



Presenting:

Improved Drug Treatment Decisions Through Consistent Benefit-Risk Tradeoffs

by Jack Kloeber

DAAG Conference 2016

DAAG is the annual conference of the SDP.

To find out more about SDP or to become a member, visit
www.decisionprofessionals.com



Improved Drug Treatment Decisions Through Consistent Benefit-Risk Tradeoffs

Assess and manage risk.

Make better decisions.

Create value.

Medical Decision Making Session
2016 DAAG – Banff, Canada

Jack Kloeber, Steve Hamlen, Dave Culhane
Kromite LLC



Kromite LLC was engaged by a client to:

- Address market and customer uncertainty about the benefit-risk of Biologics for **moderate to severe plaque psoriasis**.
- Test for an effective way of measuring and communicating the differences of treatment benefits and risks.

Physician Influencers: *(Payer influence was out of scope)*

Clinical Trial Data



Practice Staff



Patients



How can a physician consistently take benefits and risks into account when deciding which drug to prescribe?



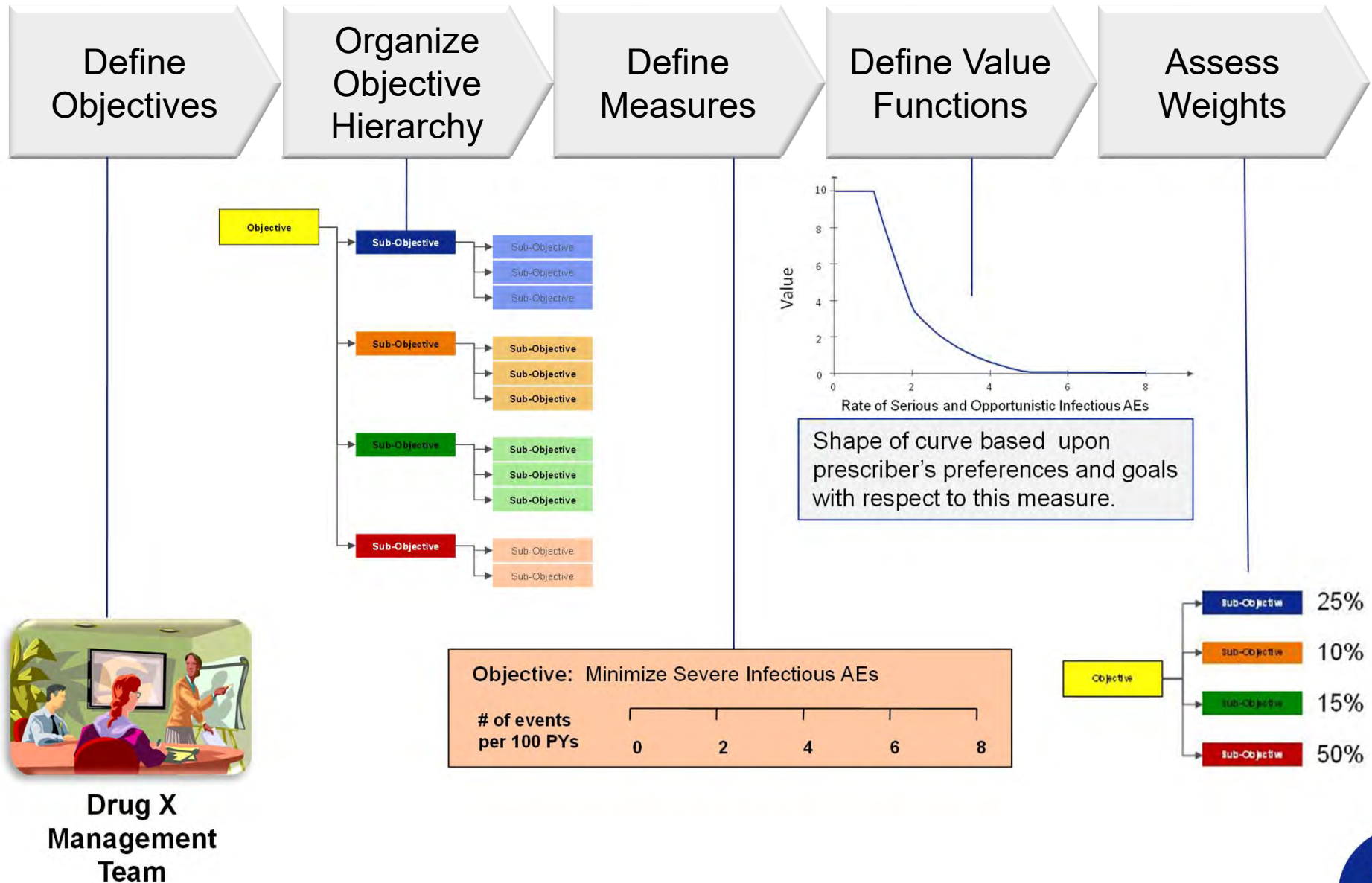
Decision Analysis applied to Physician Drug Prescribing Choice – a Complicated Decision

- ❖ Physicians make decisions of which drug to prescribe to their patients by weighing a complex set of benefit / risk tradeoffs.
 - How well drug treats disease (efficacy)
 - Minimize serious adverse events / side effects (safety)
 - **Disconnect** between perception (+++) and evidence (+) of benefit/risk
 - Other factors influencing prescribing choice: administrative burden, perceived medical/legal liability
- ❖ Patient preferences are rarely considered in Dr. prescribing decision making process, sometimes leading to non-compliance to their prescriptions
 - Ease of use (self-injection devices); Convenience (frequency of dosing); Psychological Impact (child having to take bipolar drug during school hours); financial impact to patient

Decision Science can be applied to create physician-patient decision making tools:

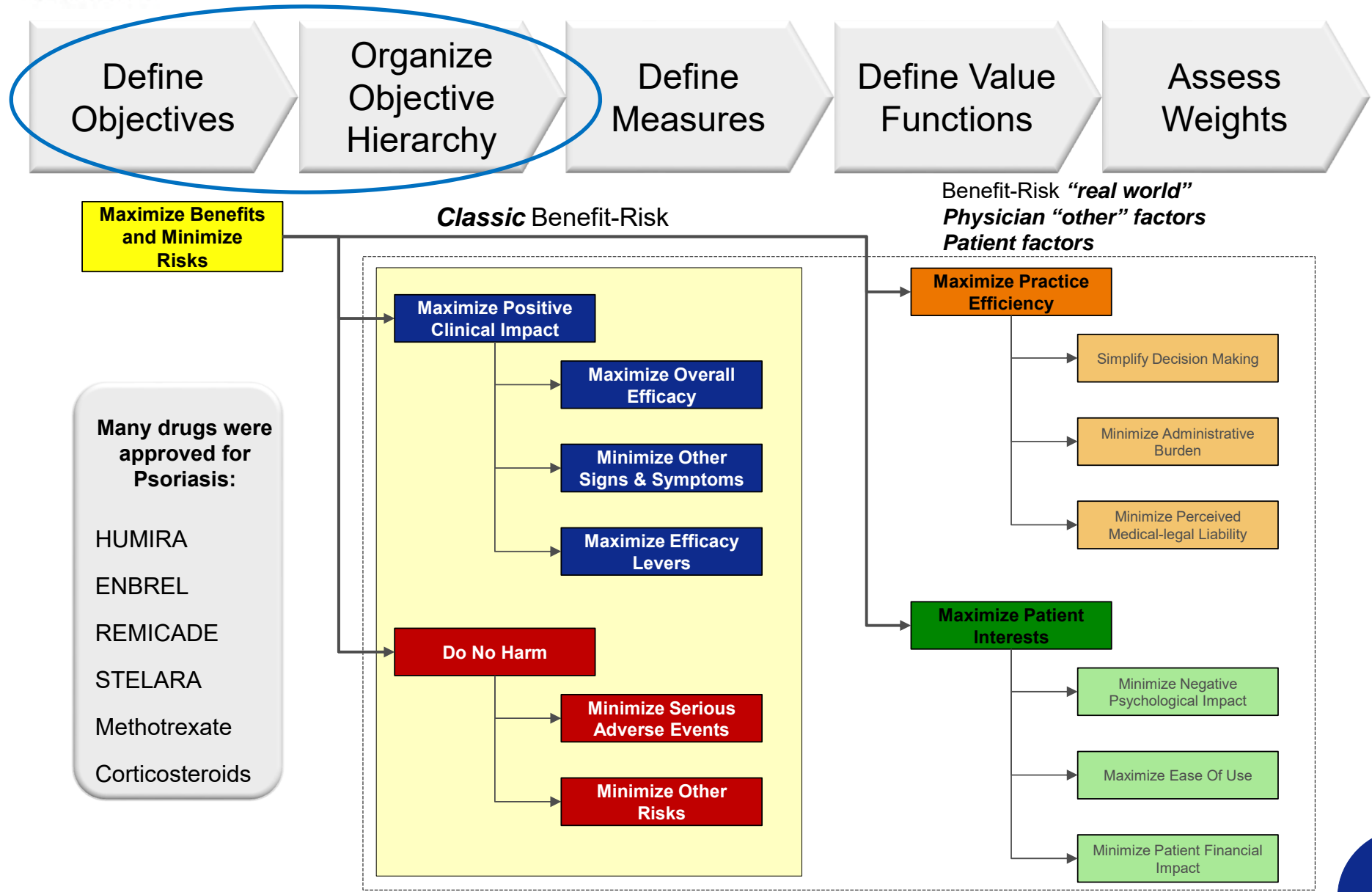
- Remove bias and false perceptions from physician prescribing decisions, and focus choice on data / evidence
- Alignment of physician and patient preferences in treatment selection with the goal of enhancing patient outcomes and compliance

Case Study: Custom Benefit-Risk Model for Psoriasis





Case Study: Defining Treatment Objectives





Classic Benefit-Risk

Maximize Overall Efficacy

- Patients Achieving PGA ≥ 1 (16wks)
- Patients Achieving PASI 75 (16wks)
- Patients Achieving PASI 50 (4wks)
- Patients Maintaining PASI 75 (3yrs)

Maximize Efficacy Levers

- Patients Achieving % PGA ≤ 2 @12 weeks Post Interruption
- Availability Of Weight Based Dosing
- MPR

Minimize Other Signs & Symptoms

- Change In VAS (Itching) (12wks)
- Change In VAS (Pain) (12wks)
- Change In NAPI (24wks)

Maximize Positive Clinical Impact

Do No Harm

Minimize Serious Adverse Events

- Minimize Severe Infections, Incl. Opportunistic
- Minimize Malignancies
- Minimize CVD Risk (e.g. CHF, MACE)
- Label Warning (Neurologic Disease)
- Label Warning (Hepatic)
- Label Warning (Renal)

Minimize Other Risks

- Accepted Medical Practice
- Impact of DDIs
- Comorbidity As A Significant Consideration
- Half-Life
- Tolerability Issues



Benefit-Risk “Real World”

