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# Simple Solutions to Save Lives and Reduce Suffering

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OUR STORY AT YEAR FIVE



On the cover: Safe Surgery Program Director Dr. Alex Haynes is one of the founding faculty members of Ariadne Labs. He has been integrally involved in the development and research of our Safe Surgery tools and, as a practicing surgeon at Massachusetts General Hospital, Haynes uses the surgery checklists in his own OR.



**The fundamental disease of health care systems is lack of execution. The cause of this disease is complexity. Five years ago, when we founded Ariadne Labs, we set out to prove it is possible to discover the cure. And now, as you'll read here, we have done just that.**

We began with work to transform three of the critical moments in health care: childbirth, surgery, and in serious illness. We have created simple tools that can be applied in medical settings almost everywhere to produce demonstrably better care. We are now extending that effort to primary health care, a cornerstone of better health and health care, and eventually to the other key systems in health care.

Our work is only possible because of all the support, talent, and teamwork that has come together around this shared vision. We are leading a new kind of science and innovation that will advance health and well-being for all. I hope you'll find the work we've done compelling and join our efforts.

*Atul Gawande, Executive Director*

## 2003-2011: Building the foundation for Ariadne Labs

● Dr. Atul Gawande forms research group to develop tools that improve the delivery of care for patients. By 2007 he is joined by Dr. Bill Berry.

● Gawande and Berry lead the global effort to create the Surgical Safety Checklist as part of the World Health Organization's Safe Surgery Saves Lives campaign.

● Inspired by the Surgical Safety Checklist, WHO convenes global maternal health and patient safety experts led by Gawande to develop the Safe Childbirth Checklist.

● Pilot study of the Surgical Safety Checklist in 8 hospitals around the world demonstrates a 47% decrease in deaths and a 36% reduction in complications.

● Idea that a simple tool like a checklist can save lives in medicine goes mainstream after the TV show ER features the Surgical Safety Checklist and Gawande's Checklist Manifesto becomes a New York Times bestseller.

● Centers for Disease Control and Prevention consults with Gawande and his research team to create the H1N1 Checklist.

● The South Carolina Hospital Association signs on to implement the Safe Surgery Program statewide.

● The Safe Childbirth Checklist field tested in 17 sites in India, Kenya, Tanzania, Ghana, Nigeria, Mali, Pakistan, Egypt, and China.

● Dr. Susan Block leads a team of palliative care experts to develop and pilot a conversation-based intervention that improves care for patients with serious illness.

● Gawande founds Lifebox to spread the Surgical Safety Checklist, and make surgery and anaesthesia safer on a global scale.

The last century of scientific research has given us incredible breakthroughs in medical knowledge and capability. Today we can identify, treat, and often cure most diseases and health conditions.

However, all too often our health systems fail to deliver the right care to patients at critical moments. Errors in routine surgery leave many dead and disabled. Infants die from avoidable infections. Seriously ill patients receive invasive treatments that have no benefit.

Millions of people die or suffer needlessly each year due to failures in the delivery of care. We can do better. *A lot better.*

Five years ago we created Ariadne Labs—the only joint center of Brigham and Women's Hospital and the Harvard T.H. Chan School of Public Health—to address these failures. Our work is possible thanks to our supporters who also believe better is possible. Together, we are advancing a shared vision: for health systems everywhere to deliver the best possible care for every patient.

Our approach begins with identifying crucial failures that cause harm in the health-care system. We research, develop, and test simple interventions to address the failures. We have created tools like a Safe Surgery Checklist, which fosters teamwork and communication among surgical teams. Our

# Five Years of Innovation and Impact

Safe Childbirth Checklist guides birth attendants to provide 28 essential birth practices known to save the lives of mothers and babies. And our Conversation Guide helps clinicians have conversations with their seriously ill patients about their goals of care.

We pair our tools with systems-level implementation strategies that maximize their potential benefit. For instance, we have demonstrated that coaching birth

attendants on the Safe Childbirth Checklist drives dramatic improvements in the quality of care. In Serious Illness Care, building a reminder to clinicians improves the likelihood that they will have an important conversation with their patients about their goals of care.

Our work is informed by data, deep frontline knowledge from our physicians, researchers, and partners in the field, as well as a global network of clinicians and implementers dedicated to improving the delivery of care. In the pages that follow, you will see how our innovations improve surgery, childbirth, serious illness care, and primary health, and learn about the other critical areas where we will innovate next.

This is the science of health systems innovation. Five years on, we have demonstrated it works. We are leading the way globally in providing simple, scalable solutions that reduce suffering and save lives. ■



2012

## Ariadne Labs launches

with 13 employees after Brigham and Women's Hospital and the Harvard T.H. Chan School of Public Health sign off on creation of a first-of-its-kind joint center for health systems innovation.

● Ariadne Labs, Stanford University, Massachusetts General Hospital, Brigham and Women's Hospital, Kaiser Permanente, and Cooper Hospital form the Emergency Manuals Implementation Collaborative to promote use of cognitive aids during OR crises.

● Serious Illness Care Program begins its flagship study at Dana-Farber Cancer Institute to test a system intervention that supports patient-clinician guided conversations about patient goals and values.

● The Safe Childbirth Checklist Collaborative launches with 30+ countries to implement the checklist and share best practices.

● Ariadne-led study demonstrates that when surgical teams use checklists during OR crises, they complete nearly 100% of lifesaving steps. Without them, they complete only 77%.

*History continues on page 18*

# BetterBirth

GIVING MOTHERS AND BABIES A FIGHTING CHANCE



*Sita Kathauria gave birth to her daughter Anshika on Sept. 3, 2016. Kathauria was one of the 160,000 women who took part in the BetterBirth trial.*

- » 800 women and 7,000 babies die every day in childbirth
- » Poor quality childbirth care is a major contributor

The BetterBirth Program envisions a world in which **every mother and newborn receives respectful, high-quality childbirth care** that ends preventable suffering and death. We are working toward this global goal by testing and spreading tools that ensure mothers and newborns everywhere receive the most essential care proven to save lives during birth.

