



AVALON HEALTH ECONOMICS

# Establishing the Value of New Drugs, Devices, & Diagnostics

Avalon Health Economics LLC

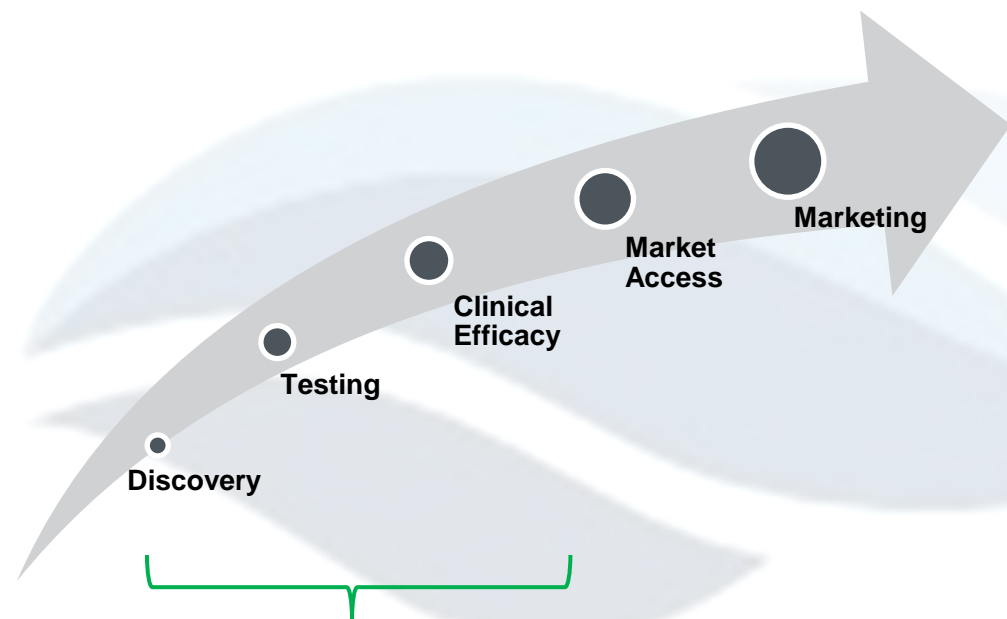
Morristown, NJ

[www.AvalonEcon.com](http://www.AvalonEcon.com)

# Medical Care Innovators Need to Demonstrate Value

- Globally, population aging and technological advancement have strained health care budgets
- The success or failure of a new compound, drug, device or diagnostic test turns on whether the innovation will have access to health care markets
- Increasingly, access is a function of *two* critical elements:
  - **Clinical effectiveness**
  - **Cost effectiveness**
    - Cost effectiveness analysis
    - Budget impact analysis
    - Cost impact analysis