Physician “other” factors

Simplify Decision Making

- Decision-making Algorithm

Minimize Administrative Burden

- Level Of Burden

Minimize Perceived Medical-legal Liability

- External Influences

Patient factors

Minimize Negative Psychological Impact

- DLQI

Maximize Ease Of Use

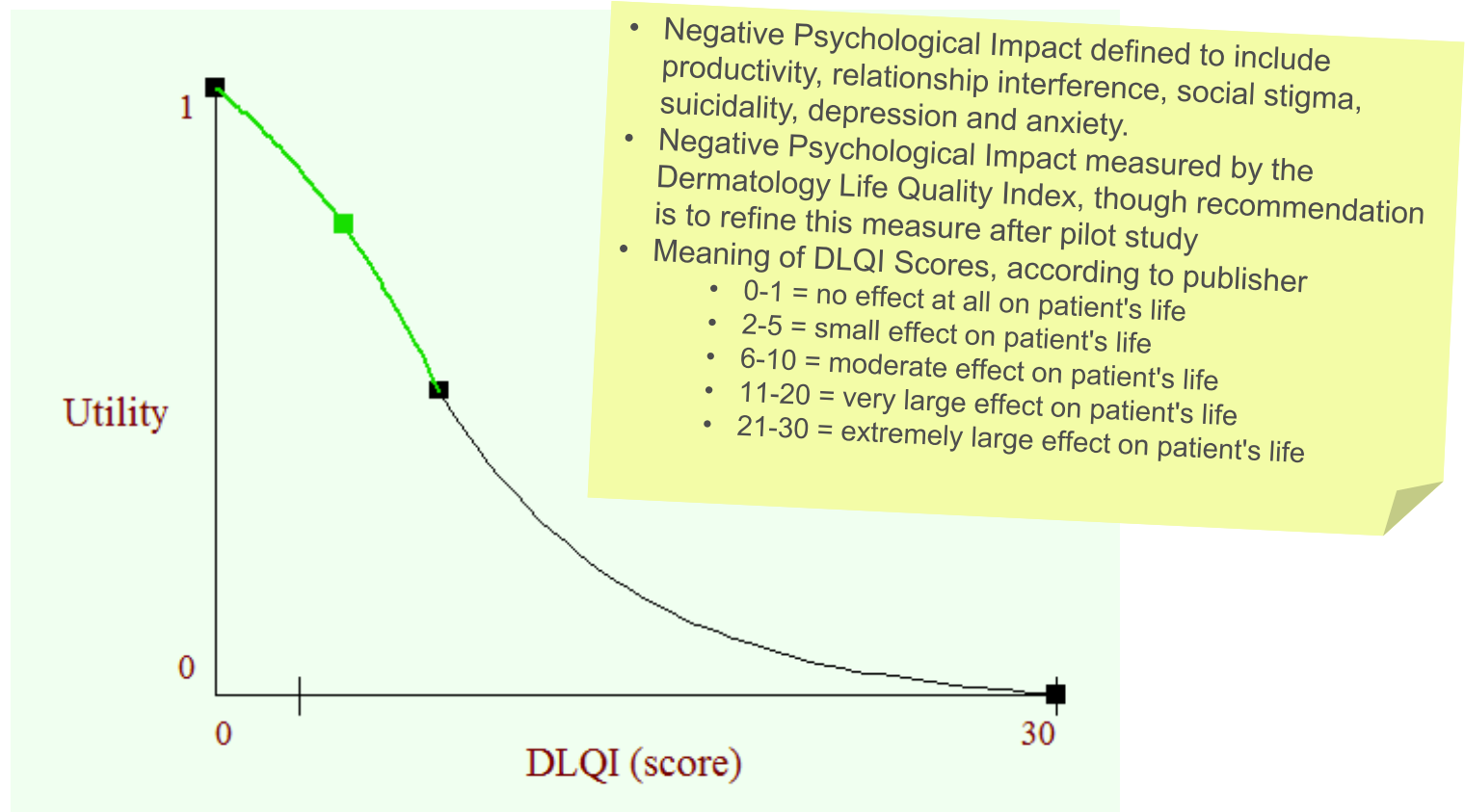
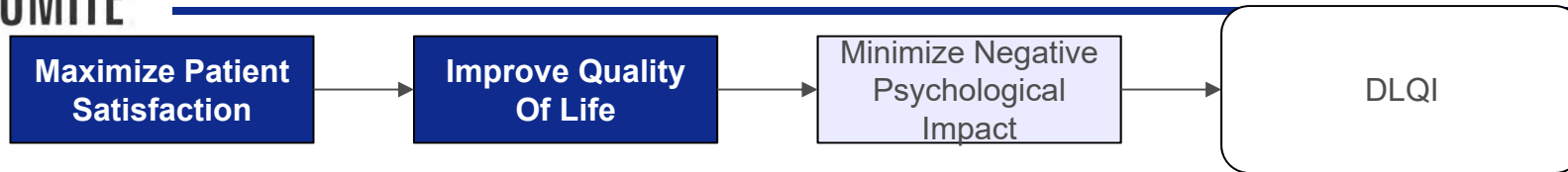
- Route of Administration