The BetterBirth Program focuses on improving facility-based care at the highest risk period for women and babies—the 48 hours around childbirth. We use the World Health Organization’s Safe Childbirth Checklist, a 28-item tool that includes the essential childbirth practices critical to address the seven big killers of women and babies. When birth attendants routinely perform the Checklist’s childbirth practices—like handwashing and monitoring vital signs—women and newborns are healthier. We pair the Checklist with an implementation strategy to strengthen the health system and empower birth attendants to provide quality care to every mother consistently and reliably.

- » The BetterBirth Program in India dramatically improved quality of care delivered in primary care facilities
- » BetterBirth facilities delivered nearly twice the most important childbirth steps, but more needs to be done to protect the health of mothers and babies

In our BetterBirth trial in India, we found that the program demonstrated large-scale, broad-based improvement in care. We now know it is possible to achieve real progress in the delivery of care in low-resource settings. However, the improvements were insufficient to reduce the deaths of women and newborns. More research is needed to identify the additional components required to save lives at childbirth. We are collaborating with partners around the world to continue to improve implementation of the Checklist, evaluate program achievements, and develop additional approaches that collectively will save the lives of women and infants. ■

## CHILDBIRTH CHECKLIST TRANSFORMS CARE AT NAMIBIA HOSPITAL

*Senior Medical Officer Dr. Leonard Kabongo set out in 2014 to improve childbirth care for mothers and infants at Gobabis District Hospital in Namibia, which delivers an average of 2,200 babies per year. With support from Ariadne Labs, Dr. Kabongo implemented the WHO Safe Childbirth Checklist.*



*The hospital saw adherence to essential birth practices jump from 68 percent to 95 percent, resulting in reductions in perinatal and maternal mortality. Dr. Kabongo explains:*

“The Checklist has completely changed our organizational design. Before you do any vaginal examination, you must wash your hands. Water and soap must be available. Before, there might not have been water in the delivery room, or even soap. Because the Checklist requires handwashing, management had to fix this. The Checklist has also empowered nurses. If a patient comes in with bleeding, fever, or anything abnormal, it is linked to an action plan. Nurses see patients first, and they can act quickly with the Checklist. If there is no checklist, they have to wait for the doctor. **Empowering the frontline staff is very important.** Adhering to the practices, our stillbirth rate has dropped by half. Our maternal mortality has dropped as well.”

# Safe Surgery

REDUCING SURGICAL DEATHS AND COMPLICATIONS



Photo: Surgery team at Brigham and Women's Hospital

- » Americans have on average seven operations in their lifetime
- » Surgical errors leave millions dead or disabled

People in the United States will have an average of seven surgeries in their lives—from minor outpatient procedures to major life-saving operations—making surgery one of public health's most critical and widely used interventions. **The Safe Surgery Program leads the global effort to make surgery safer**, emphasizing the importance of preparation, communication, and teamwork to reduce surgical errors and produce the best possible outcomes for patients.

Our research has demonstrated that when surgical teams do not communicate effectively, or try to work from memory, they can miss critical safety practices. The Safe Surgery Program standardizes safety measures through simple tools and implementation strategies that promote better communication and teamwork in the operating room. Our work is built around the World Health Organization Surgical Safety Checklist, the Ambulatory Surgery Center Checklist Template, and the Operating Room Crisis Checklists. These tools are designed and tested to help surgical teams reduce errors, communicate better, and work together effectively in a complex and stressful environment. In multiple studies, we have demonstrated that using these checklists fosters a culture of patient safety in the OR that reduces complications and saves lives.

- » Surgical Safety Checklist cuts death and complications 47%
- » Safe Surgery Program in South Carolina cut death 22%
- » Surgical Safety Checklist used globally in 100 million of 300 million operations

The Surgical Safety Checklist is now used around the globe, but there is much more work to be done. The Safe Surgery team works with sites throughout the world to adapt these tools to local contexts, learning how the culture of the surgical team affects use of the tools in diverse settings. Our research has influenced local, regional, national, and global policies on safe surgical practices, improving the care for millions of patients each year. ■

## CALM TEAMWORK REASSURES FAMILY IN EMERGENCY SURGERY

*Bobby Rettew is a digital and social media strategist in South Carolina, whose work with the South Carolina Hospital Association introduced him to the WHO Surgical Safety Checklist and Ariadne Labs. In June 2017, Bobby and his wife Sarah were expecting twins George and Henry, who would join their daughter, Rose. At 32 weeks, Sarah woke to find she was bleeding and needed an emergency cesarean section. Bobby recalls what happened:*



"At the hospital, I watched my whole life get wheeled away to surgery. My heart sank. When I entered the surgical suite, there was a team of providers working calmly around Sarah. I saw her face. **She was scared. So was I. Then something changed. I saw the Checklist on the wall.** I watched each person wash their hands before entering the surgical suite, watched as they followed all of the Checklist steps I knew through my work. Right then, my personal and professional lives came together. I found comfort and confidence that allowed me to be a support for my wife and a father in that operating room. As the boys arrived, I found joy in each cry, each smile, knowing that everything was under control. Sarah recovered well from the C-section, and the twins are home now, growing and eating like crazy."

# Serious Illness Care

PRIORITIZING WHAT MATTERS MOST TO PATIENTS WITH SERIOUS ILLNESS



- 
- » 85% of people believe physicians and patients should talk together about patient wishes for care
  - » Only 25% of people facing serious illness have had conversations with their health professional
- 

We believe **every individual with a serious illness should receive care that aligns with their goals, values, and priorities.** Individuals who have conversations with their clinicians about what matters most to them are more likely to receive the care they want, experience better quality of life, and are less likely to receive non-beneficial medical treatments.