## The Product Development Lifecycle

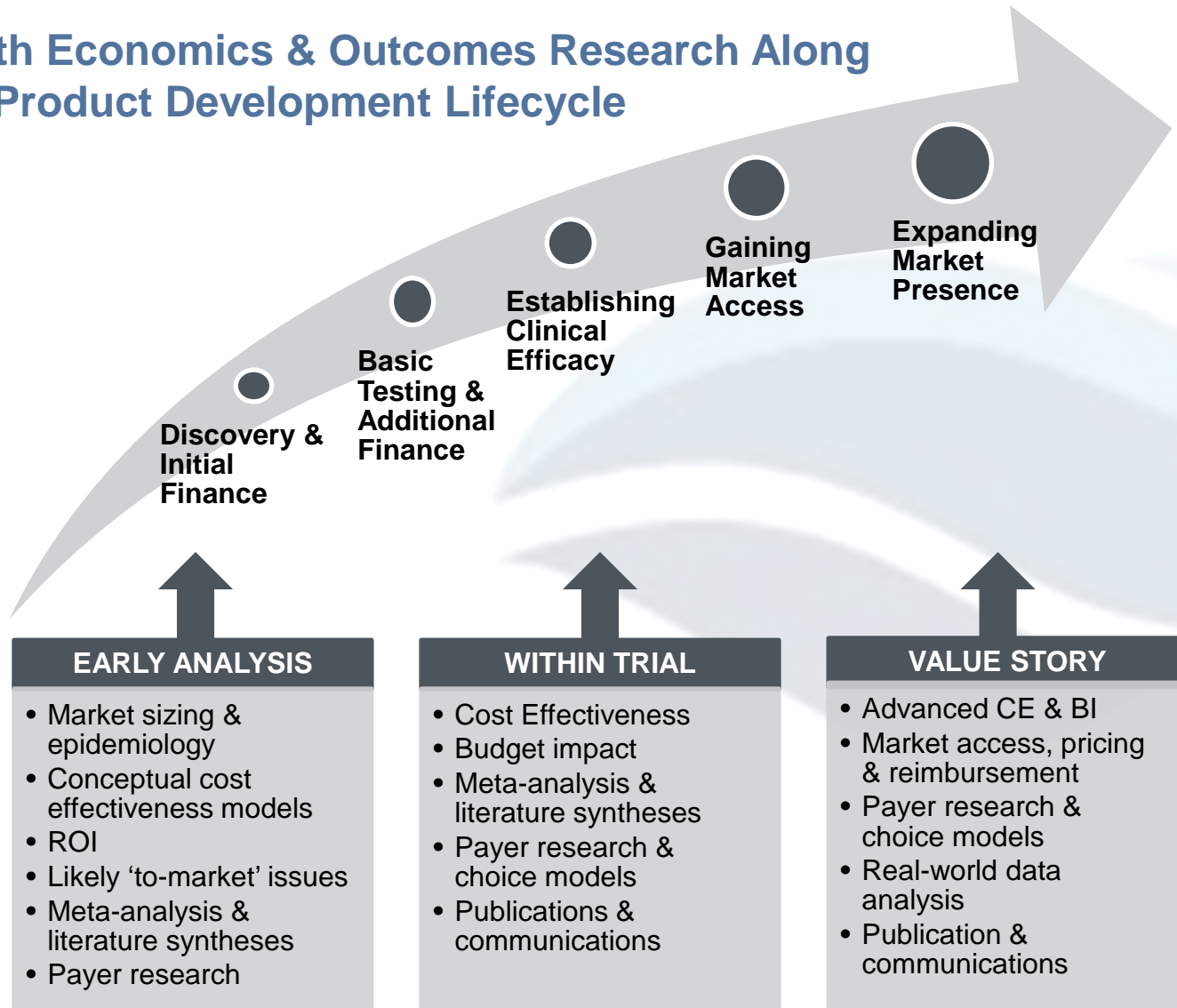


There are clear advantages to starting the process sooner, and revising the process along the product lifecycle



# Avalon Health Economics Offers Economic Evaluation Services Along the Product Development Lifecycle

## Health Economics & Outcomes Research Along The Product Development Lifecycle



# Key Questions and the Tools Avalon Employs to Answer the Questions

## Information Need for “Product X:”

Is there a market for Product X? If so, how large?

If a payer (or a health system) were to start paying for Product X, what would be the effect on the payer’s total budget?

Compared to the “standard of care,” does Product X result in:

- Better outcomes & lower costs?
- Better outcomes & similar costs?
- Similar outcomes & lower costs?

What are some other important barriers to market access?

## Problem Solving Tools:

**Epidemiology & biostatistics: incidence, prevalence, trends & forecasting, confounding factors**

**Cost impact analysis; budget impact analysis (BIA)**

**Conceptual models; simple/conceptual cost-effectiveness analysis; trial-based cost effectiveness analysis**

**Market access research; payer research; reimbursement analysis/forecasting; discrete choice modeling; conjoint analysis**



# Two Basic Approaches to Economic Evaluation

## Budget Impact Analysis (BIA)

- Disease prevalence ( $P$ ) =  $X\%$  x population
- Uptake =  $Y\%$  (e.g., treatment seekers or diagnostic candidates)
- Affected population ( $AP$ ) =  $P \times Y\%$
- Intervention costs ( $C$ ) =  $\Sigma[p(i) \times c(i)]$
- Simple budget impact ( $BI$ ) =  $AP \times C$
- In some cases the intervention is associated with “cost offsets”
  - BIA must have an imbedded CEA that shows the relationships between the intervention and changes in other medical costs (i.e., offsets)

