



Merck's Approach to Antimicrobial Stewardship

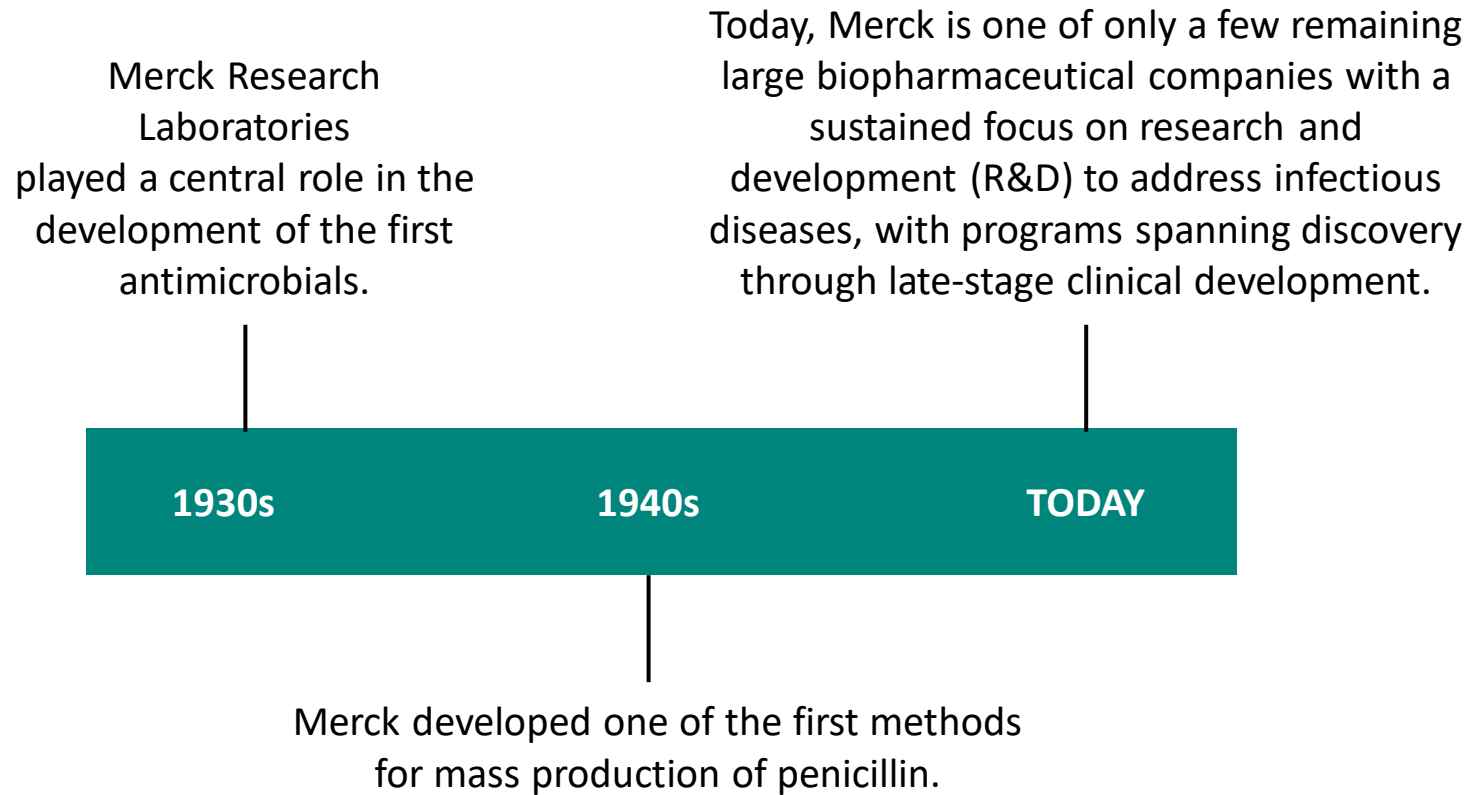
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Disclosures

- I am a compensated employee of Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc., Kenilworth, NJ, USA.
- The content of this presentation does not necessarily represent the opinions of Merck & Co., Inc.