Ariadne Labs created a list of questions for clinicians that guides them to have meaningful conversations with their seriously ill patients about both their quantity of life and quality of life. These conversations enable clinicians and patients to align care around what matters most to the patient. Our program supports these conversations by helping clinicians identify the right patients, know when to talk to them, and make the information easy for other clinicians to find in the electronic medical record.

- 
- » **The Serious Illness Care Program results in more conversations with patients, earlier in the course of illness, about what matters most to patients**
- 

Early results from the Serious Illness Care Program trial at the Dana-Farber Cancer Institute in Boston show that more patients are having the conversations, the conversations are happening earlier in the course of illness, and are addressing critical questions around prognosis, values and goals, and end-of-life care planning. Patients reported less anxiety and depression.

The Serious Illness Care Program is now being adopted in health systems around the world, including Baylor Scott & White in Texas, the United Kingdom's Clatterbridge Cancer Centre National Health Service Foundation Trust, University of Pennsylvania Health System, and Lahey Health and Lowell General Hospital in Massachusetts. ■

## DOCTORS, FAMILIES HAVING MORE MEANINGFUL CONVERSATIONS

*In 2017, Baylor Scott & White, the largest health system in Texas, became the first in the U.S. to roll out the Serious Illness Care program as one of Ariadne Labs' Innovation Partners.*

*Dr. Mark Casanova, director of Clinical Ethics and Supportive and Palliative Care at Baylor University Medical Center, has played a vital role in the introduction of the program. He reflects on the impact he has seen:*



"There is a lady we have been caring for in our palliative care outpatient clinic for two years now. She has advanced heart disease and advanced lung disease. Soon after I'd returned from Boston for the training with Ariadne Labs, I thought, 'We know this lady fairly well, but let's see what else we can glean from the Conversation Guide.' **I was able to pick up from her some of her desires and goals and fears really clustered around her husband.** She left the office and her daughter came back and asked to speak to me. My heart started to beat quickly and I thought, 'She's upset.' She went on to tell me how profound that interaction was and how she'd heard her mom say things she didn't realize were on her mind as concerns. She was able to elaborate for me the background concerns. That's just one example of conversations we've had where we've really been able to get meaningful information from our patients that helps guide us."



# Primary Health Care

PUTTING THE CARE BACK IN HEALTH CARE

I have had the pleasure to work with Ariadne Labs for the last two years and a half as part of a global partnership that aims at accelerating performance improvement in primary health care systems globally. With Ariadne Labs, we have found rigorous and daring thinkers and innovators interested in taking a radically different look at unresolved development problems.

*Jeremy Veillard, PhD  
Program Manager, World Bank Group*

Primary health care ensures people of all ages stay healthy and live longer. Nearly all countries have major gaps in delivering primary care. Too many children die from preventable causes and too many adults die from treatable infections and chronic conditions. Across the globe, care is fragmented, costly, and not tailored to patient and family needs, especially for the poor and most vulnerable. Our interventions aim to guide countries in establishing primary health care systems that are accessible, coordinated, comprehensive, life-long, and person-centered.

Our team is working to reshape the conversation on primary health care through collaboration with key global stakeholders like the World Health Organization and the World Bank to create a common language that makes the case for why health care systems should focus on primary health care now. We're identifying better measurements of primary health care system performance and building interventions, such as a care management program in Estonia, to improve gaps in care. We work at the global and country level to change the delivery of frontline primary health care services for better patient outcomes. The goal is to design interventions and tools that will allow primary care systems to improve performance, efficiency, and quality of care.

# Delivery Decisions Initiative

PROVIDING MOTHERS AND BABIES WITH SAFE, RESPECTFUL CARE



Millions of women face potentially life-threatening and lifelong health complications from the wrong care at the wrong time. We have demonstrated that the characteristics of a hospital where a woman gives birth are the strongest indicators of whether she will deliver with an unnecessary C-section. While cesarean deliveries can save lives in an emergency, our research indicates clinicians are not always clear on when a cesarean is truly necessary. Our goal is to ensure every woman delivers her baby with the right care.