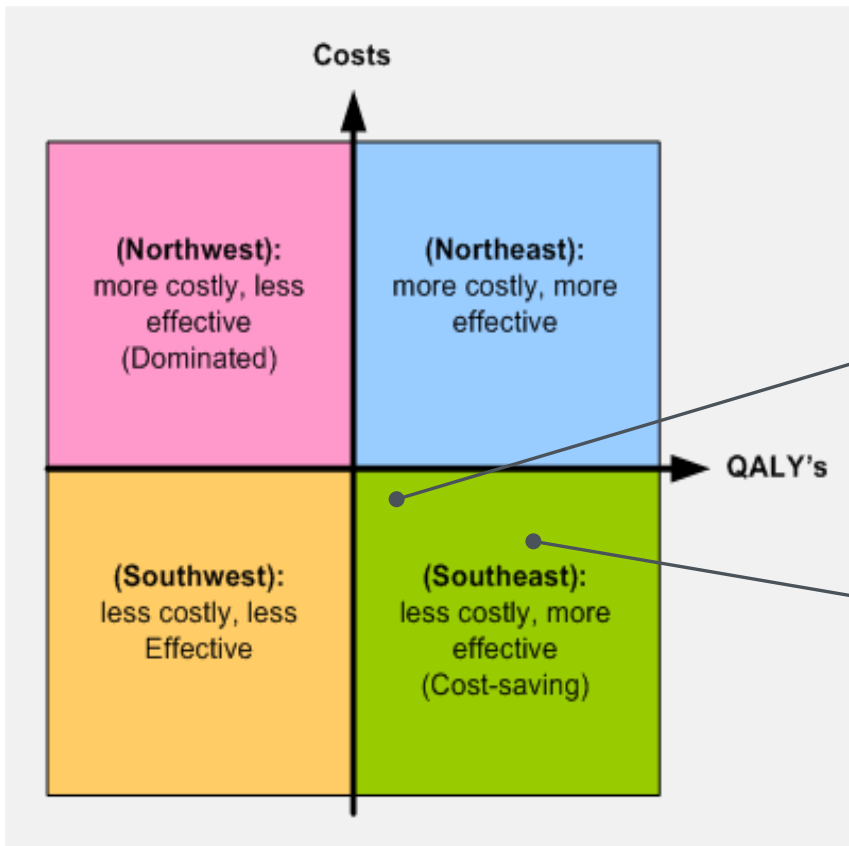
## Cost-Effectiveness Analysis (CEA)

- Calculate intervention costs similarly as intervention costs in BIA; also calculate costs of usual care.
- Identify standardized measure of outcome [usually life years or quality-adjusted life years (QALYs), but can be something else]
- Compare  $C(\text{intervention})/\text{outcome}$  to  $C(\text{usual care})/\text{outcome}$
- Decision matrix is the CEA four quadrants...