For More Than 80 Years, Merck Has Been Developing Medicines and Vaccines to Treat and Prevent Infectious Diseases

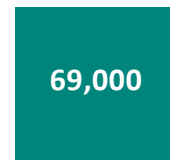
Novel



HEADQUARTERS
Kenilworth, NJ, U.S.A.
operating in more than
140 countries



BUSINESSES Prescription medicines, vaccines, biologic therapies, animal health products



69,000
EMPLOYEES
worldwide
(as of 12/31/18)

The Private Sector Has an Important Role in Antimicrobial Resistance (AMR)

Addressing



Speed up discovery and development

Slow down the emergence of resistance



PUBLIC COMMITMENTS HAVE BEEN MADE

- Davos Declaration¹
- Industry Roadmap²
- AMR Industry Alliance Progress Report³

1. Davos Declaration (<https://www.amrindustryalliance.org/wp-content/uploads/2017/12/AMR-Industry-Declaration.pdf>)
2. Industry Roadmap (<https://www.ifpma.org/wp-content/uploads/2018/06/Roadmap-for-Progress-on-AMR-FINAL.pdf>)
3. AMR Industry Alliance Progress Report (<https://www.amrindustryalliance.org/progress-report/>)

Merck is Taking Action to Address AMR and Antimicrobial Stewardship (AMS)

Advance

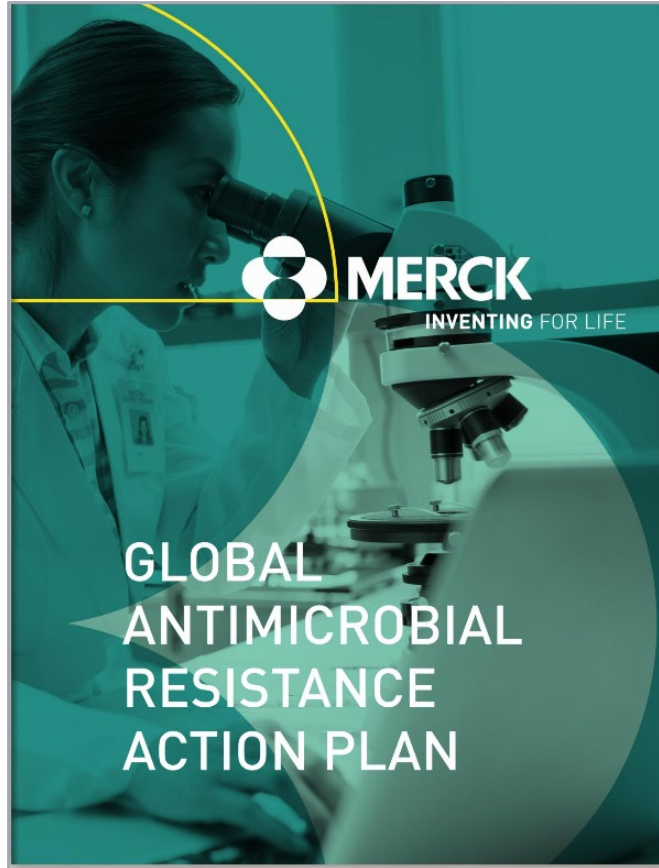
MERCK
INVENTING FOR LIFE

AS A GLOBAL HEALTH CARE LEADER, MERCK IS:

- 
LEADING IN INFECTION PREVENTION
 through the development and production of vaccines to prevent infections and reduce the need for antibiotics.
- 
DRIVING INNOVATION
 to discover and develop new treatments and antibiotic alternatives to address AMR.
- 
ADVOCATING FOR POLICY SOLUTIONS
 to support sustainable investment in the development of new tools to combat AMR.
- 
ADVANCING ANTIMICROBIAL STEWARDSHIP
 to improve patient outcomes and slow the development of AMR.
- 
SUPPORTING GLOBAL AMR SURVEILLANCE
 through our Study for Monitoring Antimicrobial Resistance Trends (SMART), which provides data to the scientific community on AMR trends.
- 
PROTECTING AND MAINTAINING ANIMAL HEALTH
 by promoting the responsible use of antibiotics and vaccines.

“ Merck remains deeply committed to working with governments, health care providers and others to drive antibiotic innovation, promote appropriate use and enhance access for patients. ”

– Kenneth C. Frazier, Chairman and Chief Executive Officer



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GLOBAL ANTIMICROBIAL RESISTANCE ACTION PLAN

DELIVERING ON OUR COMMITMENTS

Recognizing that collective action is needed to address the growing global health threat of AMR, Merck has joined several industry initiatives. In January 2016, the company and over 100 biopharmaceutical, generic medicines and diagnostic companies, as well as key trade associations, launched a joint declaration at the World Economic Forum setting out bold commitments and calling for governments and industry to take action against AMR.