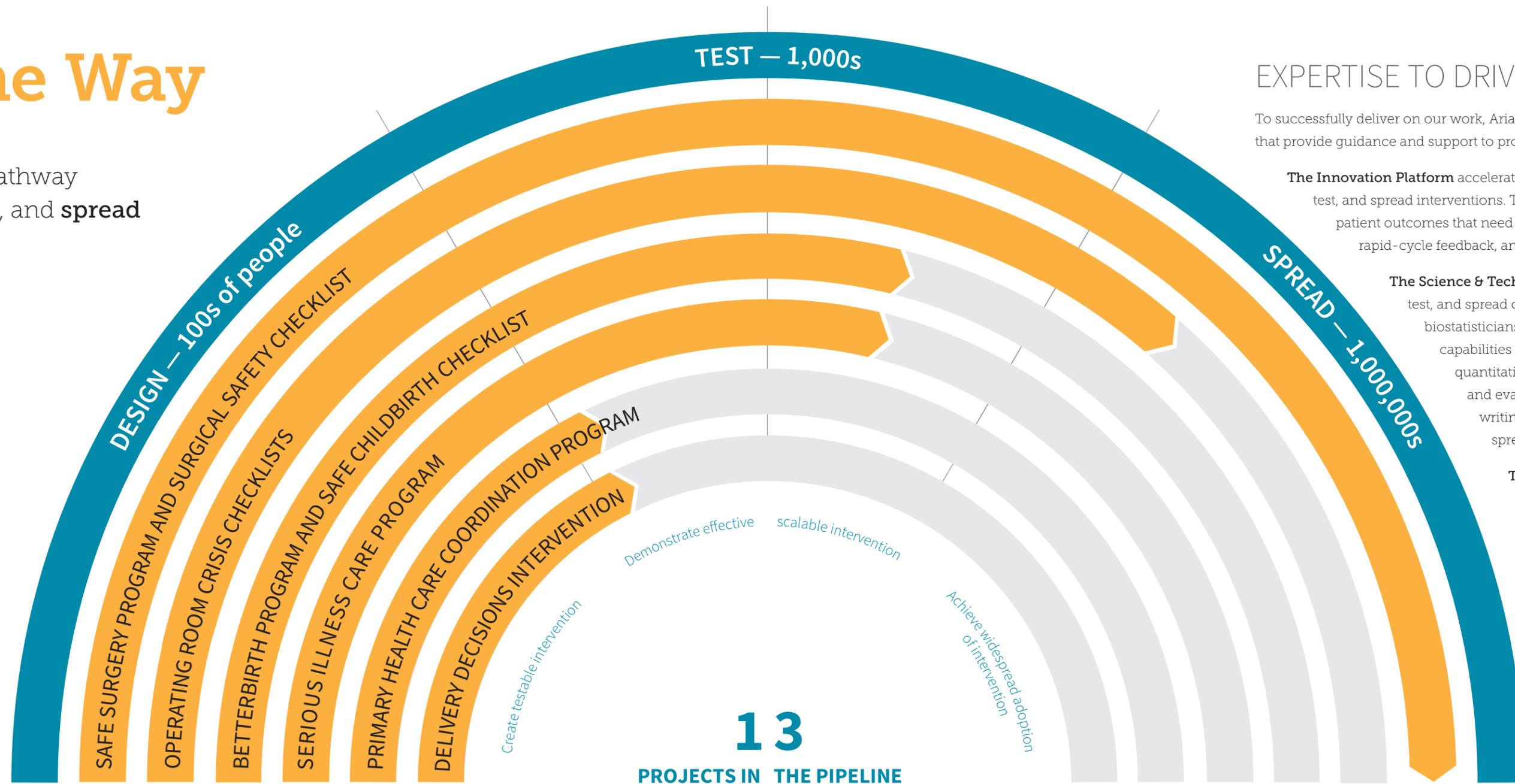
The Delivery Decisions Initiative is developing a solution that improves communication between clinicians and laboring women, defines the basic care every woman in labor should receive, and ensures this care happens reliably. Working with a broad coalition of technical experts and stakeholders in maternal health, we will test the effectiveness and impact of our intervention at four American hospitals in early 2018.

The Delivery Decisions Initiative is taking steps to make labor and birth care a more thoughtful, intentional, and collaborative process, while also improving safety and reducing harms from unnecessary cesareans. I value their approach, which includes soliciting input from all disciplines—recognizing the contributions of all members of the maternity care team, doctors, midwives, nurses, doulas, while working to center the voice of those we care for.

*Lisa Kane Low, PhD CNM FACNM, FAAN,  
President of the American College of Nurse Midwives*

# The Ariadne Way

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



## EXPERTISE TO DRIVE SOLUTIONS AND SPREAD

To successfully deliver on our work, Ariadne Labs has invested in specialized platforms of expertise that provide guidance and support to projects, from design through test and spread.

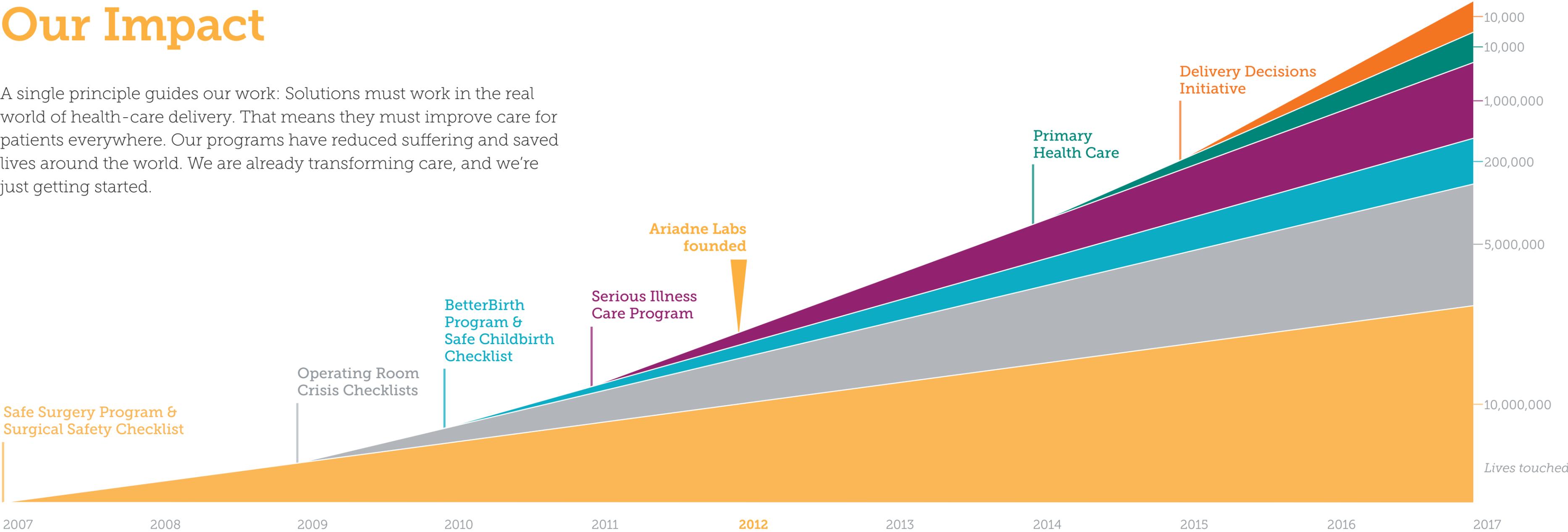
**The Innovation Platform** accelerates the ability of new projects to successfully design, test, and spread interventions. The team works with new project leaders to identify the patient outcomes that need to be improved, generates intervention options, collects rapid-cycle feedback, and iterates on solution design and implementation.

