

Implications of Asthma Genomics for Public Health

University of Washington
Center for Genomics & Public Health



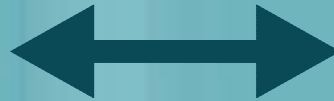
Asthma

- Disease definition unclear
- Current pharmacotherapy not ideal for all
 - Non-responders
 - Adverse drug reactions
 - Difficult regimens
- Prediction of exacerbation imperfect
- Methods of prevention unclear.
- Public policies can be improved

Complex Causes of Asthma

Genetics

Beta-adrenergic receptor
IL-4, IL-4RA, IL-13
TNF-alpha
Other



Environment

cigarette smoke, cockroaches,
mites, animal allergen, molds,
pollen, air pollution,
food allergens



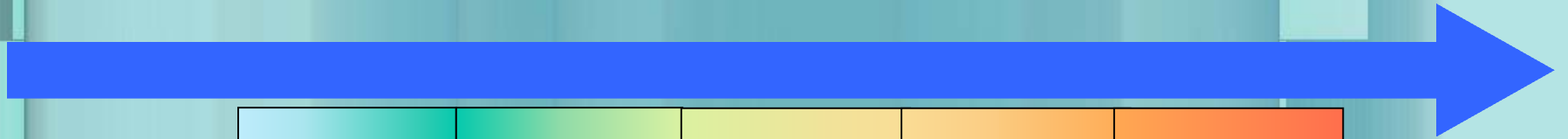
ASTHMA



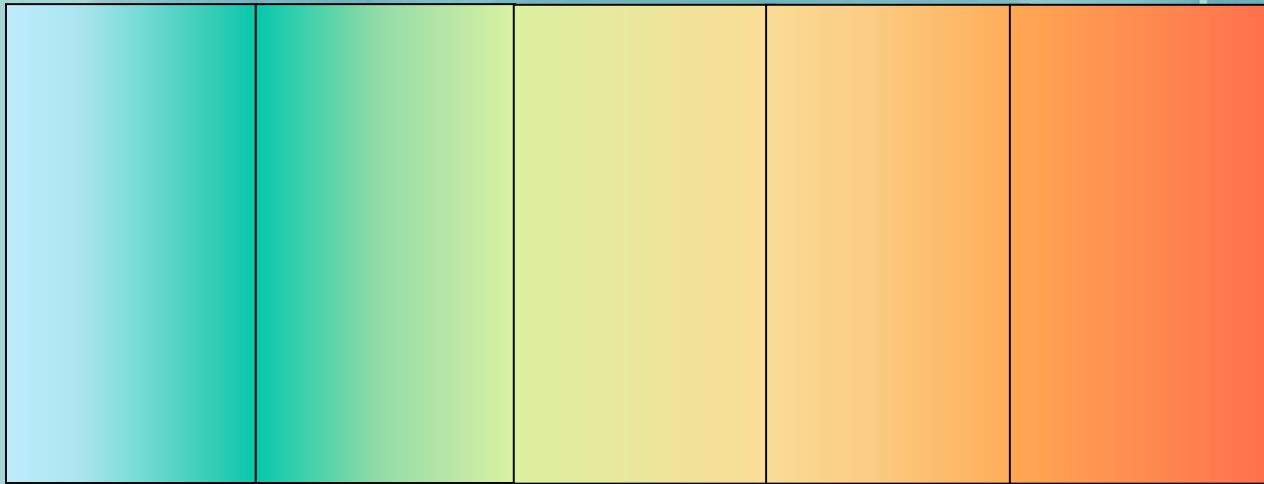
Genomics in Healthcare

- No longer a distinct field of study
- Expected to play increasing role in health research & practice
- **Definition** – the study of the functions and interactions of all the genes in the genome, including their interactions with environmental factors.

From “Bench” to “Trench”



Genetic
Contribution
to Disease



Improved
Health
Outcomes

From “Bench” to “Trench”

