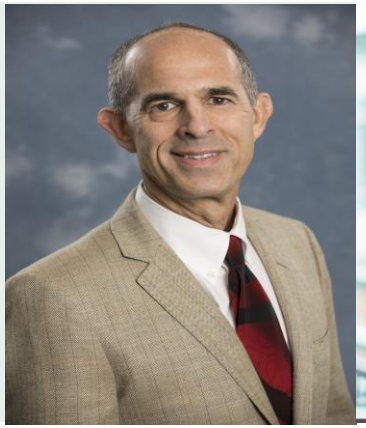
Pricing in a Pandemic: Options, Debate, a Path Forward

Session Two: Cost-Effectiveness and Value-Based Pricing

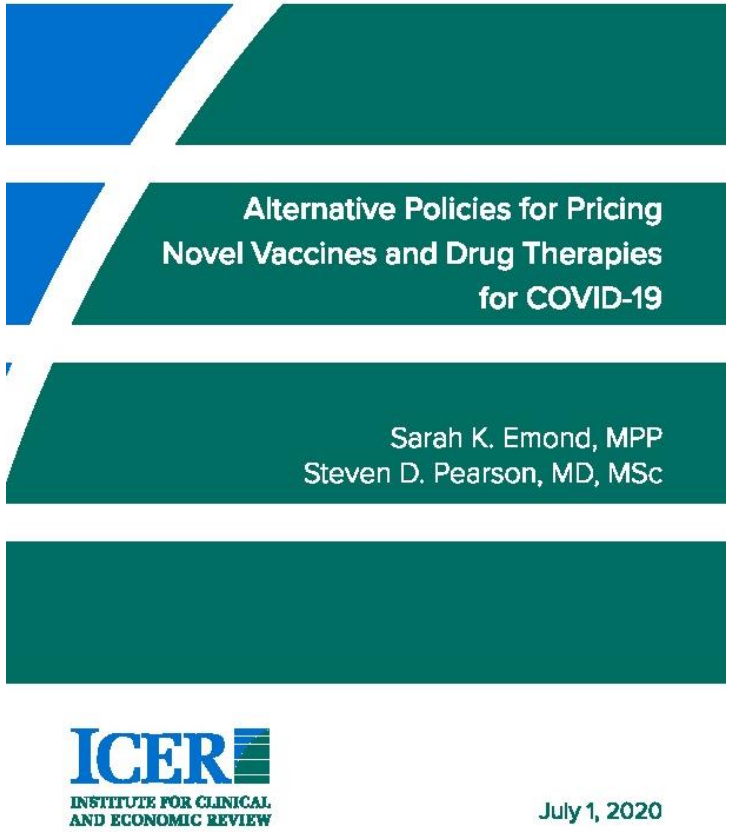
ICER
INSTITUTE FOR CLINICAL AND ECONOMIC REVIEW

Panel Members

Steven Pearson, MD, MSc	Jon Campbell, PhD	Eleanor Perfetto, PhD	Bobby DuBois, MD, PhD	Steve Miller, MD	Craig Garthwaite, PhD
President, ICER **Moderator**	Associate Professor, Pharmaceutical Outcomes Research, University of Colorado	Executive Vice President of Strategic Initiatives, National Health Council	Chief Science Officer and Executive Vice President, National Pharmaceutical Council	Chief Clinical Officer Cigna	Associate Professor of Strategy, Kellogg School of Management, Northwestern University
					

Approaches to Pricing Novel COVID-19 Vaccines and Treatments

- Status quo: unrestricted pricing
- Cost-recovery pricing
- Value-based pricing
- Monetary prizes
- Compulsory licensing
- Advanced market commitments



Pricing Approaches

1 **Status quo: Unrestricted pricing.** Private companies develop vaccines and treatments, are rewarded with patent rights, and are allowed to decide how much to charge for the resulting products within a monopoly pricing paradigm.

