

# Quality of Life and the Importance of Sight: Ghanaian Versus American Utility Values

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# Goals of Talk

- Define value-based medicine and utility analysis
- Compare American and Ghanaian beliefs concerning quality-of-life using utility analysis
- Explore options for conducting quality-of-life research within Unite for Sight



# Value-Based Medicine®

- **Value-Based Medicine® is an analysis methodology which allows the practice of medicine to be based upon the *value* of medical interventions**

# Value-Based Medicine®

- **Permits higher quality care than with evidence-based data alone**
- **Maximizes resources to save healthcare dollars**

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graph TD; A[Value-Based Medicine] --- B[Evidence-Based Medicine]; A --- C[Value]; A --- D[Economic Analysis]
```

Value-Based  
Medicine

Evidence-  
Based  
Medicine

Value

Economic  
Analysis

# What is Value?

**Improvement in:**

- **Length of life  
and/or**
- **Quality-of-life**

# Ophthalmology

- **Conferred value is gained by improving quality-of-life**

# Quality-of-Life Assessment

- **Functional: NEI VFQ-25**
- **Preference-based: Utility Analysis**
  - **Time-tradeoff**
  - **Standard gamble**
  - **Rating scales**

# Utility Analysis

- **All-encompassing (function, economic situation, caregiver status, fear of the future, etc.)**
- **Patients who have a disease are best able to appreciate the effect of a disease on their quality-of-life**
- **Standardization is key**

# Utility Analysis

- **Utility anchors:**
  - **1.0 = perfect health (or 20/20 OU permanently)**
  - **0.0 = death**

# Time-Tradeoff Utility Analysis

- **How many additional years do you expect to live?**
- **How many of those years, if any, would you trade for a technology that would return you to perfect health (vision)?**

# Ghanaian Time-Tradeoff Example

- 65 year old female with bilateral cataracts has visual acuity of CF OD and 20/200 OS:
  - Expects to live 20 years
  - Willing to give up 8 years for normal vision for the rest of her life



# Ghanaian Time-Tradeoff Example

**Utility calculation:**

$$1 - (8/20) = 0.6$$

# Ocular Disease Utilities

| <u>Better eye</u> | <u>Utility</u> |
|-------------------|----------------|
| 20/20 OU          | 0.97           |
| 20/20             | 0.92           |
| 20/200            | 0.66           |
| 20/800            | 0.52           |
| HM-LP             | 0.35           |
| NLP               | 0.26           |

# Utilities

- **Angina**
  - **Mild - .90**
  - **Moderate - .70**
  - **Severe - .53**

# Ocular Utilities

- **Correlate more with degree of visual loss in the better-seeing eye, rather than the underlying cause of loss**



**Total Value Gained**

**QALY**

**(Quality-Adjusted Life-Year)**



# **QALY**

**Utility improvement**

**x**

**Years of benefit**

# Total Value Gained

- **Total hip**
  - **0.20 x 15 yrs****3.0 QALYs**
- **Cataract**
  - **0.26 x 15 yrs****3.9 QALYs**

# Ghanaian Data

- **Number of patients: 217**
- **Gender: 64% female, 36% male**
- **Mean age: 56**
- **Age range: 10-105**

# Ghanaian Data

- **Vision ranged from NLP to 20/20**
- **Mean utility: 0.84**
- **Utility range: 0-1**
- **Wide range of disease**

# Ghanaian vs. American Utilities

|                        | Count | Mean Age | Mean Utility | Std Dev | 95% CI    |
|------------------------|-------|----------|--------------|---------|-----------|
| LP-CF BJO              | 17    | 72       | 0.47         | 0.29    | 0.32-0.62 |
| LP-CF Ghana            | 47    | 71       | 0.77         | 0.22    | 0.70-0.83 |
| 20/200-20/400 BJO      | 33    | 69       | 0.65         | 0.21    | 0.58-0.72 |
| 20/200-20/400 Ghana    | 16    | 68       | 0.80         | 0.19    | 0.71-0.89 |
| 20/20 Better Eye TAOS  | 32    | NA       | 0.92         | 0.13    | 0.94-0.98 |
| 20/20 Better Eye Ghana | 25    | 35       | 0.86         | 0.21    | 0.77-0.94 |

Non-overlapping 95% confidence intervals are significantly different at  $p=.05$ .

BJO: Brown MB. Utility values associated with blindness in an adult population. *British Journal of Ophthalmology* 2001;**85**:327-331.

TAOS: Brown GC. Vision and quality of life. *Trans Am Ophthalmol Soc* 1999;**97**:473-512.

# Conclusions

- **For patients with very low vision (LP-CF), Ghanaians perceive greater utility in worse vision than Americans ( $p < 0.05$ )**
- **For patients with low vision (20/200-20/400) or perfect vision, Ghanaians and Americans perceive the same utility in their vision ( $p > 0.05$ )**

# Conclusions

- **Possible to gather utilities in Africa**
- **Possible for valuable data to be collected within Unite for Sight framework**

# Challenges of Ghanaian Study

- **Translator required to overcome language barrier**
- **Religious beliefs concerning death**



# Thank you

- **Unite for Sight**
- **Patients in Ghana**
- **Drs. Melissa and Gary Brown**
- **Dr. Barry Milcarek**

