



Economic Impact and Outcomes of Digital Technology in Healthcare

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- **Health Outcomes**
- **Economic Evaluation**
- **Summary**
- **Conclusions**

Health Outcomes



- Health outcomes are the result(s) or impact of disease condition: patient, health service or society.
- Result(s) or change(s) in a patient's condition, status following intervention, and the effect of the intervention on how the patient functions.
- Outcomes may also include resource use or consumption or costs.

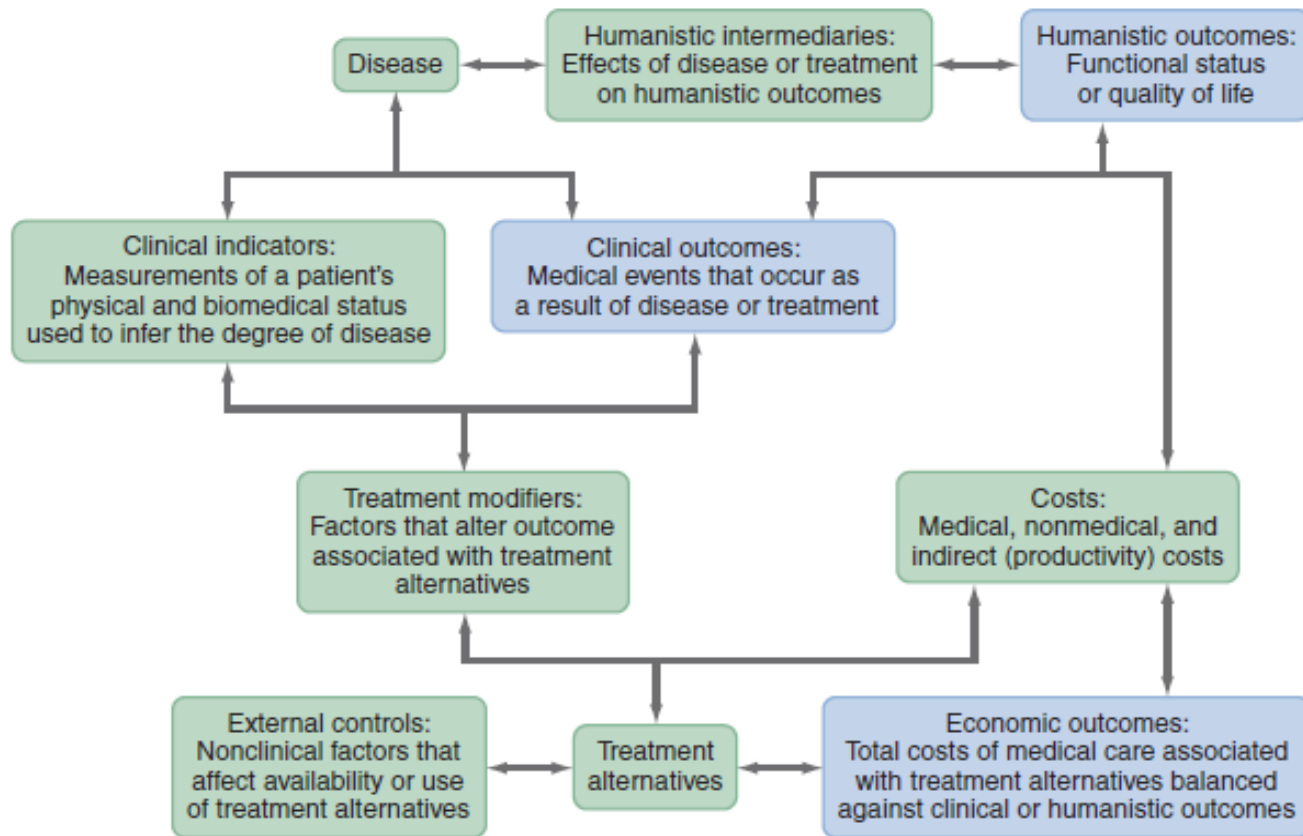
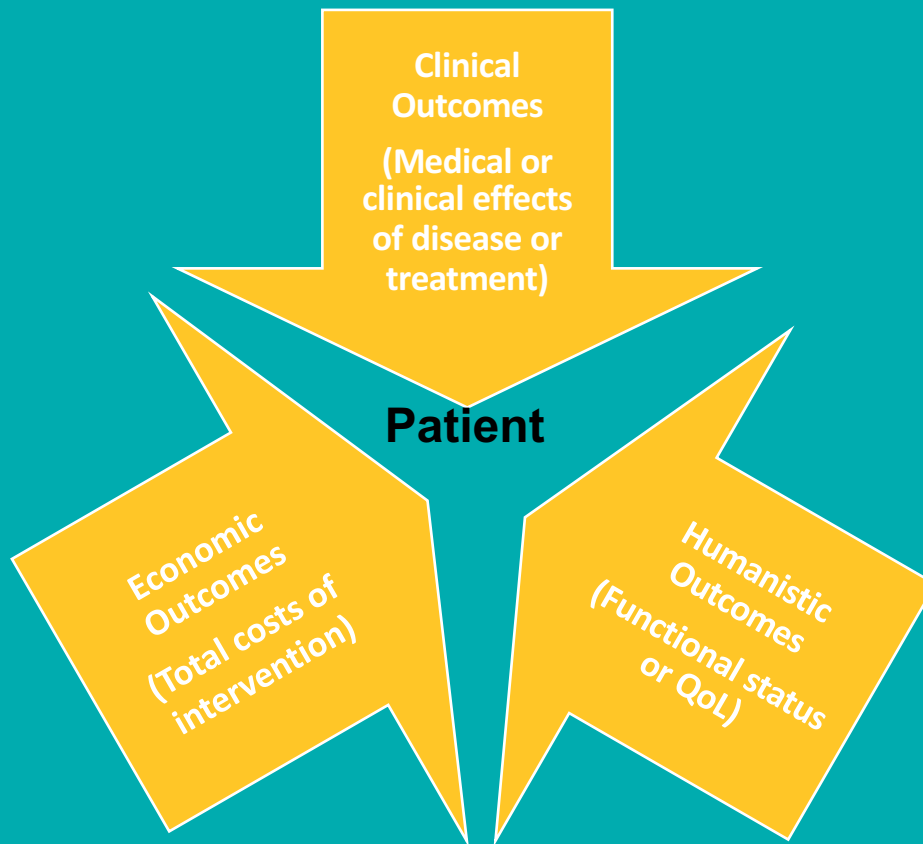


