Pharmacometrics Meets Health Economics:
Quantitative Approaches in the Translation from Efficacy to Real World Effectiveness and to Cost-Effective Patient Care

QUIZ TIME
• **QALY?**
  Quality Adjusted Life-Year

• **ICER?**
  Incremental Cost-Effectiveness Ratio
  \[ \text{ICER} = \frac{\Delta \text{Cost}}{\Delta \text{Effectiveness}} \text{, per QALY} \]

• **NMB?**
  Net Monetary Benefit
  \[ \text{NMB} = (\text{Willingness to pay threshold} \times \Delta \text{Effectiveness}) - \Delta \text{Cost} \text{, per QALY} \]
Adapted from Milligan, et al. CPT 2013

Breaking down the barriers to cost-effective patient care

Pathway Target Drug Benefit/Risk

Systems Biology Systems Pharmacology (SP) Translational Sciences Exposure Response

‘Right Pathway’ ‘Right Target’ ‘Right Molecule’ ‘Right Dose’

Effectiveness & Reimbursement

Optimized Products

‘Right Patients’

Concentration Time

PD

PKPD

Effect
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