At the U.N. High-Level Meeting on AMR in September 2016, Merck and 12 other leading companies released the *Industry Roadmap for Progress on Combating AMR*. This document laid out additional commitments to reduce the environmental impact from the production of antibiotics, help ensure antibiotics are only used by those who need them, improve access to antibiotics globally, and explore new opportunities for collaborations between the industry and public sector.

We are a founding board member of the AMR Industry Alliance, comprised of signatories of these documents, to drive and measure industry progress against our commitments.

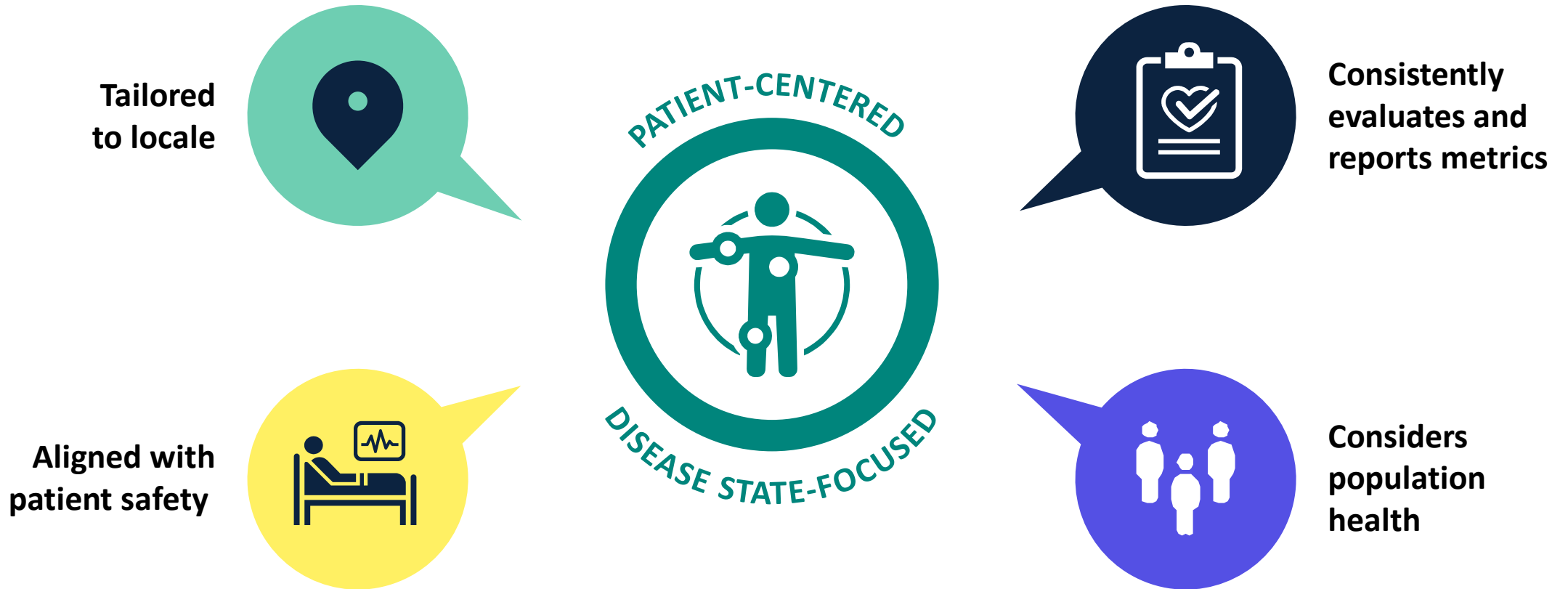
In October 2017, Merck Animal Health worked with HealthforAnimals to develop global animal health commitments related to the responsible use of antibiotics and investment into other areas of animal health and welfare.

Merck is committed to playing its part in the global response to AMR. We are working to deliver on these commitments. Four key areas of focus include:

- 
ADVANCING ANTIBIOTIC R&D THROUGH COLLABORATIONS
- 
IMPROVING APPROPRIATE ACCESS TO ANTIBIOTICS
- 
REDUCING THE POTENTIAL IMPACT FROM THE PRODUCTION OF ANTIBIOTICS
- 
ENSURING PROMOTIONAL ACTIVITIES SUPPORT AMS

1. Merck Global AMR Action Plan (<https://www.merck.com/FlipBook/GARAP/index.html>)
2. Merck Delivering on Our Commitments (<https://www.merck.com/FlipBook/DOOC/index.html>)

What Does “Good” AMS Look Like?

