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THE ARIADNE LABS STORY

OUR IMPACT: YEAR FOUR

THE ARIADNE STORY

Ariadne Labs was founded in 2012 by Dr. Atul Gawande as a joint center of Brigham and Women's Hospital and the Harvard T.H. Chan School of Public Health. We are saving lives and reducing suffering through systems innovation—scalable solutions for better care at the most critical moments in people's lives everywhere. We demonstrated our impact in surgery and have since spread our model of innovation to improve the delivery of care in childbirth, serious illness, primary health care, and beyond. Like our namesake, the Greek goddess Ariadne, who showed Theseus the way out of the Minotaur's labyrinth with a simple thread, Ariadne Labs is finding the simple threads that lead the way to better outcomes and more humane care for everyone.

COVER IMAGE: Hundreds of birth attendants across Uttar Pradesh, India were coached on the use of the Safe Childbirth Checklist as part of the BetterBirth Trial. Shown on the cover is Rachna Yadav, a birth attendant at the Sarsaul Community Health Center, who took part in the study.

KELLY DAVIDSON



From the Executive Director

This fall, I moderated a discussion on the future of medicine at the White House Frontiers Conference with President Obama. Scientists, innovators, and policymakers from a variety of disciplines came from all parts of the country to Pittsburgh to explore how to build U.S. capacity in science, technology, and innovation in the 21st century and beyond.

For the first time, I heard wide recognition that the frontiers of health innovation involve not only breakthrough science, but also follow-through science, to ensure the translation of our modern medical knowledge into front-line care. Dr. Freda C. Lewis-Hall, Chief Medical Officer of Pfizer, summed it up best when she observed, 'We have Star Wars science in a Flintstone health care system.'

Twentieth century science gave the world more than 6,000 medications and 4,000 medical and surgical procedures to address more than 60,000 currently recognized medical diagnoses and conditions. Those medications, devices, and procedures are capable of relieving suffering, saving lives, and improving health on a massive scale. But all too often, we fall short at the point of care delivery—the Flintstone system fails to effectively deliver our Star Wars medicine. Successful delivery of care requires coordinating multiple steps in care, integrating a large amount of knowledge and information, making vexing judgments,

addressing safety risks, and assuring alignment of care with patients' goals and priorities.

At Ariadne Labs, we are showing that there are identifiable points of leverage that science and innovation can unlock to make these steps happen more easily, more consistently, and more humanely. In the wake of a century of medical discoveries, it has become apparent that the biggest untapped opportunity for saving lives and reducing suffering is the development of systems innovations to insure the effective delivery of those discoveries.

When we founded Ariadne Labs in 2012, we had demonstrated the potential of a two-minute safe surgery checklist to reduce death by half in eight hospitals around the world. In 2016, we completed three major scientific trials—one scaling our Safe Surgery work across South Carolina, and two others applying systems innovation to BetterBirth and to Serious Illness Care. We have grown our community of innovators to more than 70 faculty, who are working to design and test systems interventions across the field of health care. They have launched eleven pipeline projects that are on track to generate several new interventions and measurement systems in the coming year.

In 2017, we will mark Ariadne Labs' five-year anniversary. We will announce major new findings across all our programs and projects. And, we will demonstrate new insights into the greatest points of leverage for implementing and scaling systems change in the U.S. and around the world.

We look forward to sharing and celebrating this progress with you—and demonstrating the power of health systems innovation.

Thank you for your ongoing support and ideas.

Yours,
Atul Gawande

FY 2016 Summary



Advance global health care

Maternal Health: We completed one of the world's largest maternal health randomized control trials, testing our implementation model of the WHO Safe Childbirth Checklist in Uttar Pradesh, India.

WHO Guidelines: Our experts co-authored new WHO global guidelines on the prevention of surgical site infection.

Global Primary Health Care: A new grant will expand our work on improving global primary health care systems through the Primary Health Care Performance Initiative.



Advance U.S. health care

Serious Illness Care: We completed our three-year randomized control trial at the Dana Farber Cancer Institute to test the Serious Illness Care Program and launched several initiatives to bring the program to vastly larger scale.