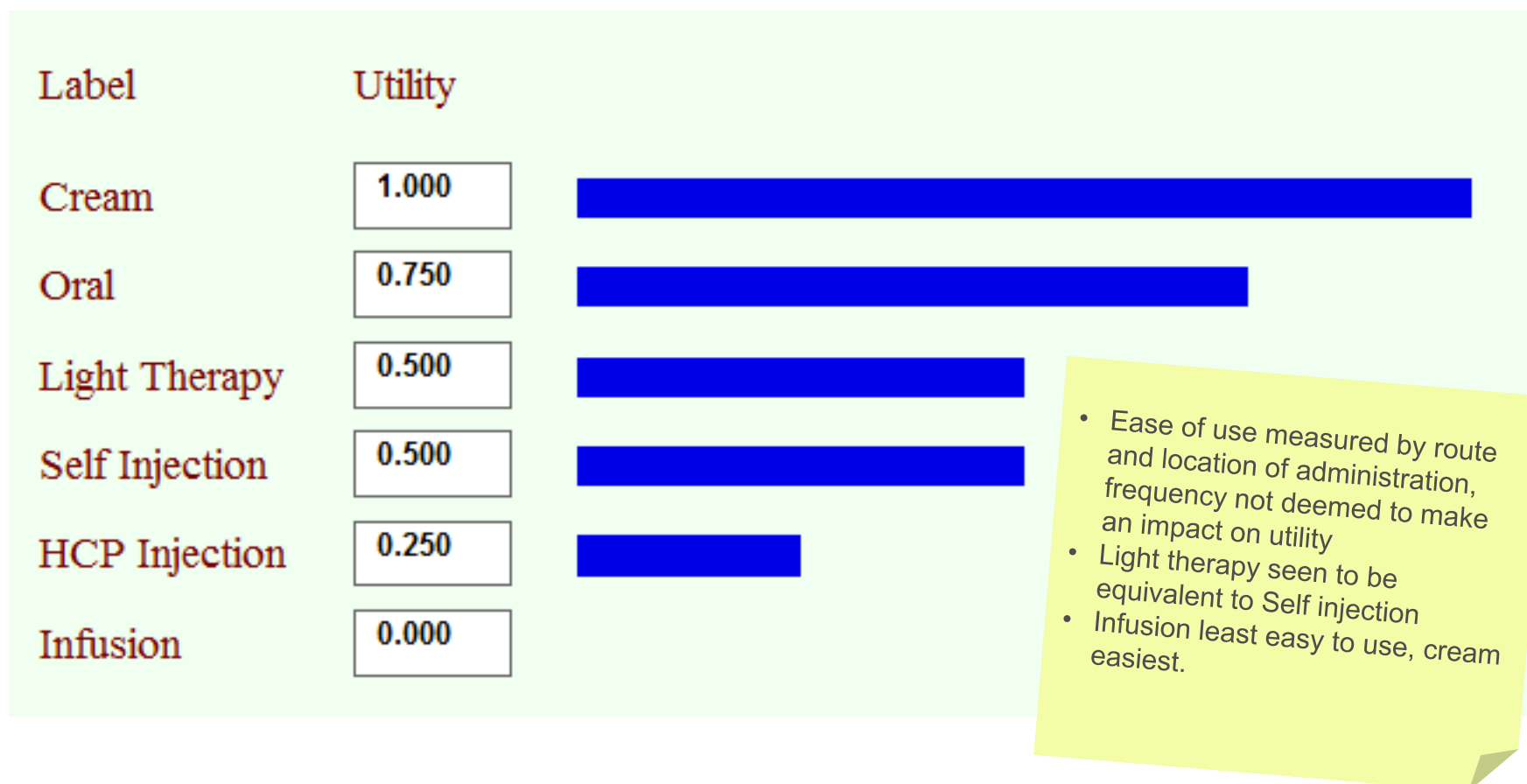
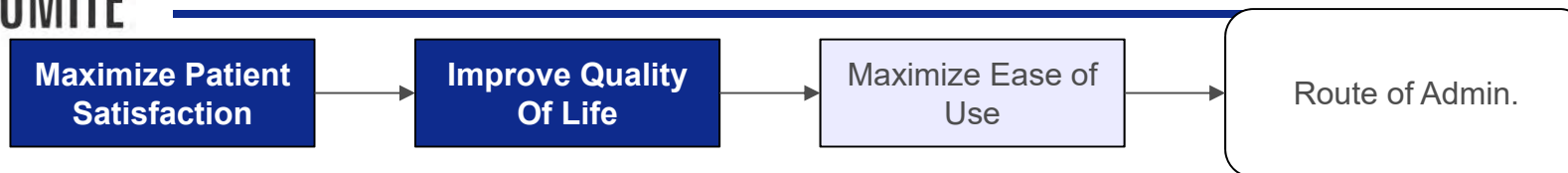
Minimize Patient Financial Impact