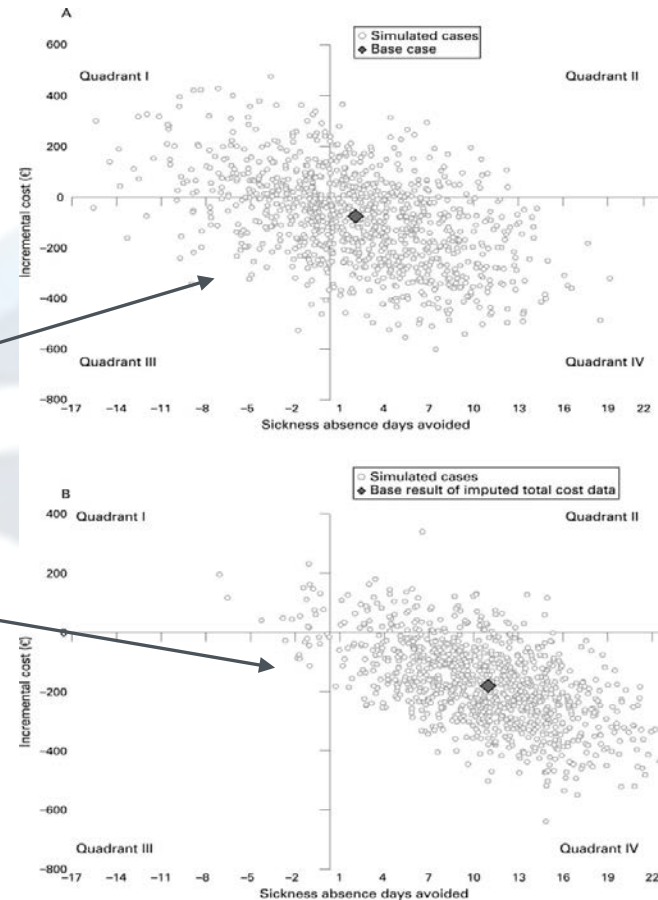


# Visualizing Cost Effectiveness Analysis

## Four Possible Outcomes of CEA



## Simulations Inform Confidence in Results



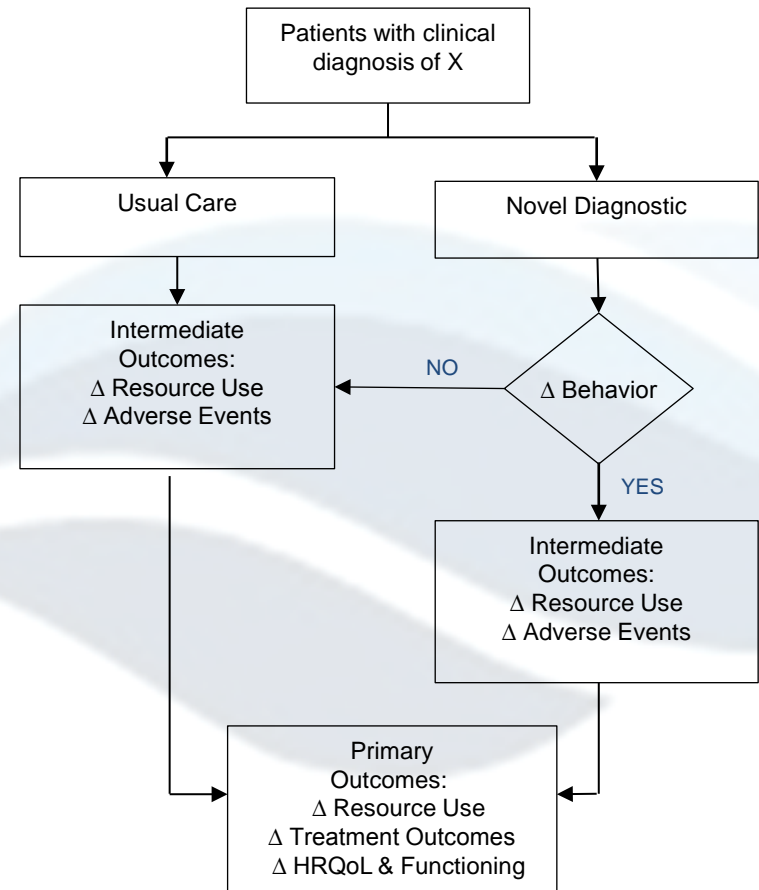
# A Common Problem: Too Early to Dive into Complex Economic Models, or Not Enough Data

## Solution:

“*Conceptual cost effectiveness analyses*” are rigorous enough to be published but rely on literature, plausible assumptions, reasonable data ranges, and expert opinion

## Advantageous for:

- Early-stage analysis with little data (diagnostics, biotech, medical devices, pharmaceuticals);
- Mid-stage analysis with minimal data (diagnostics; biotech; medical devices)
- Late-stage analysis with good data but unusual clinical applications (e.g., drugs for rare diseases)



# History and Structure of Avalon

*“We provide high-quality, high-value real-world health care economics consulting and research services relying on unparalleled industry knowledge and experience, accurate and defensible research, and attentive project management”*

## History

- Avalon Health Economics LLC (“AHE”) was formed by a group of experienced academic and industry health economists and associates
- The company’s origins were in the Health Economics Consulting Group LLC (HECG) which started in 2004 and then merged with Oxford Outcomes Ltd. (UK) in 2009. Oxford Outcomes was acquired by ICON plc (Ireland) in 2011. AHE was formed in Morristown, NJ, in 2013.