Pricing Approach	Advantages	Disadvantages
Status quo: Unrestricted pricing	• Tried and true approach that has produced truly innovative products with significant clinical benefits for patients • Existing biopharmaceutical infrastructure positioned to respond to crisis with unrestricted pricing as the incentive • High prices in U.S. gives companies the opportunity to offer lower prices in developing nations	• Prices could be set so high as to create significant affordability problems, leading to access issues and increasing health insurance premiums

Pricing Approaches

3 **Value-based pricing.** Private companies develop vaccines and treatments and are rewarded with patent rights, but government and/or private insurers use some form of cost-benefit analysis to set a ceiling price based on the degree of added benefit for patients and society.

Pricing Approach	Advantages	Disadvantages
Value-based pricing	• Sets a ceiling price for new treatments based on clinical benefit patients receive, a price well-above a cost-recovery price for truly innovative products • Gives needed incentive to companies to invest in development • Creates a price ceiling to protect against most egregious excesses of unrestricted pricing	• Uncertainty of clinical benefit when a new treatment is first available can make calculations of value-based prices difficult • Value-based price calculations do not account for size of potential patient population, thus short-term affordability concerns not addressed

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			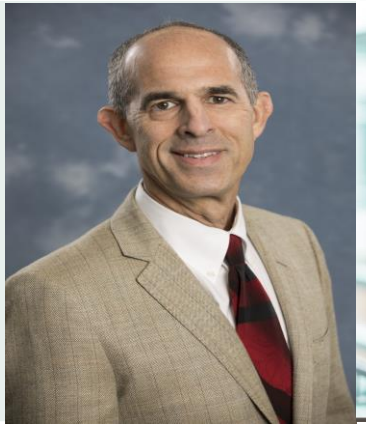	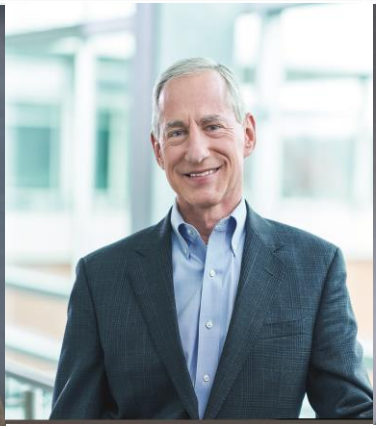	

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Remdesivir Cost-Effectiveness Analysis

Jonathan D. Campbell, PhD, Associate Professor,
University of Colorado Anschutz Medical Campus

July 31, 2020

Remdesivir Cost-Effectiveness Model Collaborators

- Melanie D. Whittington, PhD
  - University of Kansas Medical Center
- Institute for Clinical and Economic Review (ICER)
- Drs. Whittington and Campbell (and their institutions) did not receive funding for the remdesivir cost-effectiveness analyses
  - No conflicts of interest to disclose related to this research

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Alternative Pricing Models for Remdesivir and Other Potential Treatments for COVID-19

Initially Published: May 1, 2020

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Objective

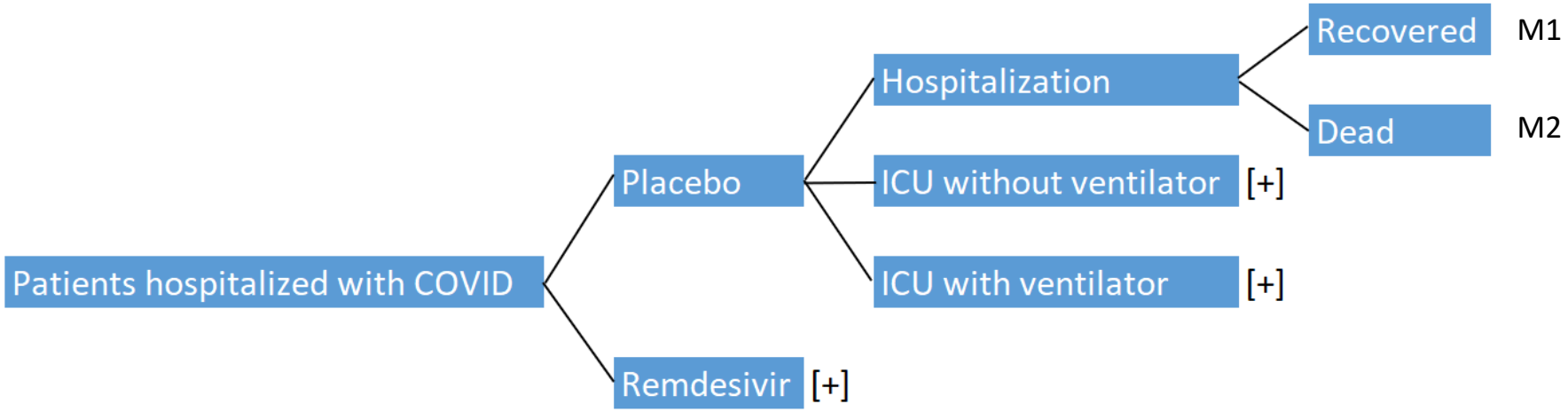
Estimate the cost-effectiveness and corresponding health-based price benchmarks of remdesivir versus standard of care for hospitalized patients with advanced COVID-19 and lung involvement.