Training for Clinicians: We trained implementers seeking to improve care for seriously ill patients from 9 countries, 27 states, 80 institutions, 50 health systems, and 17 specialties.

Maternal Over-treatment: We have begun design on a scalable intervention to address the high rates of medically unnecessary Cesarean sections in the U.S.



Expand a pipeline of new innovation projects

We brought the total number of projects in our pipeline to 11. Spark Grants supported the following three new projects:

Cancer Care: Designing tools to simplify multi-disciplinary cancer care in the outpatient setting.

Surgery Recovery: Using smartphone technology to track the recovery of post-operative patients.

Access and Accuracy: Evaluating the use of the UpToDate evidence-based clinical resource app on clinical decision making to aid diagnosis and treatment in low income countries.



Strengthen discovery, testing, and spread

We initiated development of three platforms of expertise to strengthen research and support spread of our tools and ideas. The new platforms will come online in 2017 in the areas of:

- **Innovation** to discover new ways to improve health care
- **Science and Technology** to design and test new innovations
- **Implementation** to spread and adapt our innovations



Enhance funding base

We grew our funding for research, innovation, and strategic organizational scale-up with renewed support from Ariadne Labs Founding Supporters, new support from Ariadne Labs Core Supporters, and philanthropic investment from leading institutions. We recognize these individuals and institutions at the conclusion of this report and deeply appreciate their partnership and commitment to our work.

Global primary care model

The primary care team developed a set of core recommendations for a new World Bank report on improving China's health care system by shifting from a hospital-centric model to one focused on primary health care. The 8 Core Tenets of Primary Health Care Improvement, which grew out of the report, characterize effective primary health care systems in high- and middle-income countries. The tenets offer a framework for putting into action effective, high-performing, integrative primary care in an interconnected service delivery model.

Emerging leaders in palliative care

Ariadne Labs physicians Justin Sanders and Josh Lakin were selected for the prestigious 2016 cohort of palliative care clinicians in the Cambia Foundation Sojourn Scholars Leadership Program. The award identifies the next generation of palliative care leaders and provides funding support for innovative research and leadership development.

CDC opioid checklist

An Ariadne Labs multi-disciplinary team with expertise in surgery, primary health care, and implementation science collaborated with the Centers for Disease Control to develop a physician checklist for better prescribing of narcotics for people with chronic pain. The new CDC guidelines and Checklist for Primary Care Clinicians aim to safely reduce narcotic overdosage and abuse.

U.S. Senate testimony

Executive Director Atul Gawande testified on an expert panel before the U.S. Senate Special Committee on Aging about improving care for seriously ill patients. He recommended incorporating measures of quality of life into Medicare's nursing home/hospital ratings system and removing requirements that terminal patients give up curative care to receive hospice services supporting their quality of life.



“The last century was the century of the molecule. We were trying to boil it down to the smallest possible part—the atom, the gene, the neuron. Give me the drug, the device, the super specialist. And that provided enormous good.

“But in this century, we’re trying to figure out how they all fit together to account for the health and disease of the future that we all may face.” — Dr. Atul Gawande

Dr. Atul Gawande had an opportunity to share his ideas about the next century of health care advancement with President Barack Obama during the presidential plenary on the future of medicine and health care at the White House Frontiers Conference.

Our Core Programs

This past year, we made significant advancements in understanding how to effectively design, test, and scale solutions for better care. Each of our core programs

completed major studies that will inform our approach to improving outcomes through health systems innovation.

BETTERBIRTH



The Problem: Globally, 300,000 women and 2.7 million infants die each year in childbirth, and another 2.6 million babies are stillborn. The majority of maternal deaths and complications occur in low-resource settings from causes that are known and preventable.

The Insight: The 28-item WHO Safe Childbirth Checklist of essential birth practices implemented with supportive coaching and feedback could improve the quality of childbirth care.

