PROPER INCORPORATION OF ADVERSE EVENTS FROM MEDICAL TREATMENTS IN HEALTH TECHOLOGY ASSESSMENTS

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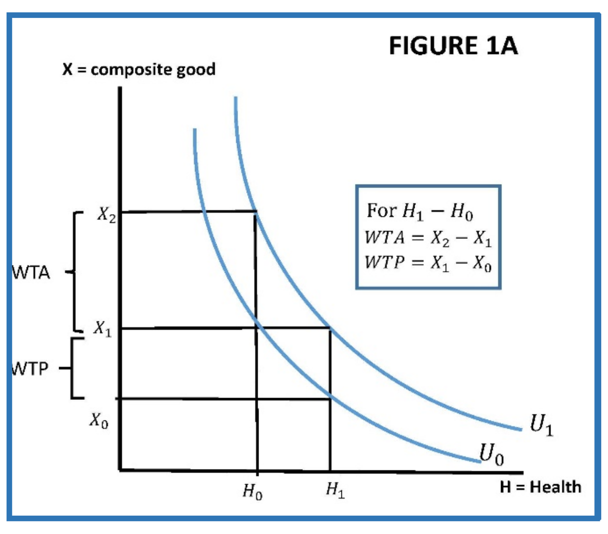
OBJECTIVE: To assess proper ways to include adverse events from medical treatments (AEMTs) in health technology assessment (HTA) and to refine data sources necessary for proper HTA and patient decision making.

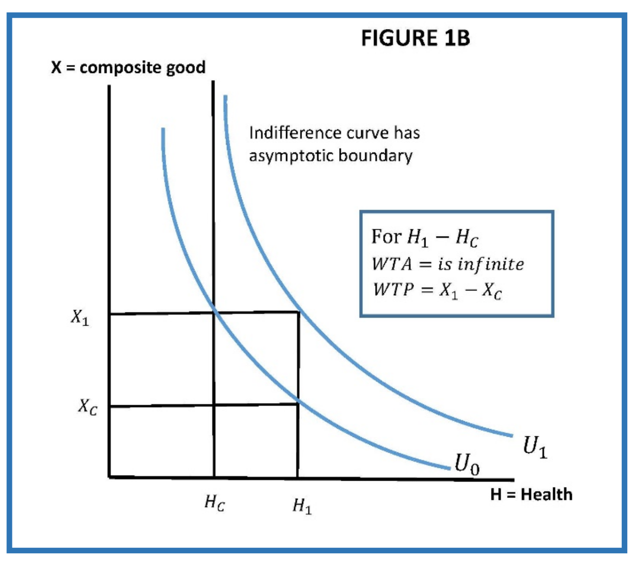
METHODS: Analyze Willingness to Pay (WTP) for health gains and Willingness to Accept (WTA) for medical treatment risks and how to properly combine them for HTA.

RESULT 1: HOW WTP and WPA DIFFER



WTP to shift from H_0 to H_1 is smaller than WTA reduction from H_1 to H_0 because of limited substitution between Health (H) and market goods (X).

RESULT 2: WTA CAN BECOME INFINITE



WTA can become infinite when utility of market goods is asymptotically bounded. Would you trade all food for some large quantity of broccoli? If not, your utility for market goods is bounded. Occurs with high incomes (satiation) or larger health losses at lower incomes.

RESULT 3: STANDARD HTA MODELS IGNORE OR MIS-VALUE AEMTS

(1) $Medical\ cost = Costs\ of\ treatment + Cost\ of\ AEMT\ treatments.$
(2) $H_i = Expected\ Health\ gain - \boldsymbol{\delta}(Health\ Loss\ from\ AEMTs)$ **where $\boldsymbol{\delta} > 1$**
(3) $ICER = (C_1 - C_2)/(H_1 - H_2)$
(4) Most HTA studies only count costs if hospitalization involved.
(5) Most HTA studies wholly ignore utility losses arising from health losses.
(6) If included, AEMT health losses *improperly valued* as comparable health gains.
(7) Proper measure is WTA, not WTP, to measure AEMT losses, since patients must "accept" providers' recommendations before medical treatments begin.
(8) From numerous empirical estimates, δ > 5.
(9) HEALTH LOSSES FROM AEMTS ARE GREATLY UNDERVALUED OR IGNORED.

RESULT 4: REAL PEOPLE PLACE DIFFERENT VALUES ON AEMTS

(1) Standard HTA approaches lump together all AEMTs into a single count.
(2) This combines things like transient nausea, hair loss, and permanent incontinence or impotence, or permanent loss of some Activities of Daily Living (ADLs).
(3) Proper methodology would carefully enumerate each relevant AEMT for each medical intervention. Otherwise, patients will never know.

CONCLUSIONS

(1) We should value AEMT health losses using WTA, not WTP.
(2) We need refined data from FDA (drugs) and providers (e.g., surgeries and missed diagnoses) to properly measure rates of AEMTs.
(3) When choosing among (say) cancer therapies, patients need better data and multi-criteria decision models to guide individual choices.
(4) When AEMTs are properly counted and valued, CEA estimates of many interventions will degrade.