The Bill & Melinda Gates Foundation Malaria Eradication Strategy

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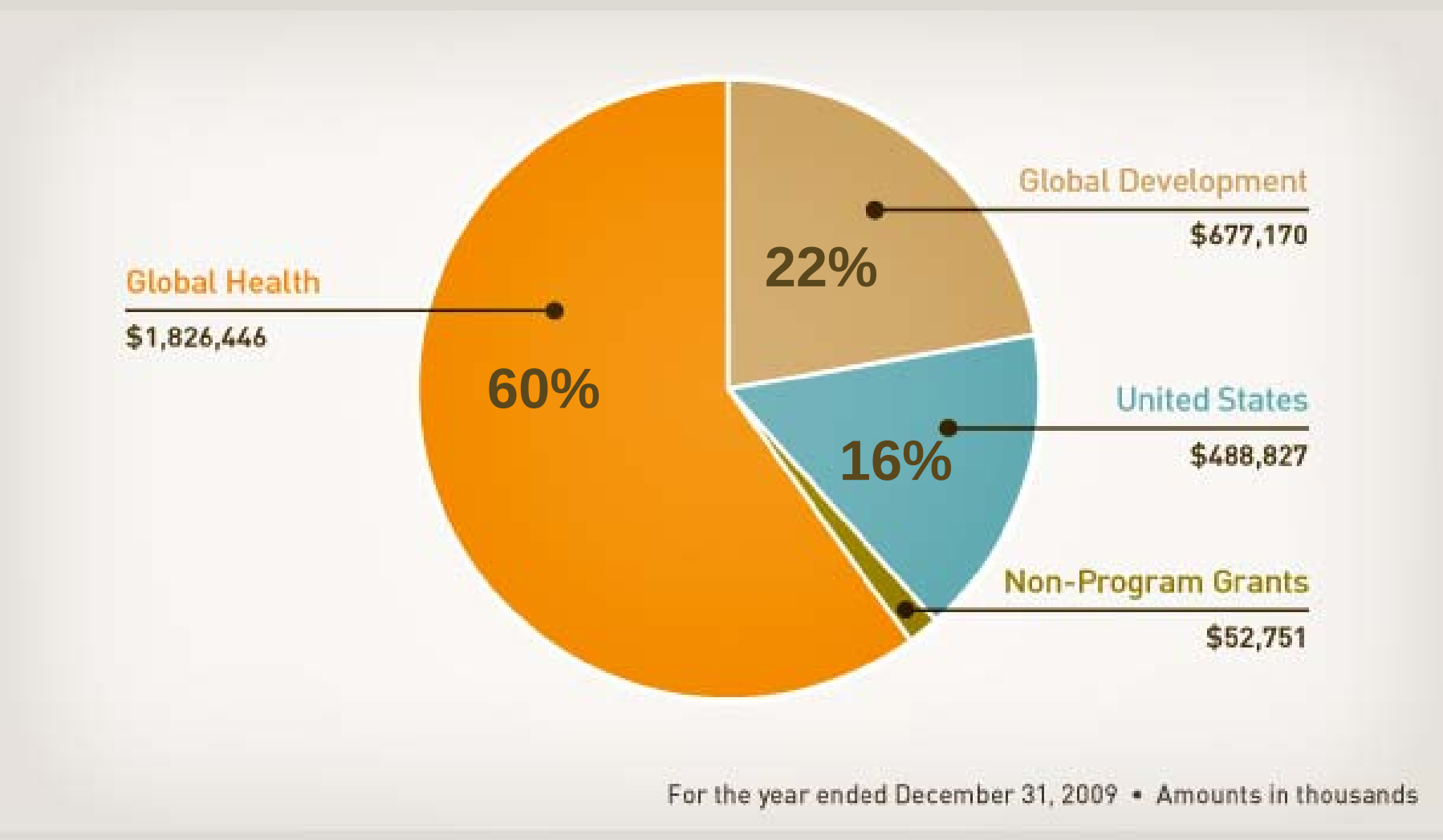
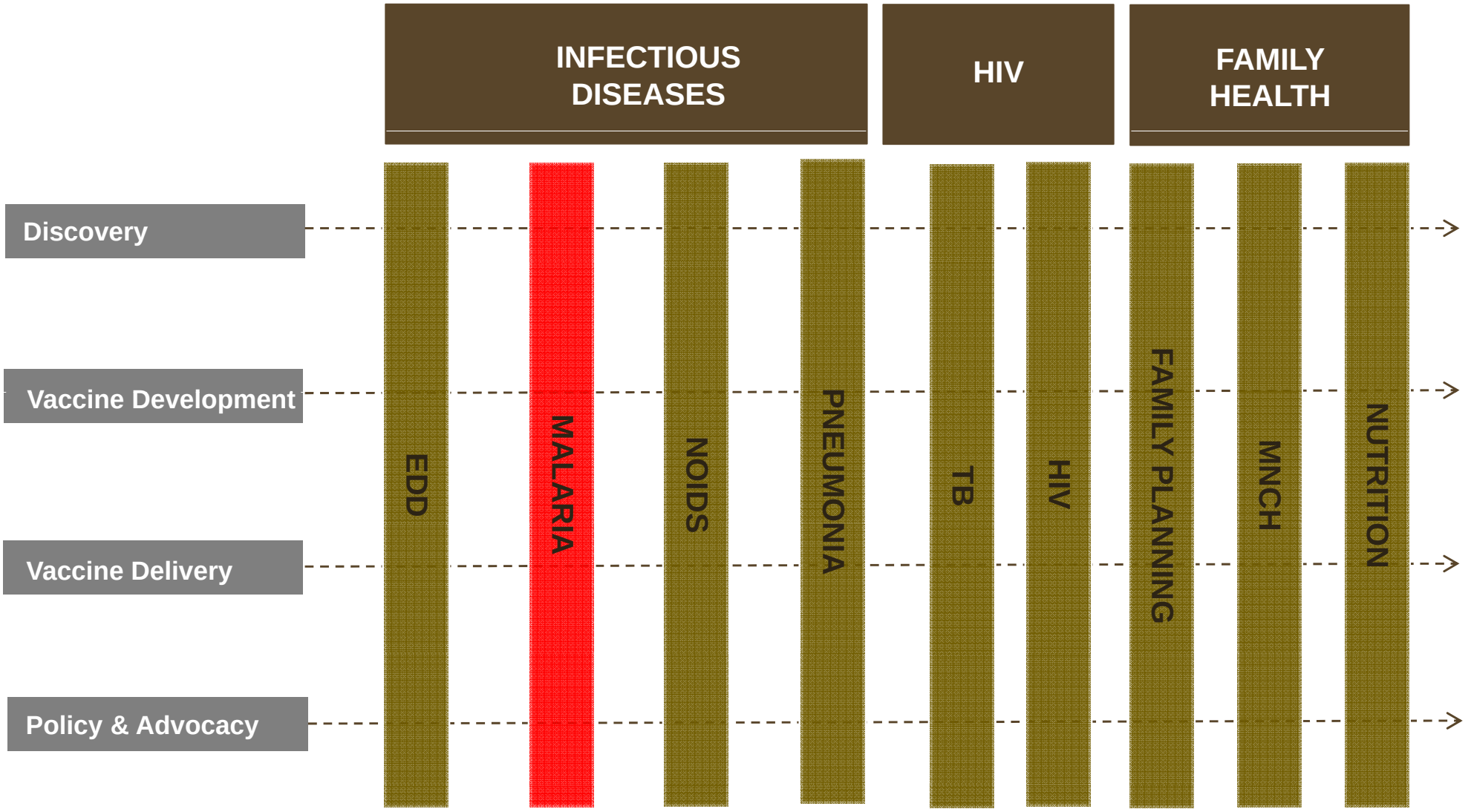
Our Areas of Focus