Our Advancements

- We completed the BetterBirth trial, one of the world's largest scientific trials of practices in childbirth. Our study was conducted in Uttar Pradesh, the largest state in India, across 120 birth centers, with more than 162,000 women in childbirth. We are actively analyzing the results of this important study and expect to publish our findings later in 2017.
- The government of Namibia is launching a national rollout of the Safe Childbirth Checklist. The rollout follows our collaboration with clinicians in the city of Gobabis to implement the BetterBirth Program at a district hospital.
- We have begun working with medical facilities in Nigeria, Rwanda, Indonesia, Zambia, and Mexico to introduce the Safe Childbirth Checklist and evaluate the methods of implementation.

SAFE SURGERY



The Problem: Around the world, more than 7 million people die or are injured from unsafe surgical practices. In developed countries, nearly half of all adverse events in hospitalized patients are related to surgical care, and at least half of all cases of surgical harm are considered preventable.

The Insight: A checklist that improves surgical team communication and essential safety practices can help reduce errors and oversights in the operating room. The WHO Surgical Safety Checklist has been demonstrated to reduce complications and deaths by 18 to 47 percent.

Our Advancements

- In South Carolina, we introduced a customized Surgical Safety Checklist to hospital operating rooms across the state and we found a 22 percent reduction in death in participating hospitals.
- We released a comprehensive Safe Surgery Implementation Guide, a step-by-step pathway for hospital leaders to reduce surgical death rates through adoption and implementation of the Surgical Safety Checklist.
- Development is underway on a new implementation toolkit for the OR Crisis Checklists, a set of 12 checklists developed by Ariadne Labs that address the most common emergencies in the operating room.

SERIOUS ILLNESS CARE



The Problem: Inadequate communication about priorities and wishes causes many seriously ill patients to receive unwanted care, fail to receive the care they do want, experience unnecessary suffering, and die in settings not of their choice.

The Insight: A Serious Illness Conversation Guide, a training program for clinicians, and systems changes can help clinicians, seriously ill patients, and their families have more, better, and earlier conversations about patient values and goals of care.

Our Advancements

- We launched our Innovation Partnerships to scale the Serious Illness Care Program with Baylor Scott and White (the largest health system in Texas), the National Health Service of the United Kingdom, and Blue Cross Blue Shield of Massachusetts.
- We began a collaboration with two other national leaders in palliative care, the Center to Advance Palliative Care and Vital Talk, to increase access to implementation and communication skills training for institutional leaders and clinical champions. We aim to reach approximately 120 institutions that provide care for millions of patients.
- We began work to convene the first national Quality Metrics in Serious Illness Communication Symposium to establish recommendations for national health care quality metrics for serious illness care conversations.

Our Innovation Initiatives

PRIMARY HEALTH CARE

The Problem: Poor-quality primary health care in low- and middle-income countries results in lower survival, overwhelmed hospitals, and widespread public health failures.

The Insight: The condition of primary health care systems is invisible to health care leaders and practitioners, but can be made visible and tractable through better data to drive improvement.