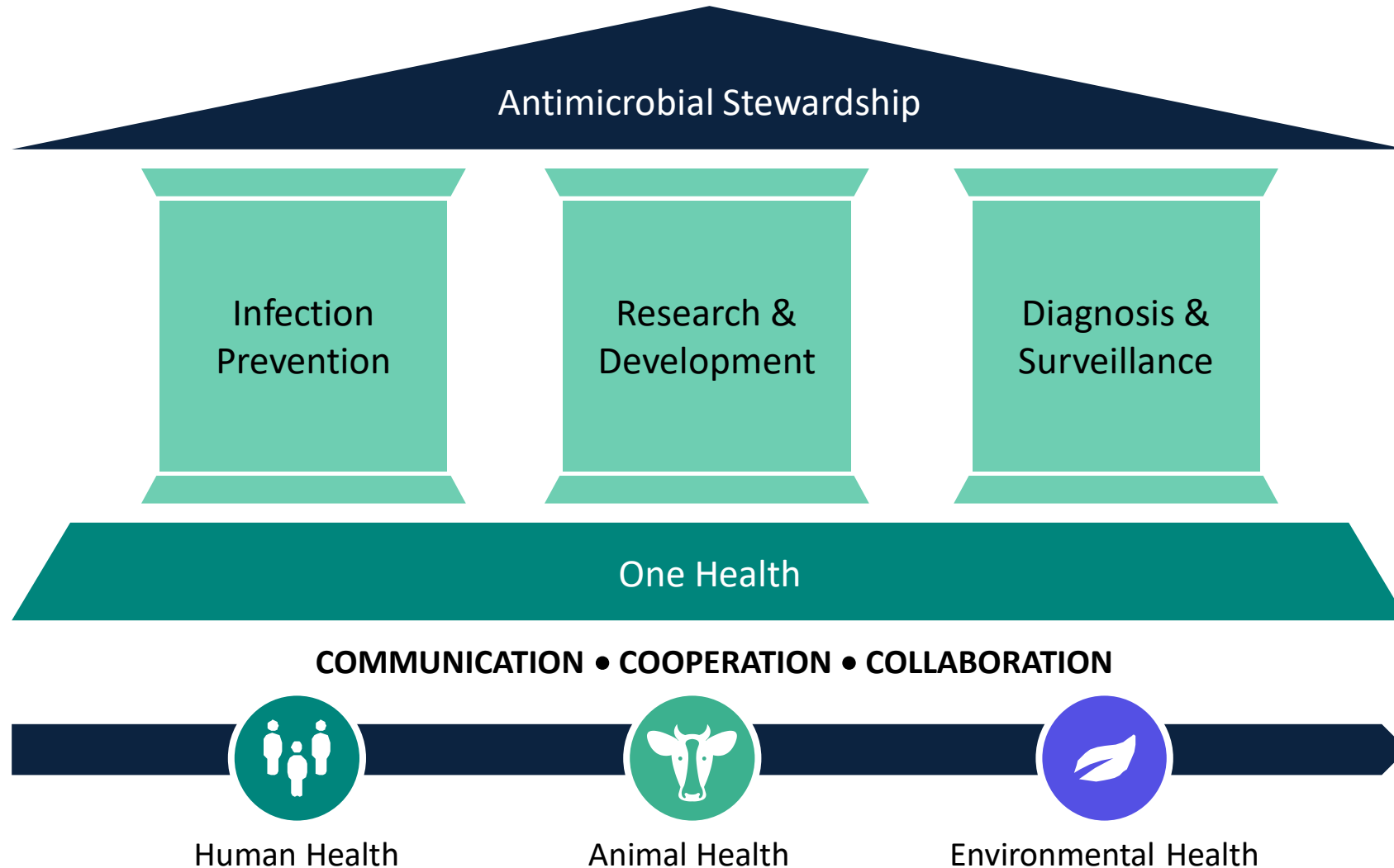


...but this is not always what is practiced.

Why Does AMS Matter to Merck?