## Structure

- We are large enough to handle complex projects, but small enough to quickly and efficiently deliver tailored solutions
- We work on projects of all size and scale
- We have **10** core staff dedicated to leadership, project management, and analysis.
- We are backed by panel of **20** experienced economists, statisticians, and consultants with extensive industry and academic experience in outcomes research, health care, medicine, epidemiology, statistics, economics, business, and law





# Key Avalon Team Members

Leadership and Core	Senior Consultants	Consultants
<p><b>John E. Schneider, PhD</b> CEO &amp; Founder</p> <p><b>Cara M. Scheibling</b> Associate Director</p> <p><b>James C. Robinson, PhD</b> Director</p> <p><b>Robert L. Ohsfeldt, PhD</b> Director</p> <p><b>Mike J. Lacey, MSc</b> Economic Modeling</p> <p><b>Azal Ahmadi, M.Phil.</b> Epidemiology &amp; Economics</p> <p><b>Eric Bell, MBA</b> Economic Modeling</p> <p><b>Zack G. Mower</b> Research Analyst</p> <p><b>Noemi Kiss, MSc</b> Outcomes Research</p>	<p><b>Alison Evans Cuellar, PhD, MBA</b> Economics &amp; Policy</p> <p><b>Bradley N. Doebbeling, MD, MSc</b> Health Informatics &amp; Medicine</p> <p><b>Darren Filson, PhD</b> Economics &amp; Statistics</p> <p><b>Jeff Kamil, MD</b> Payer Decision Making</p> <p><b>Catherine Ley, PhD</b> Epidemiology</p> <p><b>Anthony T. Lo Sasso, PhD</b> Economics &amp; Policy</p> <p><b>Jeffrey T. Macher, PhD, MBA</b> Business Economics &amp; FDA</p> <p><b>Patrick S. Moreton, PhD, MBA</b> Business Economics &amp; Strategy</p> <p><b>Michael Ong, MD, PhD</b> Medicine &amp; Health Policy</p> <p><b>Daniel Tuden, PhD</b> Market Access &amp; Reimbursement</p> <p><b>Bennet A. Zelner, MS, PhD</b> Business Economics &amp; Strategy</p>	<p><b>Geoff Boeing, MS, PMP</b> Public Policy</p> <p><b>Erin Carlson, PhD, MPH</b> Health Policy</p> <p><b>Sarah Hardin, MPH</b> Health Policy</p> <p><b>Marlene Morris Towns, PhD</b> Marketing &amp; Strategy</p> <p><b>Mia Oliver, MSN, RN, APN</b> Critical Care &amp; Medicine</p> <p><b>Joseph Smyser, PhD, MSPH</b> Social Media &amp; Health Policy</p>



# Examples of AHE's Health Economics & Outcomes Research Projects (See [www.avalonecon.com](http://www.avalonecon.com) for more)

## Pharmaceutical/Biotech

- Systematic reviews of humanistic and economic burden of illness
- Payer research on valuing pain control
- Cost effectiveness of drugs for rare disease
- Cost effectiveness of a novel biologic
- Cost effectiveness of statins
- Budget impact of respiratory drugs
- Value dossiers

## Medical Devices

- Cost effectiveness of a gastric monitoring device
- Cost impact of a catheter tip positioning system
- Cost effectiveness of a disposable examination device
- Cost effectiveness of a catheter anchor
- Cost effectiveness of a novel venous access system

## Diagnostics

- The economics of cancer biomarkers
- Cost effectiveness of a novel biomarker combination in ovarian cancer treatment
- Cost effectiveness of a point-of-care test for adenoviral conjunctivitis
- Cost effectiveness of improvement in sensitivity/specificity of a point-of-care test for conjunctivitis
- Cost effectiveness of a biomarker for infection



# Contact Information



## Main Contacts:

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