foundation spending in 2009



How is the Global Health Program Organized?



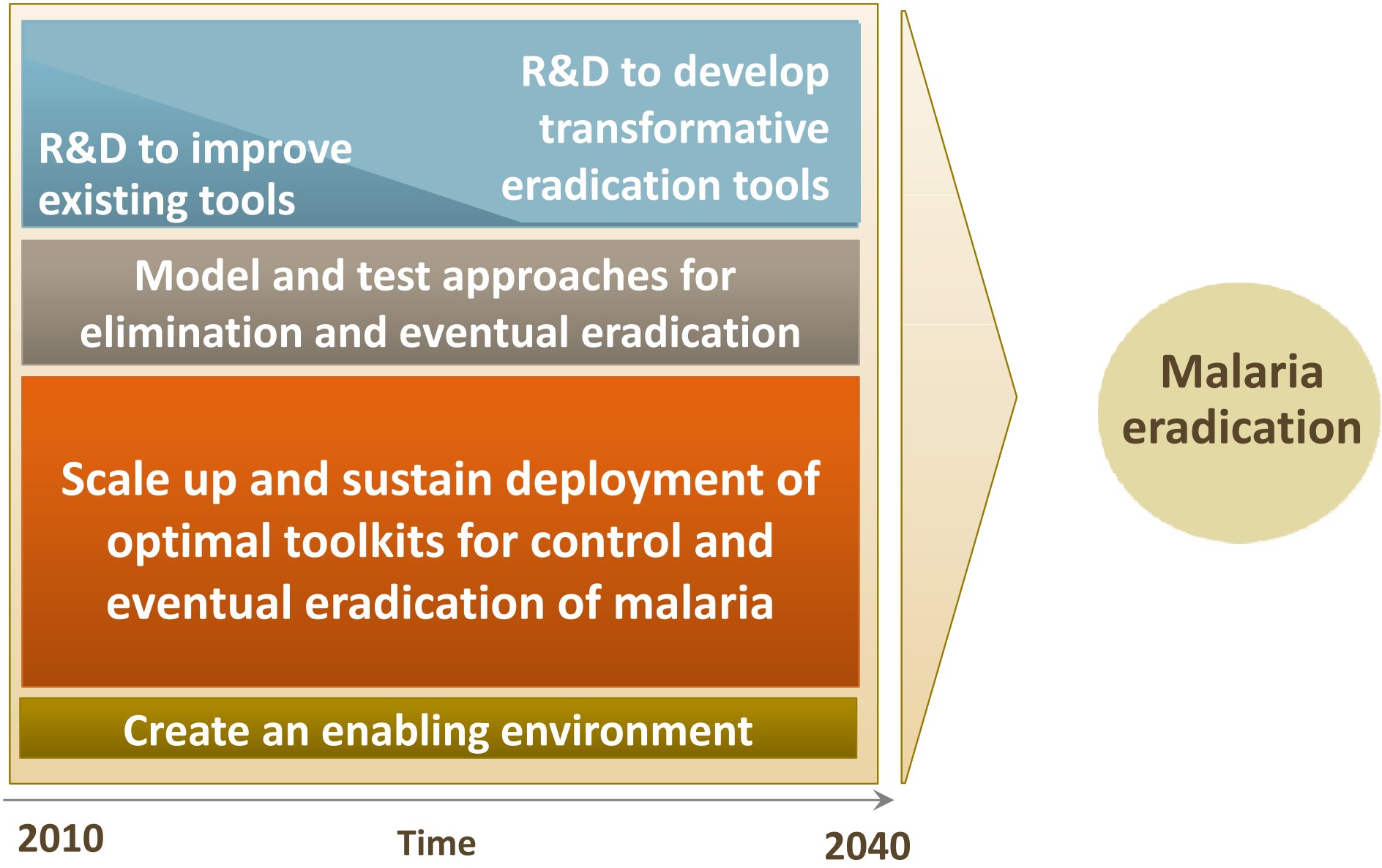
An Audacious Goal Set in October 2007

- *Every life is of equal value; accepting malaria undervalues lives where it persists*
- *The cost of malaria control will continue indefinitely*
- *There will be an ongoing need to adjust control measures as the parasites and vectors adapt*
- *The time is right for charting a long-term course to eradication, knowing that it will take several decades, sustained commitment, and an array of new tools to reach such an ambitious goal*