Identification of
Genetic Component

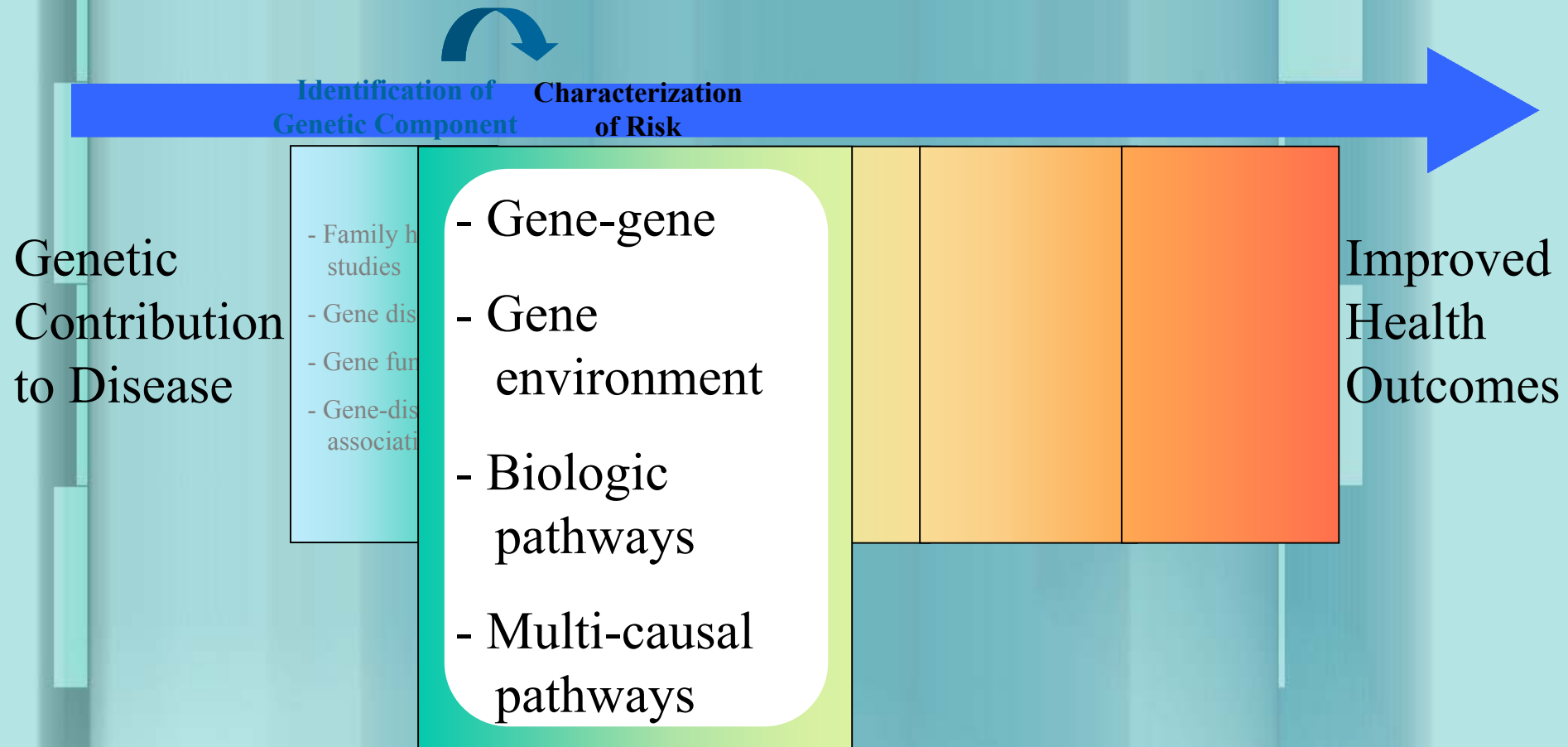


Genetic
Contribution
to Disease

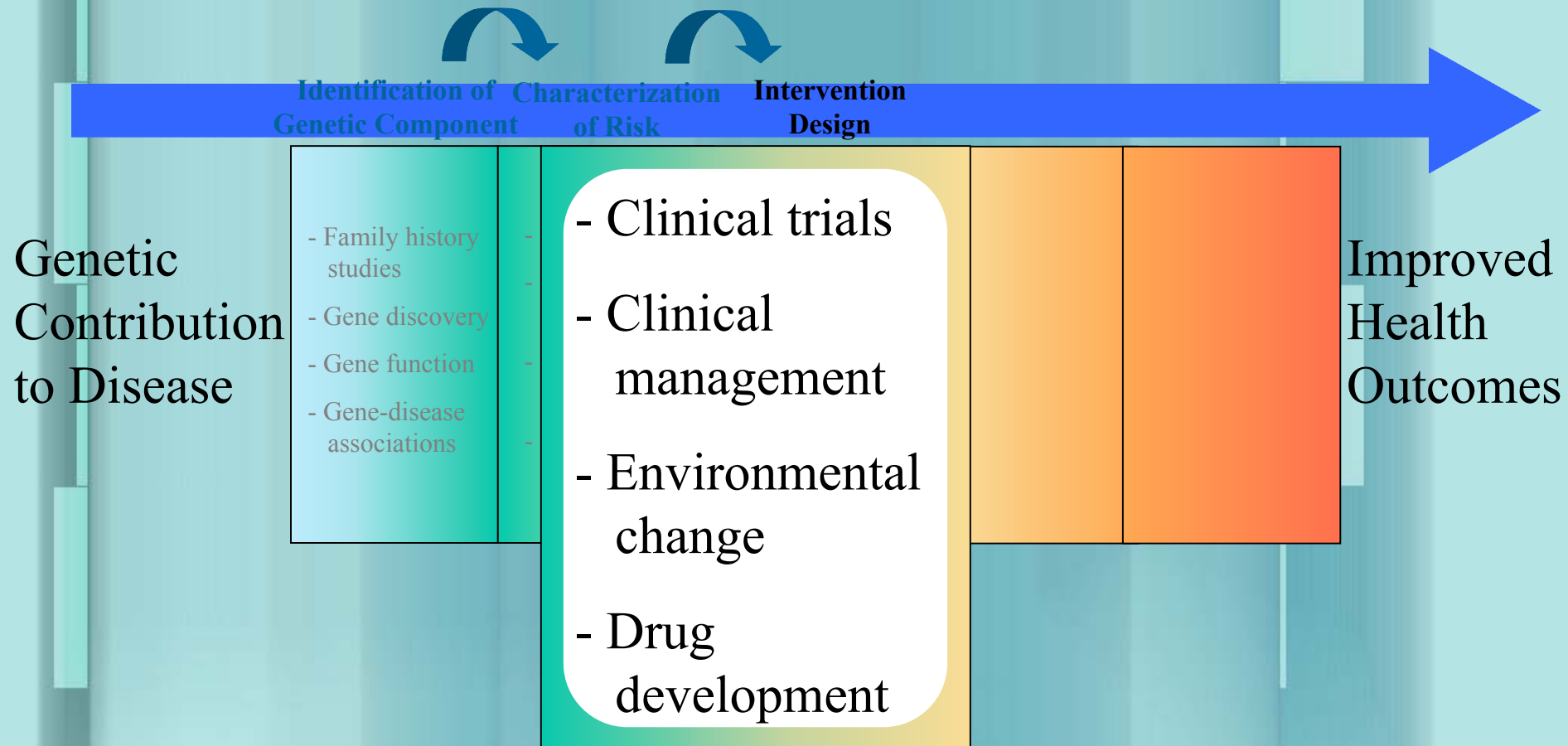
- Family history studies