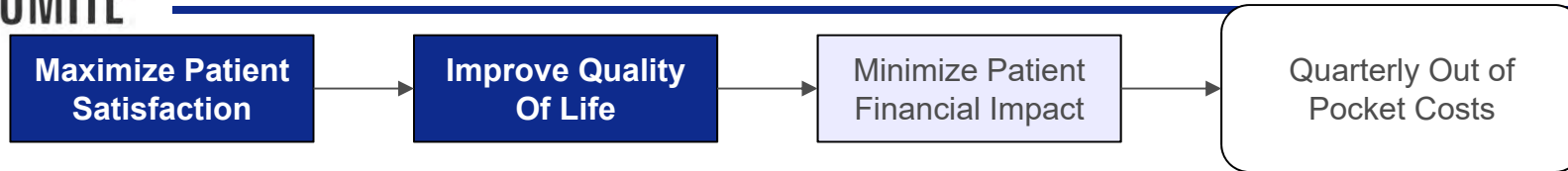
Quarterly Out of Pocket Costs



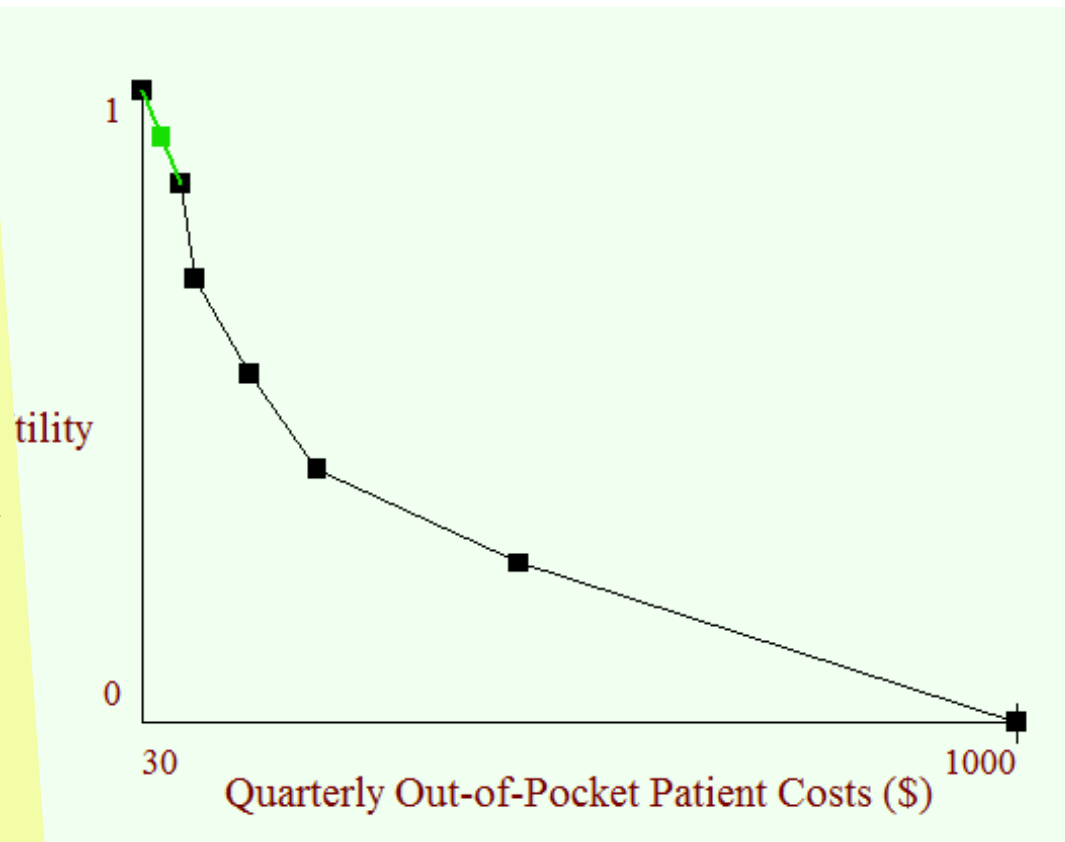
Value Functions - DLQI





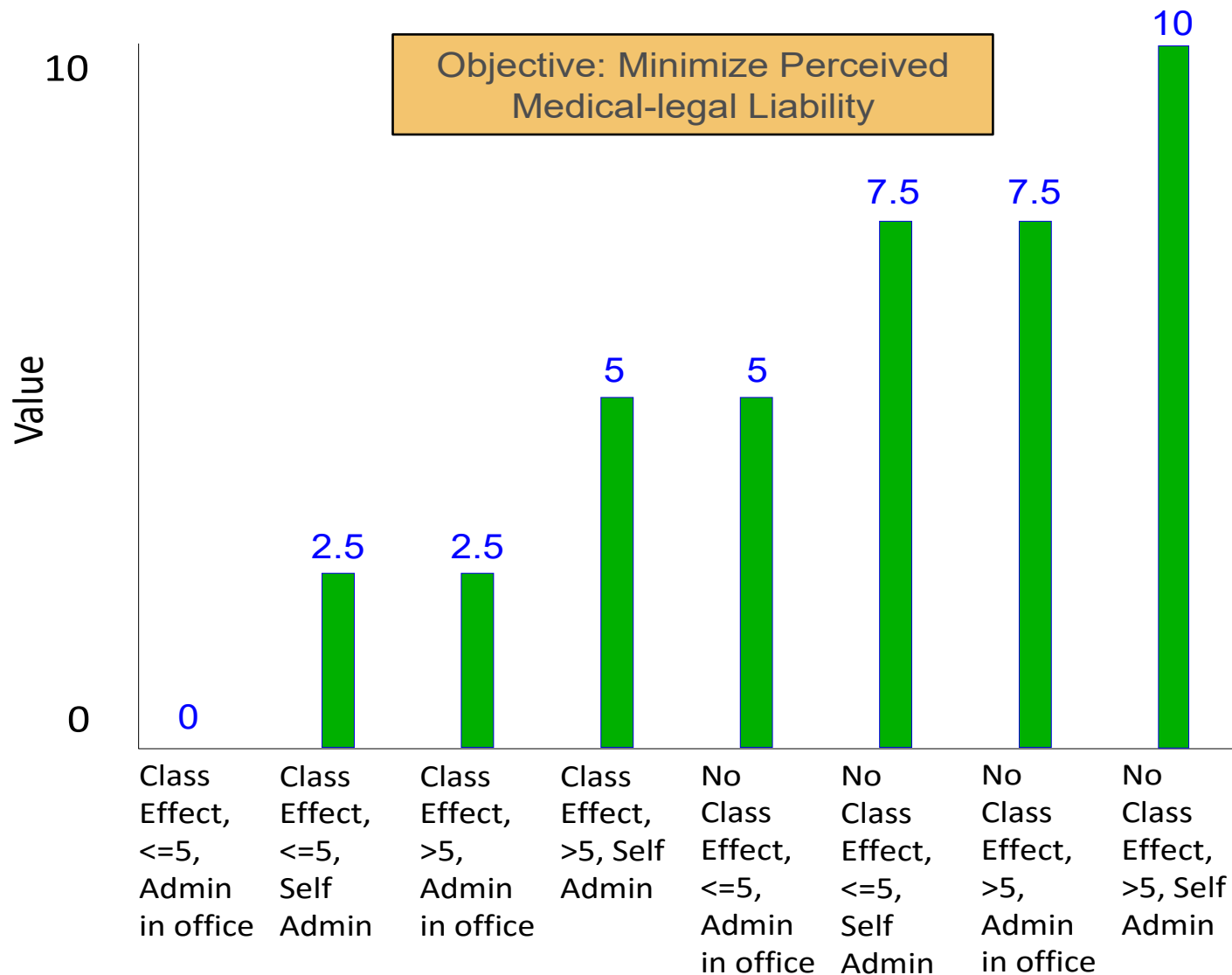


- Two dimensions go into this measure: frequency of quarterly visits to HCP, and out-of-pocket (OOP) costs to patients:
 - Low = \$30 (mid point of \$10-50 range) per doctor or medication copay
 - Medium = \$75 (mid point of \$50-100 range) High = \$150 (point chosen in \$100+ range) No Coverage
- Frequency of HCP interactions are either quarterly, or monthly. Quarterly costs points in the ordinal axis are:
 - \$30 (\$30 per quarter),
 - \$75 (\$75 per quarter),
 - \$90 (\$30 per month),
 - \$150 (\$150 per quarter),
 - \$225 (\$75 per month)
 - \$450 (\$150 per month),
 - and No Coverage.