A One Health Perspective Is Foundational to Our Approach



AMS is Built into Every Aspect of Merck's Engagement on AMR

- Advocacy for policies that enable access to new antibiotics, vaccines, and diagnostics
- Cross-functional AMS Council
- Internal AMS educational curriculum



Pursue indications in areas of unmet medical need



Identify and study populations most likely to benefit from products



Reduce environmental impact of antibiotic production through responsible manufacturing



Incorporate AMS principles into promotional materials/practices, positioning, and strategy



Support post-marketing evidence generation to further inform appropriate use



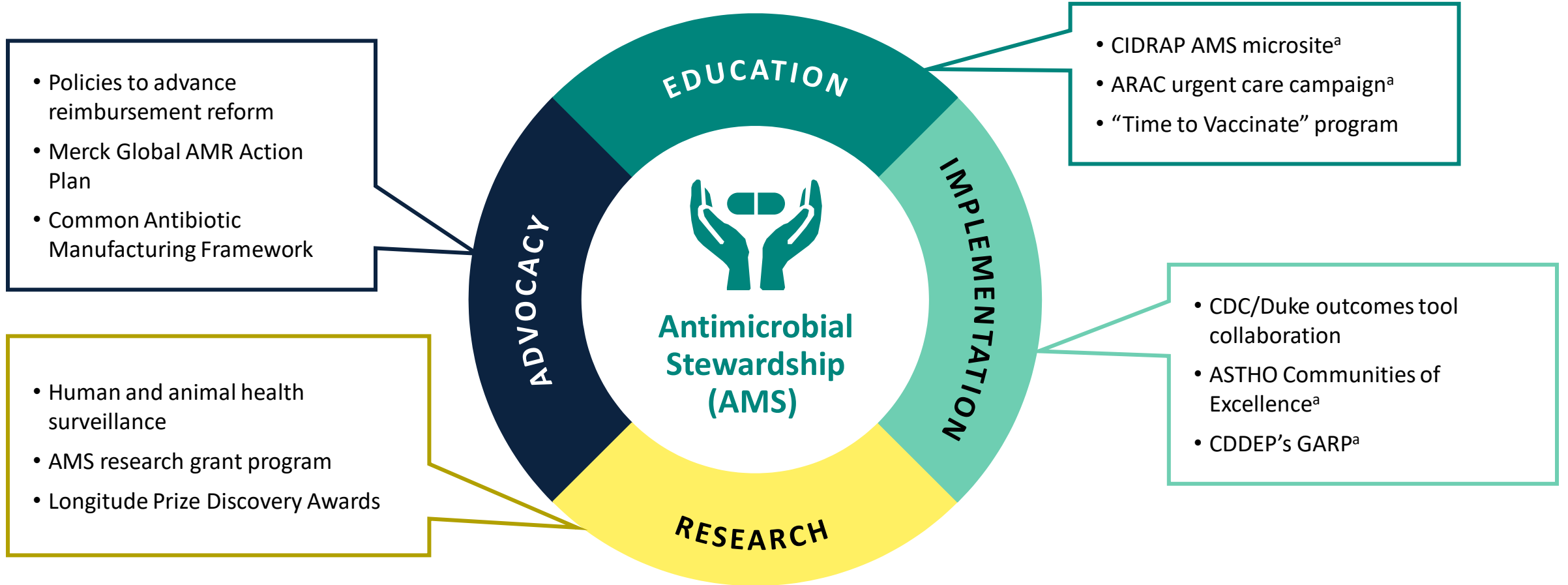
Conduct surveillance of AMR (SMART)



Engage in partnerships/opportunities to support responsible antibiotic use

Merck is Making Significant Investments to Strengthen AMS Humans, Animals, and the Environment


in



Hermesen ED, et al. The role of pharmaceutical companies in antimicrobial stewardship: a case study. *Clin Infect Dis*. 2020. <https://doi.org/10.1093/cid/ciaa053>

^a Grant support; Merck not directly involved in development; ARAC – Antibiotic Resistance Action Center; ASTHO – Association of State & Territorial Health Officials; CDDEP – Center for Disease Dynamics, Economics, & Policy; CIDRAP – Center for Infectious Diseases Research & Policy; GARP – Global Antibiotic Resistance Partnership

Collaboration is Not Optional



“No one discipline or sector of society has enough knowledge and resources to prevent emergence or resurgence of diseases in today's globalized world.”

— Dr. Bernadette Dunham
Former director of FDA's Center for Veterinary Medicine