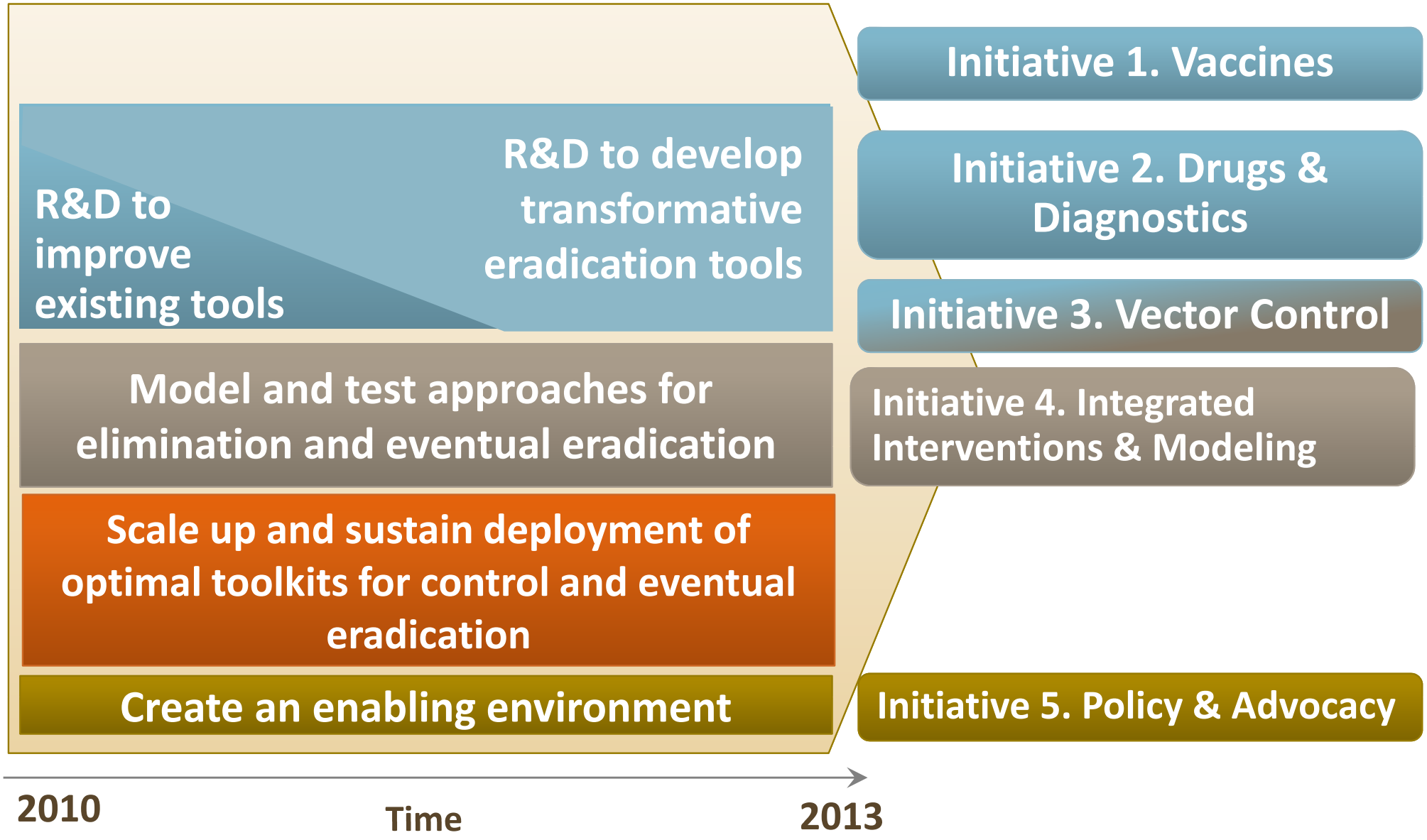
Assumptions Guiding our Malaria Strategy

- Eradication pathway is unclear—ongoing research is needed
- Need to learn from previous and current elimination efforts
- Existing tools are insufficient to eliminate malaria—new tools and approaches are needed for eradication
- Single bullet is unlikely—combined tools and approaches (a "toolkit") is needed to interrupt transmission
- Malaria elimination should focus on both P. *falciparum* and P. *vivax (P. falciparum* will be the first priority and easier)
- Global eradication will take 30-40 years due to the time needed to develop and deploy new tools

Global Actions to Eradicate Malaria



Our Current Initiatives to Eradicate Malaria



Vaccines: Objectives and Key Investments

Objectives	Key Investments
1. Facilitate licensure and appropriate uptake of RTS,S	Complete Phase III trial and submit dossier for licensure Gather evidence of effectiveness Develop an investment plan for GAVI and others
2. Develop second-generation vaccines that can interrupt transmission	Determine clinical development and regulatory plan for 2nd generation Evaluate RTS,S combination (prime-boost) Explore novel constructs to interrupt transmission
3. Create research tools that can guide rational vaccine development	Develop *P. vivax* culture system Identify immunological correlates of protection

Drugs & Diagnostics: Objectives and Key Investments

Objectives	Key Investments
1. Ensure a stable and affordable supply of quality assured artemisinin	Introduce biosynthetic artemisinin, high-yield plants Evaluate innovative financing models
2. Prevent the spread of artemisinin resistance	Promote surveillance of and a coordinated response to drug resistance Eliminate poor quality or counterfeit drugs and monotherapies
3. Develop new drugs that are not dependent on artemisinin	Identify and develop endoperoxides and novel mechanisms of action