Model Characteristics

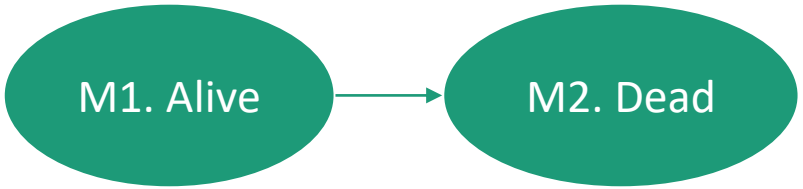
- Population: hospitalized patients with advanced COVID-19 and lung involvement
- Perspective: health care sector
- Time Horizon: lifetime
- Outcomes: total costs, quality-adjusted life years (QALY), equal value of life years gained (evLYG)
- Scenarios
  - no mortality benefit,
  - dexamethasone as part of standard care,
  - hospital stays paid exclusively through per diem amounts,
  - Mild to moderate subpopulation

Model Structure

Short-term Decision Tree



Long-term Markov Model



Model Evidence and Assumptions

- Evidence from the Adaptive COVID-19 Treatment Trial (ACTT-1) and other sources (model inputs in report)
- Treatment costs for remdesivir were in addition to a bundled hospital payment
- Assumed no remdesivir safety-related cost or disutility
- Assumed those who recovered have age-adjusted general population morbidity and mortality risk

Base-Case Results: Health-based Ceiling Price

Threshold	Base-case (assuming mortality benefit)
$50,000 per QALY and per evLYG	$4,580 - $5,080
$100,000 per QALY and per evLYG	$18,640 - $19,630
$150,000 per QALY and per evLYG	$32,700 - $34,180

evLYG=equal value of life years gained
QALY=quality-adjusted life year
**For all price benchmarks that include a range, the lower value was derived from QALYs and the higher value was derived from evLYGs.*

Scenarios: Health-based Ceiling Prices

- No mortality benefit
  - $310 to $930
- Dexamethasone as part of standard care
  - $2,520 to $22,590
- Hospital stays paid exclusively through per diem amounts (assumed reduced time to recovery = reduced hospital stay)
  - $11,710 to $39,830
- Mild to moderate subpopulation
  - $2,360 to $15,920

Threshold	Base-case (assuming mortality benefit)
$50,000 per QALY and per evLYG	$4,580 - $5,080
$100,000 per QALY and per evLYG	$18,640 - $19,630
$150,000 per QALY and per evLYG	$32,700 - $34,180

Decision Nodes

- What threshold?
- Why not disseminate an estimate of the broader societal perspective in previous version?
- When to make updates?
- How to involve stakeholder input?

Concluding Remarks

- Cost-effectiveness informed health-based ceiling prices for remdesivir range from hundreds of dollars to tens of thousands of dollars.
  - Gilead set the remdesivir price in the thousands for a treatment course ($2,340 to $3,120 announced on June 29)
- For future COVID-19 Treatments
  - Key Evidence Needs: Mortality rate and age within standard of care, reduction in hospital days, reduction in mortality
  - Decision Nodes and Pandemic Accommodations
    - Signal proper incentives to innovate without overpaying

Thank You

Next ICER Colloquium:

Monetary Prizes, Compulsory Licensing, Advanced Market Commitments

Friday, August 7th 12:00PM EST