**The Science & Technology Platform** collaborates with programs to design, test, and spread our interventions globally. A team of experienced biostatisticians, research scientists, and software engineers brings capabilities in data management; study design; qualitative, quantitative, and mixed methods approaches; monitoring and evaluation; data visualization; and manuscript and report writing. They ensure that our work is evidence-based, and spread our ideas.

**The Implementation Platform** supports the dissemination and practical application of our solutions in the real world. A dedicated team of experienced physicians, nurses, implementation specialists, social scientists, and design experts brings capabilities in strategy, marketing/communications, implementation, coaching, and community engagement to support effective adoption.

# Our Impact

A single principle guides our work: Solutions must work in the real world of health-care delivery. That means they must improve care for patients everywhere. Our programs have reduced suffering and saved lives around the world. We are already transforming care, and we're just getting started.



# Global Reach

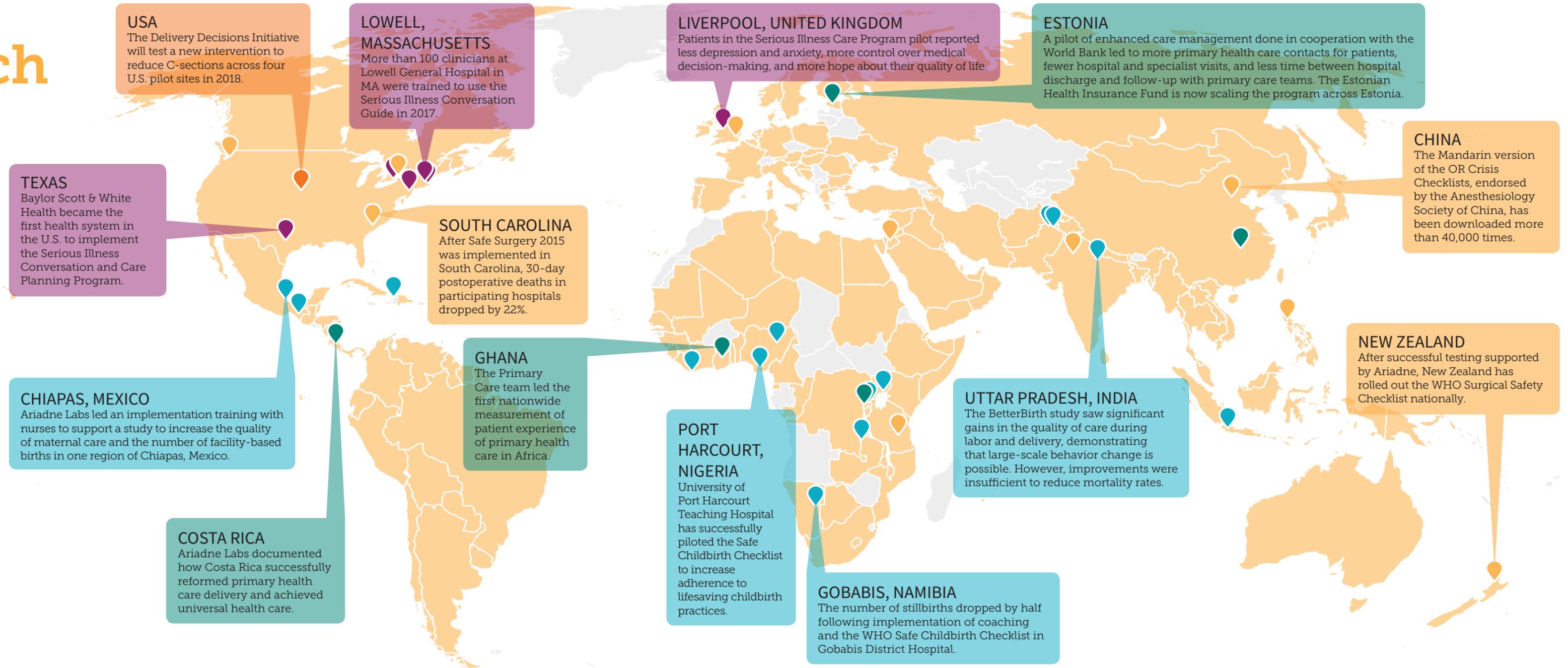
After just five years, our tools and programs have reached nearly every corner of the globe.

## SPREAD OF OUR TOOLS:

 Ariadne Labs tools downloaded in 138 countries

## DIRECT PARTNER SITES:

-  Safe Surgery
-  Primary Health Care
-  Serious Illness Care
-  Delivery Decisions Initiative
-  BetterBirth