- Gene discovery
- Gene function
- Gene-disease associations

Improved
Health
Outcomes

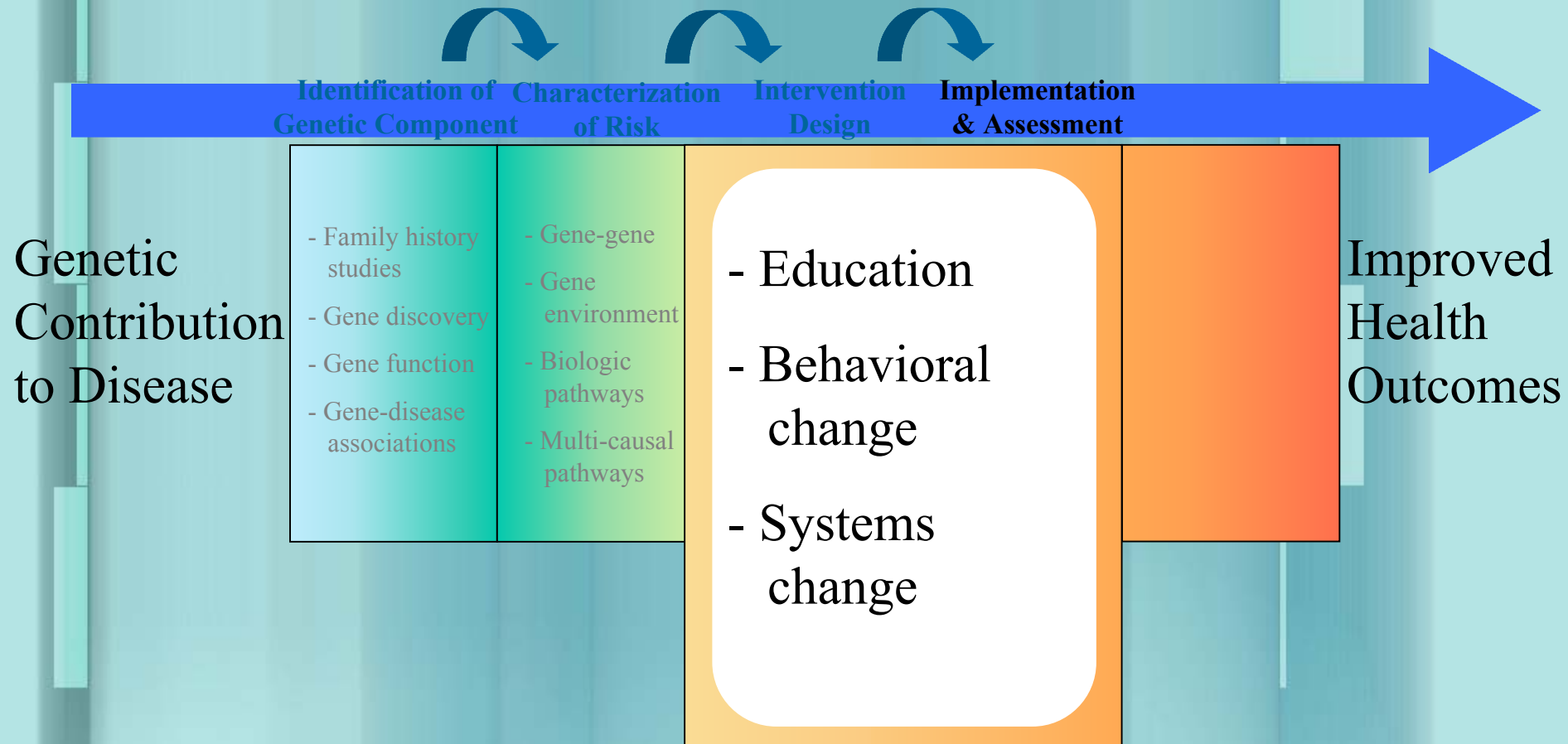
From “Bench” to “Trench”