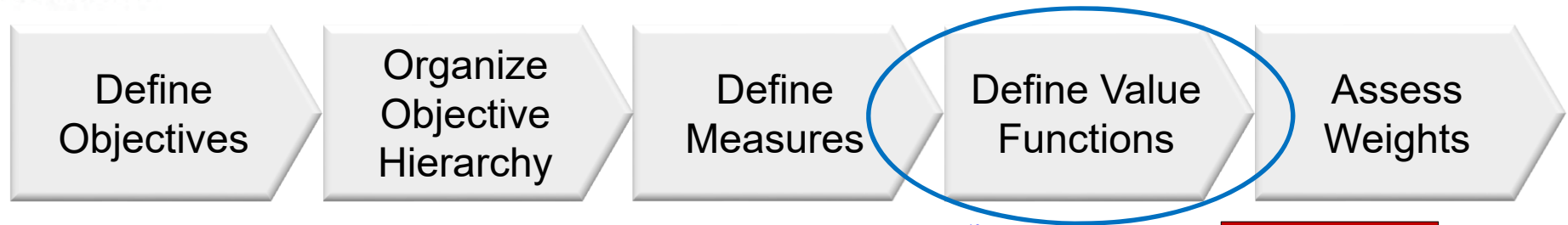


Several measures had dependent preferences



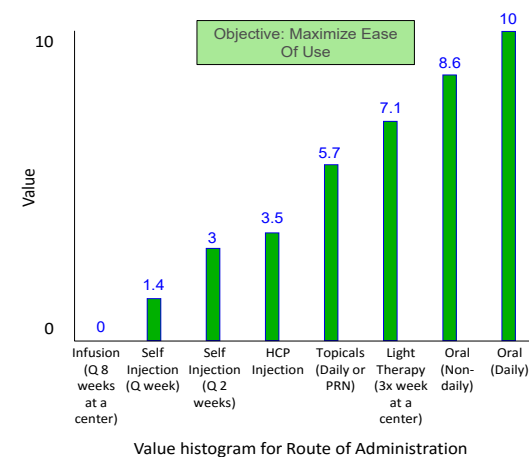
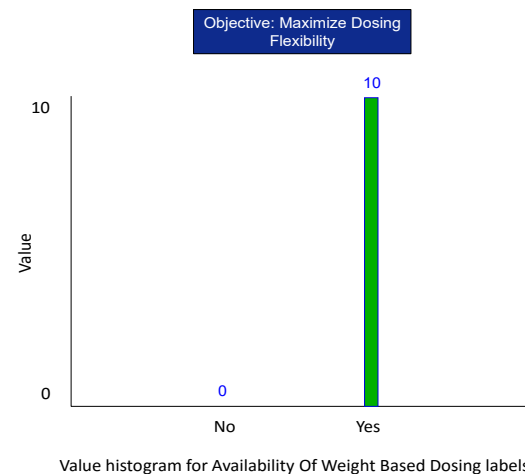
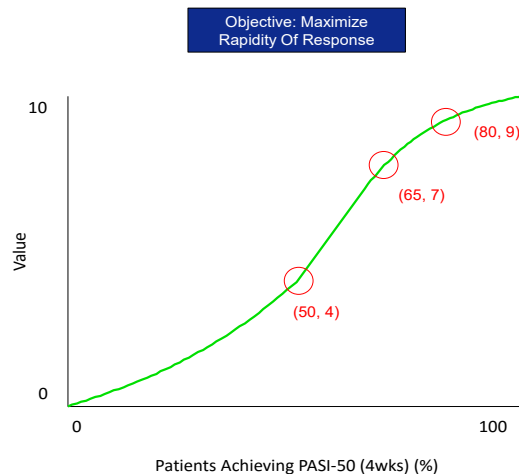
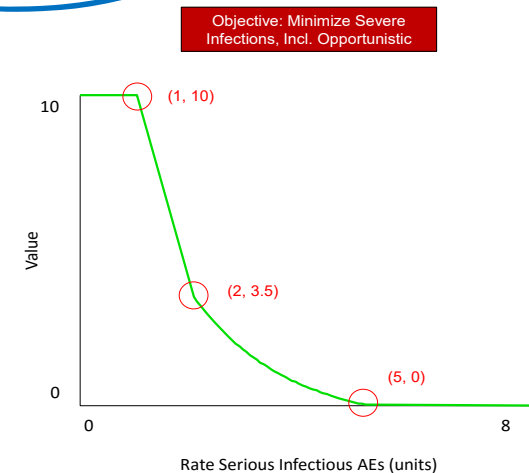
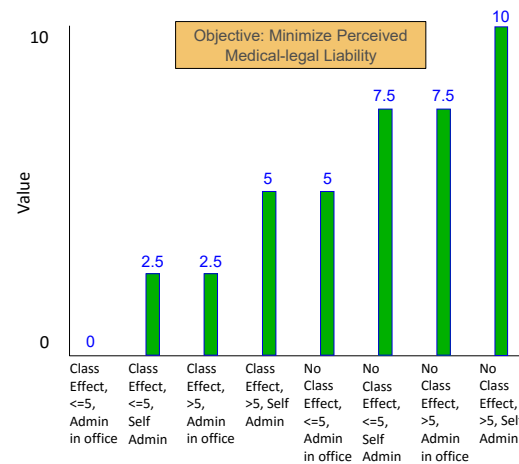


Case Study: For each measure, define value achieved if each possible outcome occurs