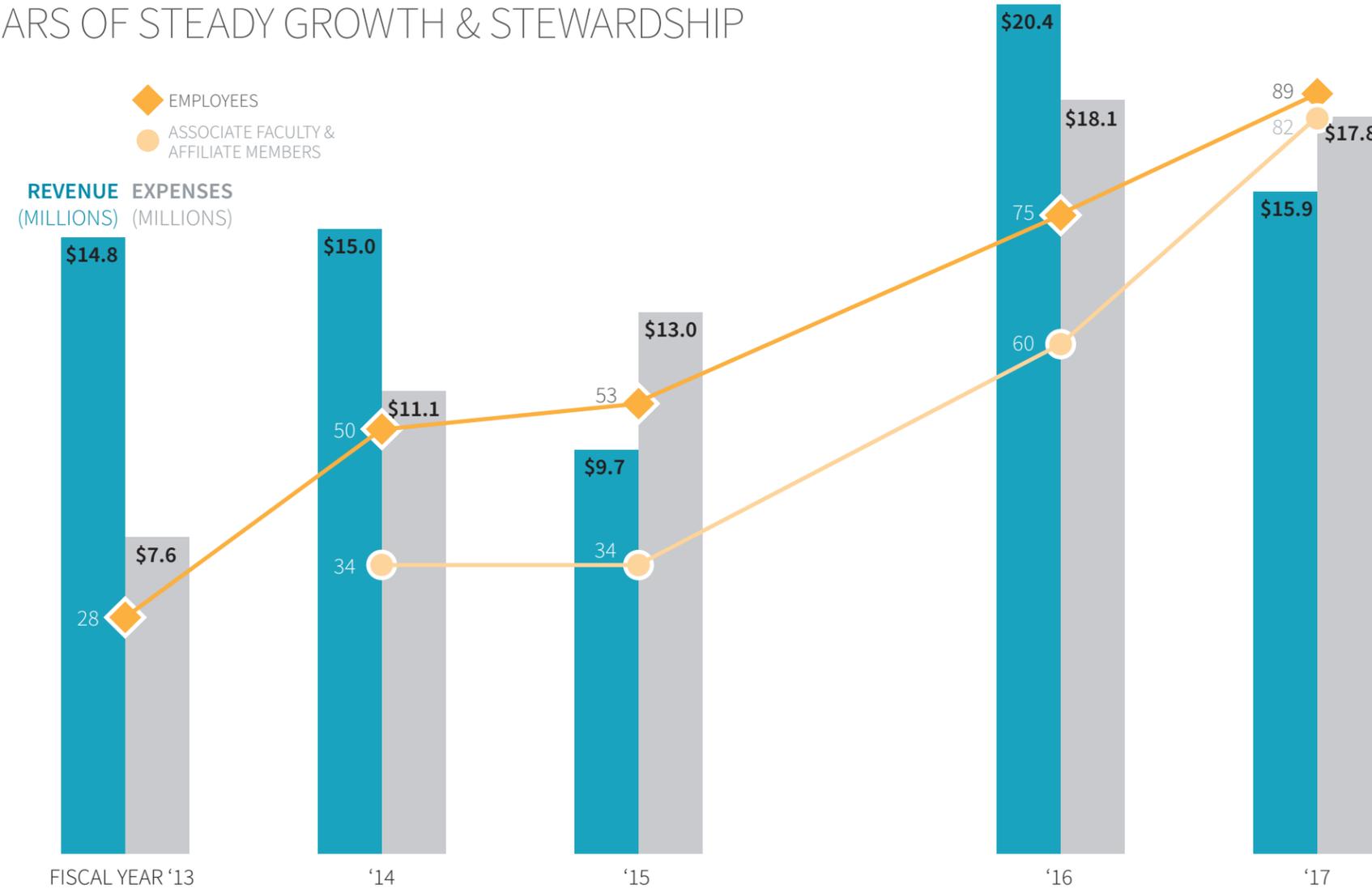
# By the Numbers

## FROM START-UP TO SCALE-UP: FIVE YEARS OF STEADY GROWTH & STEWARDSHIP

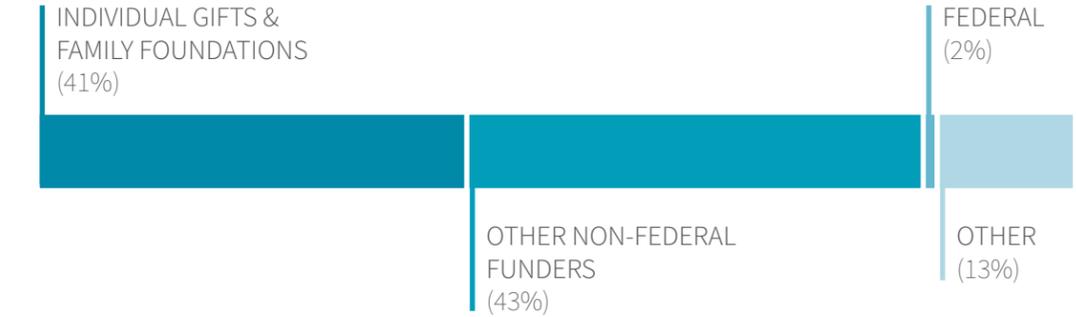
Since our founding, we have invested in careful, strategic growth, aimed at building capacity, supporting core programs, and encouraging innovation in new areas of health care. We have tripled the number of employees, with key hires in management and scientific leadership that have enabled greater depth and breadth of work across the organization. In the last three years, our associate and affiliate faculty membership—a community of innovators from across the Harvard teaching hospitals, academic community, and beyond—has more than doubled in size.

We have expanded and diversified our sources of revenue within the last five years, with some annual fluctuation reflecting the timing of grant awards and philanthropic gifts. Steady growth in expenses reflects growing program activity, as well as strategic investments in organizational capacity.

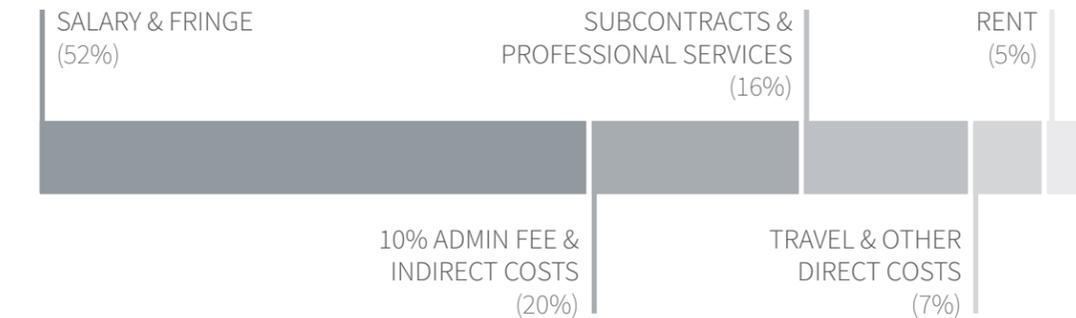
This fiscal year, we put new metrics into place, tracking important financial indicators like the average indirect cost rates of grants and contracts and the ratio of programmatic to infrastructure spending. We also established a new optimal reserve ratio that better reflects our assessment of financial risks associated with our work and our goal of remaining self-sustaining. Over the last year, we have focused our efforts to diversify revenue streams with the goal of increasing federal funding and strategic partnerships in the future. ■



## FY17 REVENUE BY SOURCE (\$15.9M)



## FY17 EXPENDITURE BY TYPE (\$17.8M)



# Making Our Work Possible

## SUPPORTERS

We extend deep thanks to these individuals and institutions whose generosity in our first five years has propelled health systems innovation from a testable idea to replicable proof-of-concept: simple, powerful solutions deliver better care at the most critical moments in people's lives everywhere.