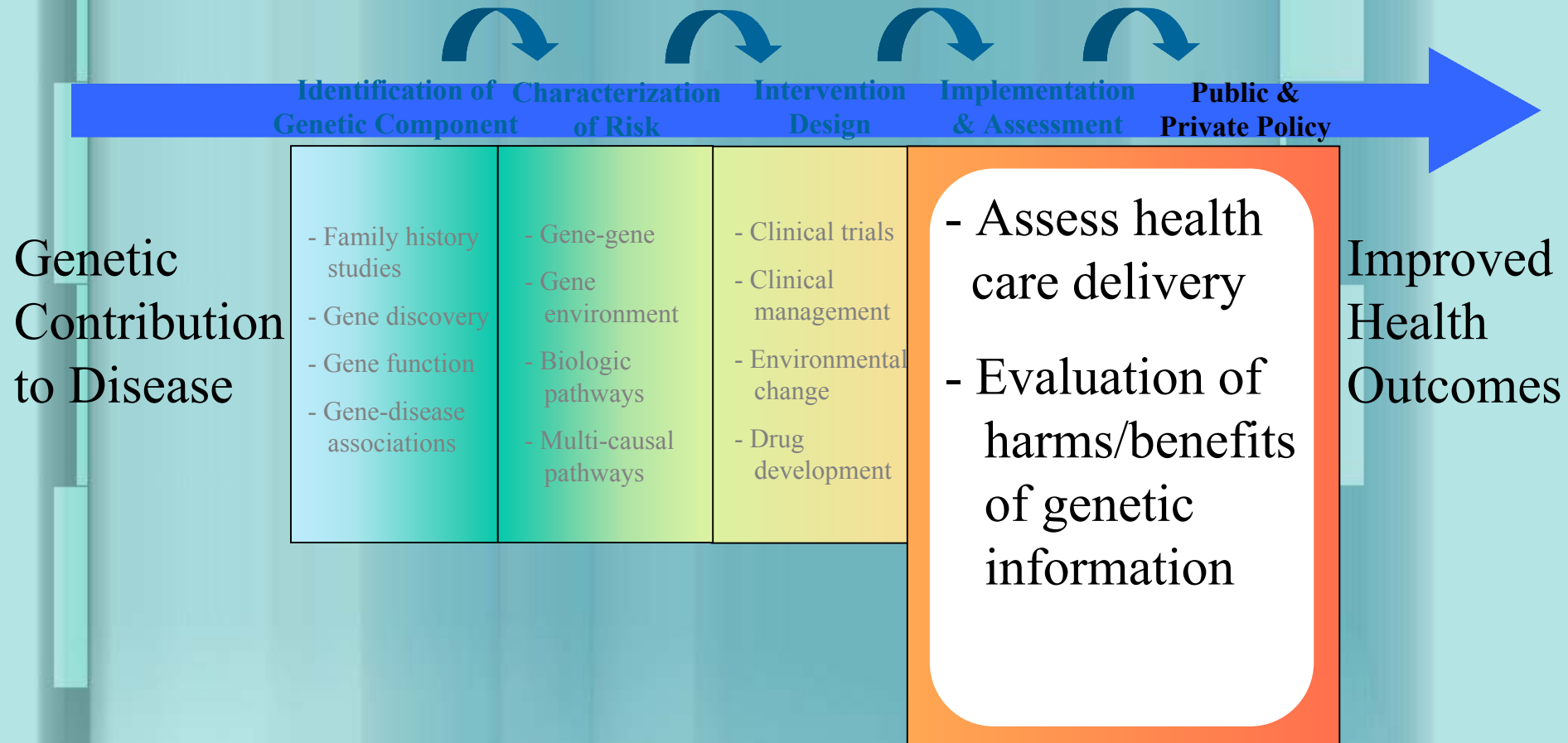
From “Bench” to “Trench”