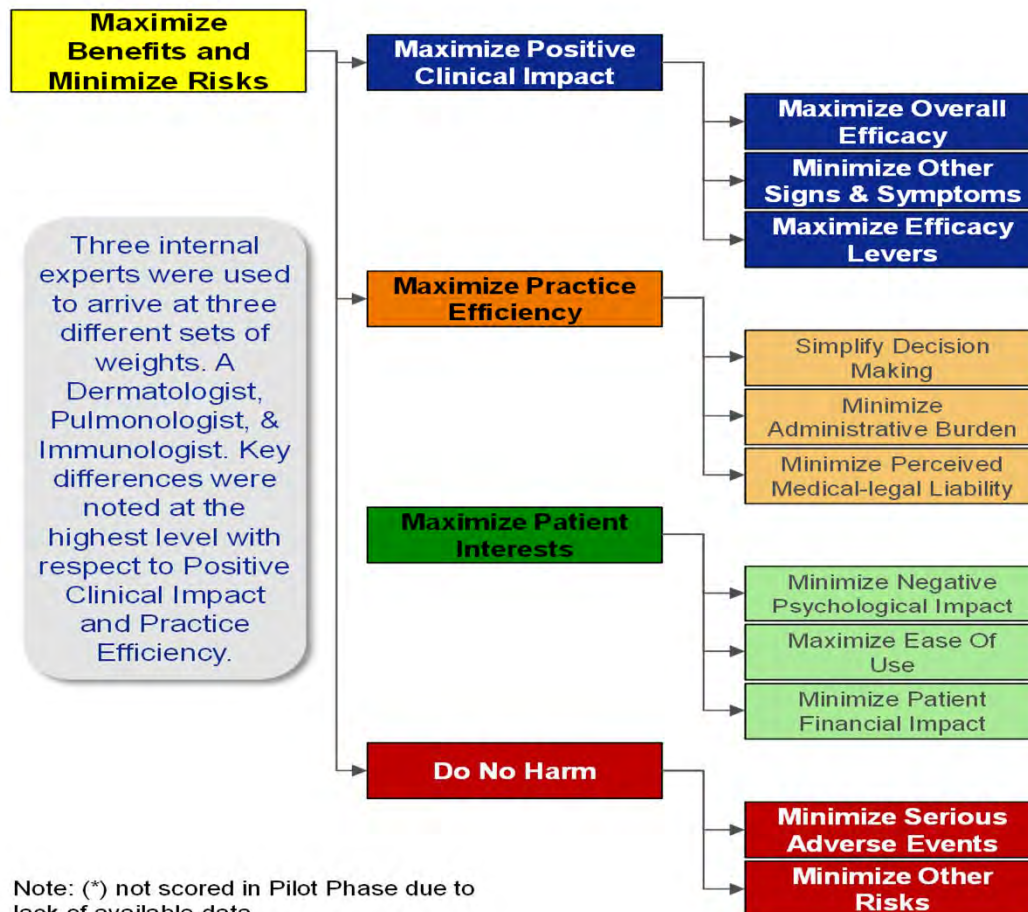
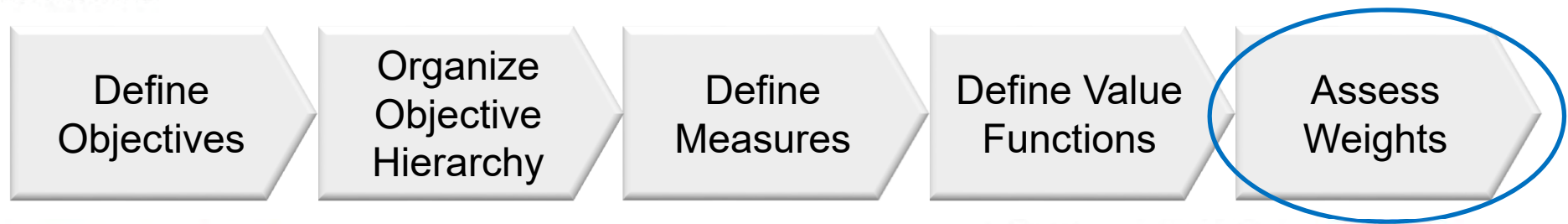
Value Function are different across measures.

Example value functions....





Case Study: Assign how important each measure is when deciding which drug to prescribe



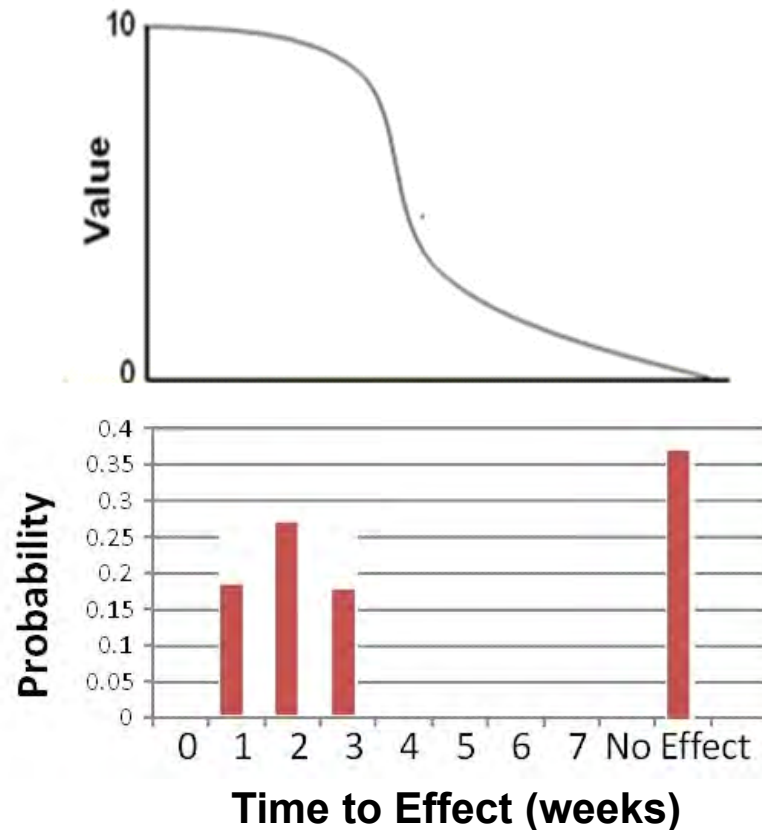
Note: (*) not scored in Pilot Phase due to lack of available data.

WS1	WS2	WS3
27% ↑ 67% { n/a* 33%	40% ↑ 77% { n/a* 23%	34% ↑ 67% { n/a* 33%
20% ↑ 14% { 57% 29%	10% ↑ 40% { 50% 10%	10% ↑ 14% { 57% 29%
20% ↑ 38% { 24% 38%	20% ↑ 35% { 05% 60%	21% ↑ 33% { 33% 33%
33% ↑ 74% { 26%	30% ↑ 75% { 25%	33% ↑ 70% { 30%



Case Study: Where does the data come from?