Figure 9-3. The conceptual model: Economic, clinical, and humanistic outcome (ECHO) model. (From Kozma, C. M., Reeder, C. E., & Schulz, R. M. [1993]. Economic, clinical, and humanistic outcomes: A planning model for pharmaco-economic research. *Clinical Therapeutics*, 15[6], 1125.)

Types of Health Outcomes

(Maloney and Chaiken, 1999)





- Healthcare professional are interested in the clinical results.
- Patients focus on impact of a condition or intervention on their health, functional status and quality of life.
- Healthcare providers are interested in cost effectiveness of service provision in the right setting, balancing costs and quality of care provided.

Economic Evaluation



- Economic evaluation is the quantification of changes in healthcare resource utilisation because of introducing an alternative course of action (Newhouse, 2010).
- It identifies, measures, values and compares the costs and consequences of healthcare interventions/programmes (Drummond et al., 2005).



- Gives insight into how resources should be allocated in a systematic way.
- Provides an objective set of criteria for making choices among alternatives.
- Compares alternatives that are solution to the same problem.
- Justifies value for money invested in an alternative – ‘Return on Investment’.

Economic Evaluation Methods



Method	Measure
Cost Effectiveness Analysis	Natural units
Cost Benefit Analysis	Monetary value
Cost Utility Analysis	Quality Adjusted Life Year (QALY's) = (QoL x Life Expectancy)
Cost Minimisation Analysis	Equal or identical benefits
Cost Consequence Analysis	Descriptive terms



Incremental Cost Effectiveness Ratio (ICER)

$$\text{ICER} = \frac{\text{Cost of intervention 2} - \text{Cost of intervention 1}}{\text{Benefits of intervention 2} - \text{Benefits of intervention 1}}$$

Intervention 2 = New intervention (Digital Patient Observation)

Intervention 1 = Control (Paper Patient Observation)

NICE recommendation = £20,000/QALY

Summary and Conclusions



- Health outcomes are the results of a disease or condition, and changes due to an intervention.
- Economic evaluation enable us to value resource use associated with healthcare intervention – ‘Return on Investment’.
- Consider the outcomes and costs associated with the use of digital technology.
- In practice, decision should not only be limited to outcomes and costs of digital technology, but also budget available.



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