- |  |  |   |
|--|--|---|
| Anonymous (multiple)   | ghSMART Consulting                             | Market Research, Inc.                       |
| The Paul G. Allen Family Foundation                                    | Goodwin Procter Boston                         | Michael McCaskey                            |
| Donnalisa and William Barnum   | The Hartford Foundation                        | Marcus McKinney, MD                         |
| *Blue Cross Blue Shield of Massachusetts                               | *The Harvard T.H. Chan School of Public Health | Ian and Sonnet McKinnon                     |
| *The Branta Foundation   | William W. Helman                              | The Gordon and Betty Moore Foundation       |
| Troyen A. Brennan, MD, MPH, and Wendy E. Warring                       | Hill Holliday                                  | John Moore and Laura Fontana                |
| *Brigham and Women's Hospital  | Reid Hoffman                                   | One8 Foundation                             |
| Sam Britton  | The Robert Wood Johnson Foundation             | Peterson Center on Healthcare               |
| Cambia Health Foundation   | Kristina Jones and Peter Hecht                 | Daniel E. Ponton Fund for the Neurosciences |
| Mark L. Casey  | Peter D. Kaufman                               | Emmanuel Roman                              |
| The Cathedral Fund   | Carl Kawaja and Wendy Holcombe                 | Rx Foundation                               |
| The Capital Group Companies Charitable Foundation                      | Michele and Howard Kessler                     | Greg and Laura Spivy                        |
| *The Charina Endowment Fund/<br>Richard L. Menschel and Ronay Menschel | *The Klarman Family Foundation                 | Lawrence T. and Beth Ann Sprinkle           |
| CRICO/Risk Management Foundation                                       | Lisa L. and Jeffrey M. Leiden, MD, PhD         | Square Roots                                |
| *Ann and John Doerr  | Karin Swartz Leschly, MD, and Nick Leschly     | Surgo Foundation                            |
| David and Michelle Ebersman  | Esther and Dan Levy                            | Andrew and Ruth Suzman                      |
| *EMC Corporation   | Eeling Lim and W. Yen Liow                     | Ashutosh Tyagi                              |
| *Mala Gaonkar and Oliver Haarmann                                      | Lone Pine Capital                              | Jeffrey C. Walker                           |
| The Bill & Melinda Gates Foundation                                    | The MacArthur Foundation                       | Jake and Cindy Winebaum                     |
| Atul Gawande and Kathleen Hobson                                       | Scott and Laura Malkin                         | Jason Yeung                                 |
|  | Jay and Susan Markowitz                        | Gwill E. York and Paul A. Maeder            |

\*Founder's Circle & Core Supporters

## 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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| TROYEN A. BRENNAN, MD, MPH<br><i>Executive Vice President and CMO<br/>CVS Health</i>  | MALA GAONKAR, MBA<br><i>Managing Director<br/>Lone Pine Capital</i> | ELIZABETH NABEL, MD<br><i>President<br/>Brigham Health</i>  | GWILL E. YORK, MBA<br><i>Co-Founder<br/>Lighthouse Capital Partners</i>          |
| ANDREW DREYFUS<br><i>President and CEO<br/>Blue Cross Blue Shield of Massachusetts</i>  | PETER HECHT<br><i>CEO<br/>Ironwood Pharmaceuticals</i>              | MICHELLE A. WILLIAMS, SCD<br><i>Dean of the Faculty<br/>Harvard T.H. Chan School of Public Health</i> |  |

## PARTNERS

The following institutions have been valuable collaborators in funding the development, testing, implementation, and evaluation of our tools and approaches. We are tremendously grateful for their partnership in our work.

- |   |  |                                 |
|---|--|---------------------------------|
| Agency for Healthcare Research and Quality (AHRQ) | National Institute for Children's Health Quality (NICHQ) | University of Washington        |
| Baylor Scott & White Health                       | PATH   | The World Bank                  |
| Boston Consulting Group (BCG)                     | Results for Development                                  | World Health Organization (WHO) |
| Lowell General Hospital                           | The Urban Institute                                      |                                 |
| New Zealand Health Quality and Safety Commission  | United Kingdom National Health Service (NHS)             |                                 |

We are grateful to the following institutions that further our work as the organizational homes of our faculty and staff:

- |   |                                      |                                      |
|---|--------------------------------------|--------------------------------------|
| Brigham and Women's Hospital                  | Beth Israel Deaconess Medical Center | Harvard Medical School               |
| The Harvard T.H. Chan School of Public Health | Boston Children's Hospital           | Harvard Business School              |
| Massachusetts General Hospital                | McLean Hospital                      | Harvard Faculty of Arts and Sciences |
| Dana-Farber Cancer Institute                  | Newton-Wellesley Hospital            |                                      |

Continued from page 1

### 2013

Obstetrician Dr. Neel Shah awarded Ariadne Labs Spark Grant to explore ways to improve childbirth in the United States.

Ariadne Labs grows to 50 employees and moves to Boston's Landmark Center.

### 2014

The BetterBirth study—one of the world's largest maternal health trials—begins in Uttar Pradesh, India, to test whether the Safe Childbirth Checklist, paired with coaching, can improve quality of care and reduce mortality.