Value Function for
Drug Speed of Effect

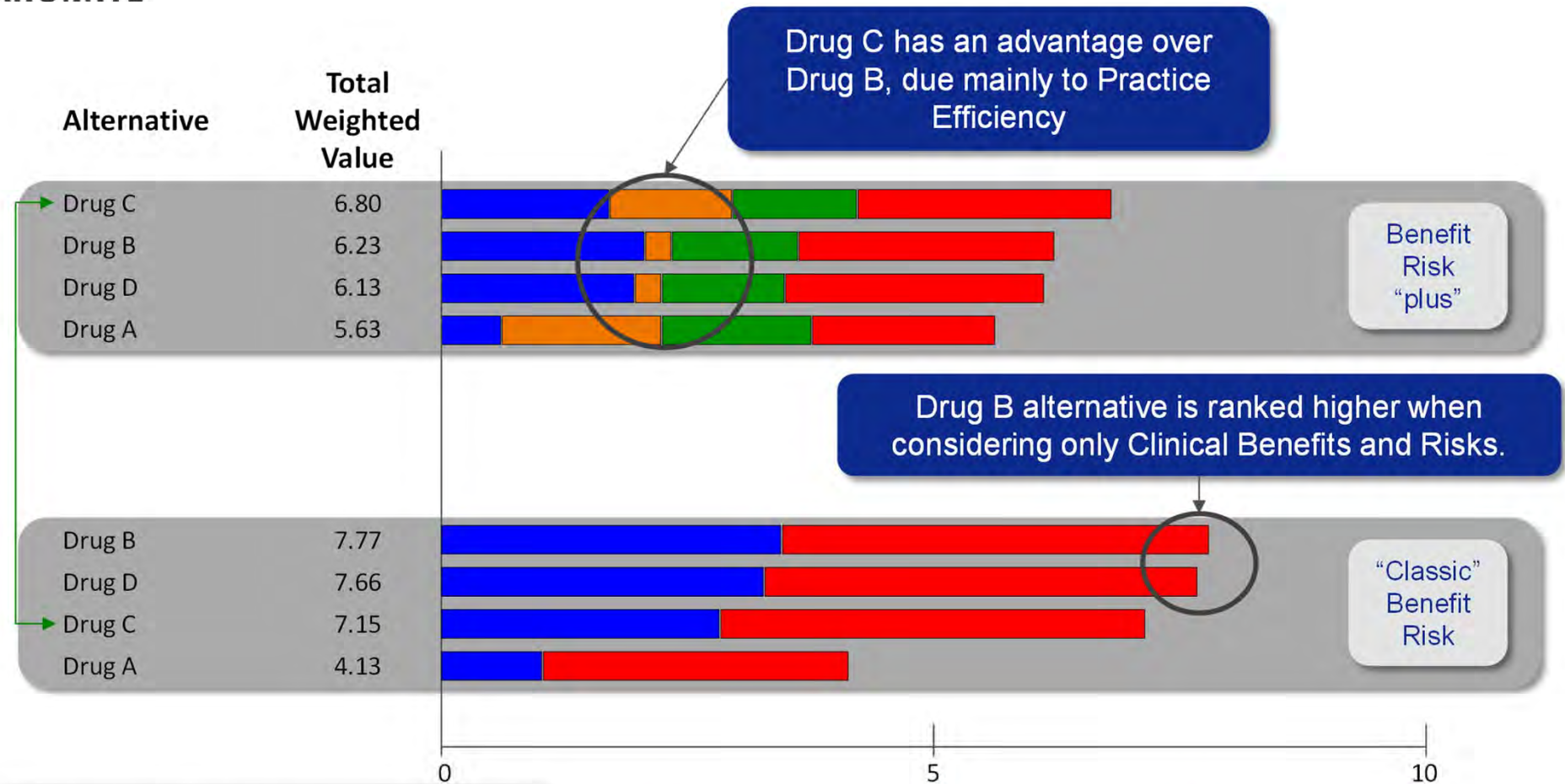


Clinical Trial results and
post launch studies
provide the data.

- **Data inputs for model can be obtained from:**
 - Clinical trial results
 - Head to Head post launch trials
 - Government sponsored comparison studies.
 - Internal team of subject matter experts
 - Advisory boards with physicians
 - Patient advocacy groups
 - Market research surveys with physicians and patients
- **Where uncertainty exists, this model structure allows for inclusion of uncertainty ranges of scores.**
- **Sensitivity analysis of weights yields credibility**



Results of Case Study: Considering physician's “other factors”, the expected drug choice is very different



Horizontal Bar Chart
 Total Weighted Value = length of stacked bar
 Component lengths = weighted value of treatments in specific objectives

■ Maximize Positive Clinical Impact
■ Maximize Practice Efficiency
■ Maximize Patient Interests
■ Do No Harm

Drug Names are blinded to protect client confidentiality



Conclusions from Psoriasis Case study

- ❖ Doctor prescribing preference changes when considering “real world” treatment choices vs. traditional clinical evidence from trials.
- ❖ Patient preferences have a meaningful input into which drug physician should prescribe, although the impact was perceived as similar across drugs from the physician perspective:
 - Will likely impact patient compliance if patient preferences are not considered in physician prescribing choice
 - Recommended that patients be asked directly what their preferences are
- ❖ Key Insights identified for client:
 - Need exists to integrate patient view into physician prescribing decision
 - Real World factors influence physician prescribing behavior, beyond clinical data

Multiple Objective Decision Analysis (MODA) methodology was shown to be a valid methodology for assisting physician prescribing behavior:

- Considering only traditional clinical benefit-risk tradeoffs
- Considering patient and physician “other” factors influencing prescribing



Turning Insights into Action: Actionable tactics developed from model results

Develop prescribing choice treatment algorithms based on patient segments

Develop simplified billing and coding tools; train physician staff; make available a reimbursement hotline; initiate patient assistance programs

Launch Patient and Physician Continuation of Care campaign – form basis for dialogue between patient and physician where treatment goals differ

Identify Life Cycle Management investments to address both physician and patient unmet needs, or use model for New Product Development

Frame discussion for formulary managers to decide which drugs to add to formulary



Maximizing Value through Decision Analysis

- ❖ Often, excellent analysis leads to insight, but no decision. Or, a decision is made but there is no action.
- ❖ To create true value from our efforts, we need to go a step further.

We must assist the Decision Maker in identifying and committing to actions required by the decision.

No action = No value



Improved Drug Treatment Decisions Through Consistent Benefit-Risk Tradeoffs

Assess and manage risk.

Make better decisions.

Create value.

Medical Decision Making Session
2016 DAAG – Banff, Canada

Jack Kloeber, Steve Hamlen, Dave Culhane
Kromite LLC