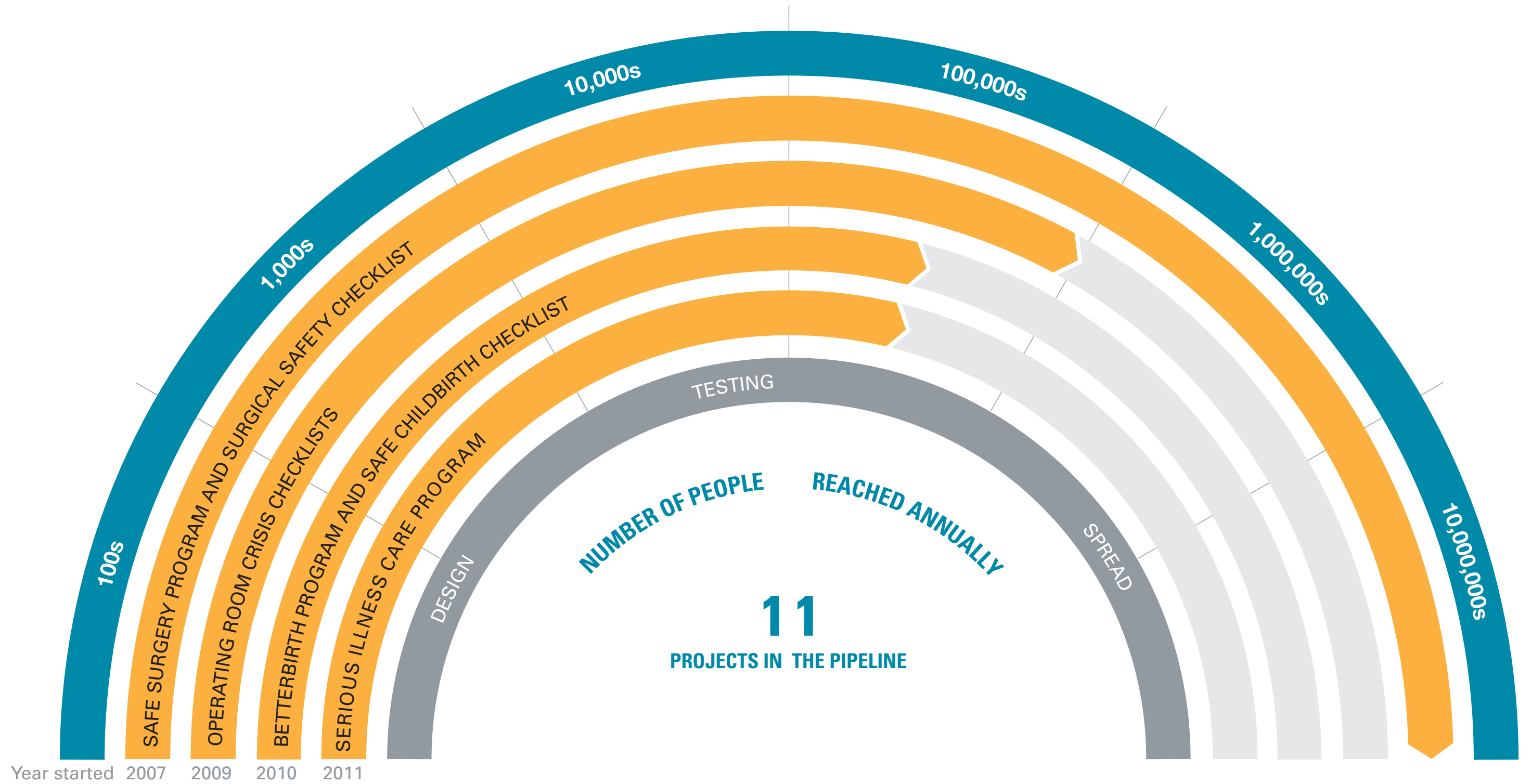
Our Advancement: We are working in countries around the world—including Estonia, Costa Rica, Rwanda, and Ghana—to understand the challenges and solutions that drive primary health care performance and to develop innovations to improve primary health care systems.

DELIVERY DECISIONS INITIATIVE

The Problem: Overuse of surgery in childbirth is harming mothers and babies. Cesarean sections are the most commonly performed surgery on humans, and nearly half of those performed in the United States may be medically unnecessary, resulting in preventable suffering, avoidable surgical complications, and billions of dollars in excess spending.

The Insight: The biggest risk factor for a woman to receive a medically unnecessary C-Section is not a mother's personal health or preferences but the facility where she chooses to deliver her baby.

Our Advancement: We collaborated with design, management, and engineering experts to understand why some hospitals have C-section rates below 7 percent and others above 70 percent. Our recent studies show how the clinical environment can influence decision-making. In 2017, we will publish findings from work with 53 hospitals on differences in these environments that can inform a solution to Cesarean overuse.