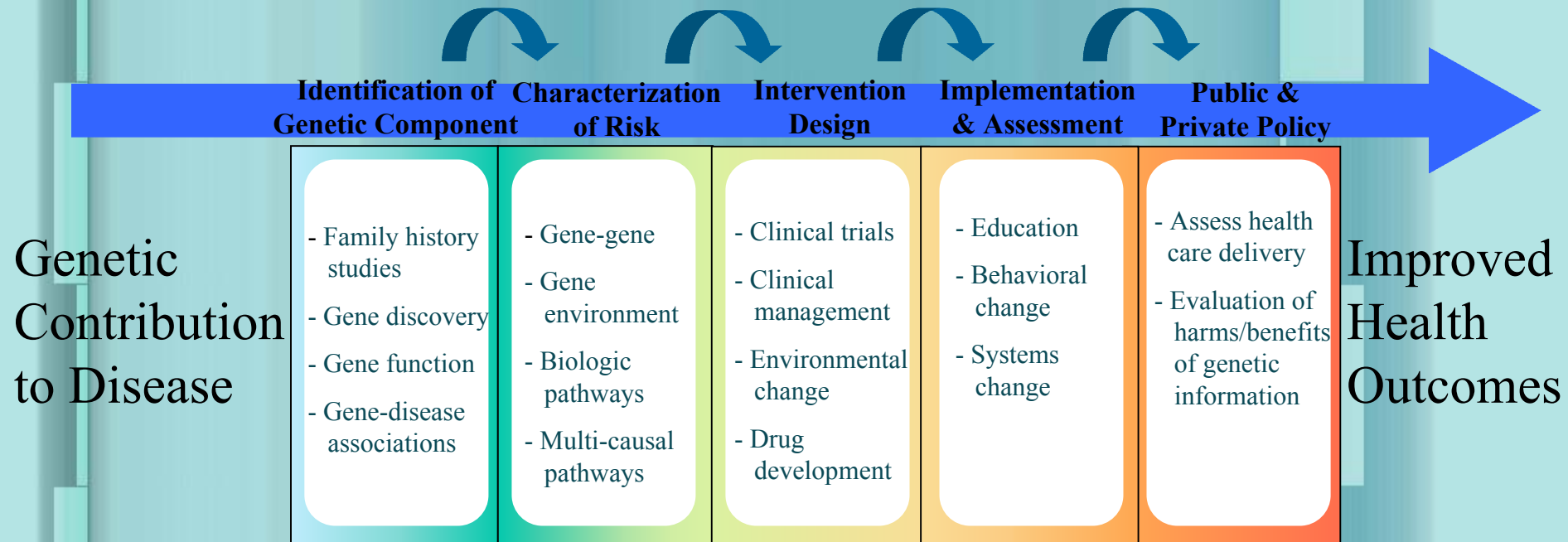
From “Bench” to “Trench”



From “Bench” to “Trench”



From “Bench” to “Trench”



Objectives

- To seek information from a variety of perspectives concerning *current* & *potential* uses of genomic information in asthma research & health care that is:
 - Based on current evidence
 - Realistic
 - Comprehensive
- To assess whether or not this information will aid in reducing asthma related mortality & morbidity

Framework

	Population-Based Prevention	Risk-Based Prevention	Diagnosis	Management
Patient/Family				
Community				
Researcher				
Healthcare Professional				
Public Health Practitioner				

Intervention Points

- **Population-Based Prevention**
 - Detection or intervention among defined group without disease
- **Risk-Based Prevention**
 - Targeted intervention for those with susceptibilities, but no disease
- **Diagnosis**
 - Identification of those with asthma.
- **Disease Management**
 - Guidance and assistance in reducing or reversing disease burden

We Welcome Your Feedback