New York Times bestseller Being Mortal: Medicine and What Matters in the End inspires social movement around the importance of seriously ill patients and clinicians being aligned around goals of care.

Brigham physician Dr. Asaf Bitton joins Ariadne Labs to begin program focused on improving primary health care globally.

Maternal and newborn health epidemiologist Katherine Semrau joins as director of BetterBirth.

CDC and Ariadne Labs release Ebola checklist.

### 2015

The Primary Health Care Performance Initiative to strengthen global primary health care systems launches at United Nations with the Gates Foundation, WHO, World Bank, Ariadne Labs, and Results for Development.

Dr. Rachelle Bernacki from Serious Illness Care selected for prestigious Cambia Foundation Sojourns Scholar Leadership Program.

### 2016

Ariadne Labs and Stanford University publish landmark study in JAMA that suggests optimal country-level C-section rate based on maternal mortality is 19%.

CDC and Ariadne Labs release Opioid checklist.

Primary Health Care team publishes core tenets for primary care improvement as part of a World Bank study to help China improve its health system.

Serious Illness Care announces first innovation partnerships: Baylor Scott & White in Texas, Lowell General Hospital in Massachusetts, and Clatterbridge Cancer Center NHS Foundation Trust in the United Kingdom.

Gawande testifies before the U.S. Senate Special Committee on Aging about improving care for seriously ill patients.

Serious Illness Care Program's founding director Dr. Susan Block honored with Lifetime Achievement Award by the American Academy of Hospice and Palliative Medicine.

Drs. Justin Sanders and Josh Lakin from Serious Illness Care selected for the Cambia Foundation Sojourns Scholar Leadership Program.

History continues on page 20

# Innovating for the Future – Our Pipeline of New Projects

Ariadne Labs continuously cultivates new projects that can bring health systems innovation to other areas of health-care delivery. Our current pipeline projects include:



**After the ICU:** A growing body of research on post-ICU recovery suggests that there are long-term consequences of being in the ICU that can negatively impact a patient's physical, cognitive, and mental well-being. This project aims to establish prioritized recovery outcomes and a scalable intervention for patients after they are released from intensive care.



**System Expansions:** This CRICO-funded project seeks to reduce the potential for patient harm during health-care mergers, acquisitions, and affiliations by creating communication tools that uncover potential problems before they happen.



**Surgical Coaching:** This project, funded through CRICO, will develop a standardized coaching program that helps surgeons improve their technical and nontechnical skills, like communication and leadership.



**Aria:** This online platform is being developed by our Science and Technology team to support the spread of effective implementation practices. It will provide a common space for users to share what works in different settings, while also allowing for systematic data collection and reporting.



**Patient ID:** This new tool, part of the Serious Illness Care Program, aims to help health systems accurately identify patients with serious illness who would benefit from a serious illness conversation with their clinician.



**Care Plan:** We're developing a tool for the Serious Illness Care Program to help clinicians identify red flags and unmet needs during a serious illness conversation and generate a set of action steps.



**Patient/Family Conversation Guide:** The Serious Illness Care Program is in the early stages of developing a partnership with The Conversation Project to create, test, and disseminate a patient and family guide to the serious illness conversation.



**Safe Launch Initiative:** This project with Johnson & Johnson centers around the design and testing of a Safe Surgery Program tool to improve safety when new devices are introduced in the operating room.

Ariadne Labs Spark Grants support early-stage projects to design new interventions or new capacities for solving problems in health-care delivery. Some of our Spark Grants are supported through a gift from the Paul G. Allen Family Foundation. Other projects are supported through Ariadne Labs.



**Ready, Aim, Implement:** This project aims to determine how to reliably and conveniently assess a site's "readiness" to implement a new intervention, informing strategies to improve the likelihood of successful implementation.



**Spreading Team Training:** This project tests assumptions as to why team training is not more widely used by surgical teams to practice clinical care, and develops options for a training model that addresses barriers and increases access to this approach.



**Measuring Management at Scale\*:** In this project, Ariadne will use an adaptation of the World Management Survey to provide the first census-level measurement of management across hospitals in the U.S.

\*Funded by the Paul G. Allen Family Foundation

## 2017

Shah launches *Delivery Decisions Initiative* to develop an intervention that reduces unnecessary C-sections.

*BetterBirth* study in *New England Journal of Medicine*, co-authored by Semrau and Gawande, demonstrates large-scale broad-based improvement in facility-based care, but improvements are insufficient to reduce maternal and perinatal mortality.

South Carolina Safe Surgery program demonstrates a 22% reduction in postoperative deaths among hospitals that complete implementation of the program.

Safe Childbirth Checklist implementation in Gobabis District Hospital in Namibia reduces perinatal mortality from 22 deaths per 1,000 deliveries to 13.8 deaths and maternal mortality to zero for two years.

JAMA Surgery study co-authored by Shah shows women giving birth by C-section have higher risk of needing a hysterectomy later in life, and face greater risk of complications during a hysterectomy.

The online OR Crisis Checklists Implementation Toolkit debuts at the 2017 American Society of Anesthesiologists.

National patient safety leader Dr. Evan Benjamin becomes new chief medical officer.

Mass General surgeon Alex Haynes becomes director of Safe Surgery Program.

Palliative care physician Erik Fromme becomes new director of Serious Illness Care Program.

Serious Illness Care study demonstrates success of serious illness conversations in a high-risk primary care setting.

Serious Illness Care Community of Practice surpasses 1,000 members.

Boston innovation leader Nic Encina joins as first chief science and technology officer.

The Estonian Health Insurance Fund, the World Bank, and the Primary Health Care team conclude successful pilot program for enhanced care management in Estonia.

Our mission is to create scalable solutions that produce better health care at the most critical moments in people's lives, everywhere.



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