ARIADNE LABS: Portfolio of impact

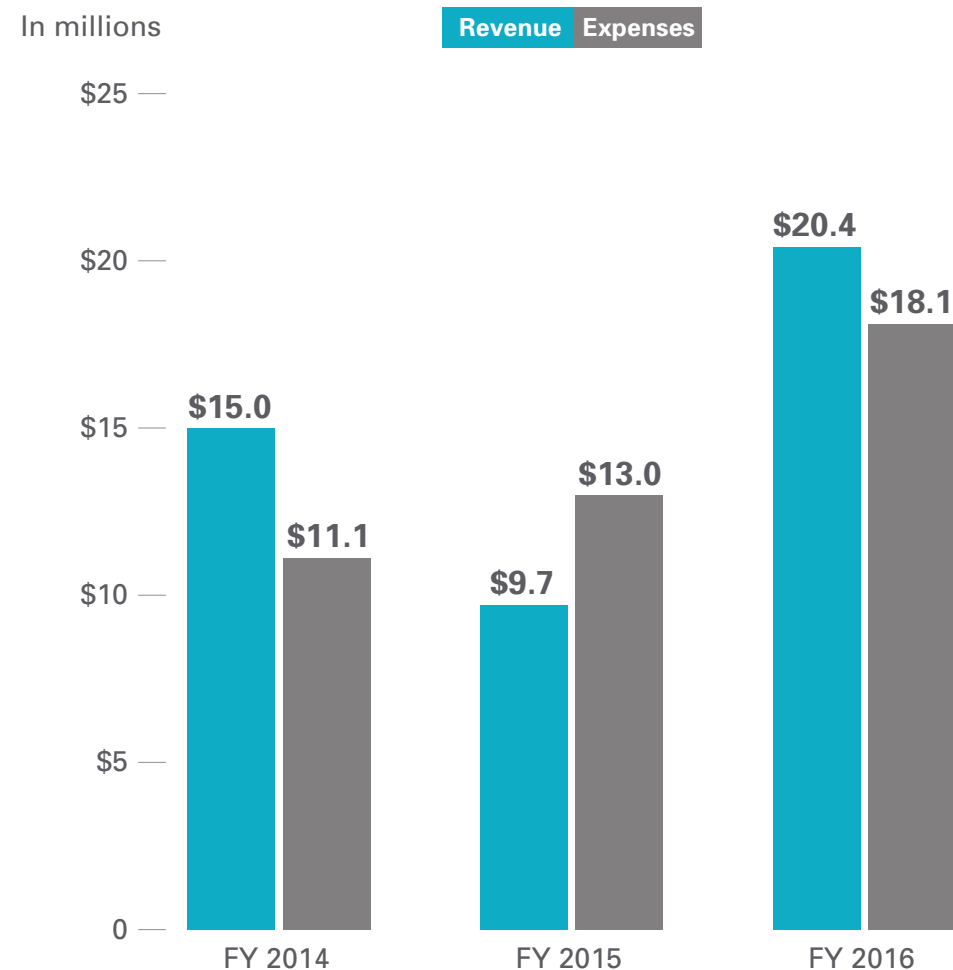
Scalable solutions for better care, everywhere

The Ariadne Labs innovation pathway represents how we design, test, and spread scalable solutions globally.

By the Numbers

A year of strategic investment

In FY 2016, revenue increased beyond expectations, doubling from FY 2015. With a new fundraising and revenue team in place, both unrestricted and restricted revenue increased while expenses were slightly lower than anticipated, primarily due to timing of sub-agreement expenditures. We ended the fiscal year in a \$2.3M net positive year-end cash position. We hired an additional twenty staff and faculty this year to keep pace with program expansion. With growth in our reserves, the leadership is well positioned to make major investments in Ariadne's scientific platforms and to develop and support new programs in FY 2017.



Advisory Board

Our Advisory Board is comprised of world-class leaders in science, education, and business. They support Ariadne Labs by contributing expertise on research priorities, scientific plans, implementation approaches, and collaborations.

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Our Supporters

We are grateful to the following individuals and institutions whose generous major support in FY2016 helped us create better care for everyone, everywhere.

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MASSACHUSETTS GENERAL HOSPITAL

DANA-FARBER CANCER INSTITUTE

BETH ISRAEL DEACONESS MEDICAL CENTER

BOSTON CHILDREN'S HOSPITAL

NEWTON-WELLESLEY HOSPITAL

HARVARD MEDICAL SCHOOL

HARVARD BUSINESS SCHOOL

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