Drugs & Diagnostics: Objectives and Key Investments (2)

Objectives	Key Investments
4. Develop new drugs to interrupt transmission	Develop hepatocyte culture systems and blood-stage culture of *P. vivax* Develop drugs targeting liver stages, gametocytes, and blood stage Develop drugs for latent infection, prophylaxis, and mass drug administration
5. Define diagnostics for elimination	Determine potential for diagnostic tests to detect low parasite levels, improve malaria control, and measure reduced transmission

Vector Control: Objectives and Key Investments

Objectives	Key Investments
1. Preserve and improve the impact of existing control tools	Identify and develop active ingredients for IRS and LLINs to avoid resistance mechanisms Develop improved, longer-lasting IRS Develop insecticides to be used in combination
2. Identify new tools and strategies to enable elimination	Conduct early proof-of-principle studies of new paradigm tools Identify novel behavioral & ecological targets
3. Prioritize candidate tools, alone or in combination	Create a Vector Control Development network for vector control groups

Integrated Interventions & Modeling:
Objectives and Key Investments

Objectives	Key Investments
1. Demonstrate the impact of scaling-up and sustaining high coverage	Capture and share lessons learned from high-transmission countries in reducing and sustaining control
2. Indentify countries where elimination is most feasible	Develop and apply a tool to assess feasibility of malaria elimination to inform country decision making
3. Gather and disseminate evidence on effective strategies for elimination	Capture and share lessons learned from countries in malaria elimination and post-elimination maintenance
4. Identify optimal packages of existing and new tools for use in specific transmission settings	Support operational research on how to integrate and deliver new tools Create a platform to support evidence-based decisions & model optimal packages for elimination

Policy & Advocacy: Objectives and Key Actions

Objectives	Key Actions
1. Maintain current and encourage increased funding for malaria R&D and implementation	Mobilize new donors for R&D Encourage continued funding commitments by current donors and governments Explore new partnerships for innovative financing
2. Support implementation of the Global Malaria Action Plan (GMAP)	Support partners to track countries' progress Disseminate success stories about meeting GMAP targets
3. Build the evidence base to inform effective policy	Capture and disseminate lessons learned on effective policies to

Changes in our Malaria Strategy

Previous focus

- Reducing the disease burden in Africa
- Malaria caused by *P. falciparum*
- Develop vaccines to limit disease and death in populations most affected
- Development of artemisinin-based combination therapies (ACTs) to treat blood-stage infections
- Developing new insecticides for existing tools (IRS and LLINs)

Expanded focus

- Interrupting transmission globally
- Modest investments in *P. vivax*
- Develop vaccines that interrupt transmission and are appropriate for both children and adults
- Drugs that interrupt transmission, have sustained prophylactic activity and target the liver stage
- Improving or replacing existing tools
- Vector behavior and ecology

Changes in the Integrated Interventions & Modeling Initiative

Previous focus

- Measuring the effectiveness of single interventions
- Individual models
- Raising general awareness about malaria
- Strengthening global malaria partnerships

Expanded focus

- Measuring the effectiveness of integrated interventions in different transmission settings
- Integrated modeling platform and data sharing
- Ensuring sustained and new funding for R&D and implementation
- Creating the right policy environment for malaria elimination

Complementary efforts by others

- Finance the introduction of RTS,S
- Invest in strategies focused purely on limiting disease in high-risk populations including
- Conduct basic research for new targets, parasite biology, and *P. vivax*
- Address remaining issues of severe malaria, malaria in pregnancy, and the implementation of IPT
- Develop and implement national plans for elimination
- Help support the operational research agenda
- Share data to strengthen modeling and analysis
- Build capacity and invest in health systems strengthening

Closing Thoughts

- Malaria eradication is feasible but will require a long-term, sustained effort over several decades

- Key lessons must be learned from the history of malaria
  - Research must be a central component
  - Efforts must be integrated into and build health services
  - Surveillance will be key to monitoring and evaluation and to finding and attacking malaria where it persists

- R&D of new approaches and tools is the focus of the foundation's strategy

- Multiple partners, sustained commitment, and increased financing will be essential

- Without the challenge of eradication, we will consign too many to live with and die from malaria forever

Thank You