Eastern England SECURE DATA ENVIRONMENT

Part of the **NHS Research Secure Data Environment Network**

Health Innovation East

NHS

Conducting the chosen Health Economic Assessment

STAGE 1

Business Case / Project Proposal

STAGE 2

Understanding Scope for an HEA

STAGE 3

Health Economic Assessment

CAMBRIDGE UNIVERSITY Health Partners

In Stage 1, you considered Return on Investment (ROI) to support your project proposal. In Stage 2, you explored whether a full Health Economic Assessment (HEA) was appropriate and which type of analysis might fit best. **Stage 3 now brings this together by showing real-world examples of different types of HEAs in practice.** These examples are not intended as step-by-step guides, but as illustrations to help you understand what each type of analysis looks like, and how others have applied them in health and care contexts.

There are excellent resources available locally, nationally, and internationally that can help you with your health economic evaluation needs. The examples provided below are in no means representative of all examples out there. Rather, they intend to help you get started by providing some references to have to hand to show you what each type of analysis would look like, instead of acting as a step-by-step guide.

Cost-utility analysis (CUA):

As mentioned in Stage 2, Cost-Utility Analyses (CUAs) are used in the UK to guide resource allocation across various healthcare settings. For instance, they support the decisions made by NICE on which drugs and medical devices should be available through the NHS in England.

Title of Example	Setting/ Intervention	Method/ Perspective	Key findings	Reference link
"Cost-utility and Cost-effectiveness of internet-based computer tailoring for Smoking Cessation"	The smoking cessation programme combines computer tailoring and tailored counselling with a practice nurse. The multiple computer tailoring consisted of computer-generated letters personalised according to patient characteristics.	The CUA compared three options: (1) the PAS intervention (the combined approach), (2) multiple computer tailoring only, and (3) standard of care looking at smoking abstinence and HRQoL at 12 months. It took a societal perspective, and considered costs to the healthcare system as well as to the patient.	Results showed that the multiple computer-tailored programme was the most cost-effective treatment, while the cost utility was likely highest for the standard of care.	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3636293/
"Cost-utility analysis of a cardiac rehabilitation programme"	An app-based cardiac rehabilitation programme called Teledialog.	A CUA was conducted comparing Teledialog with standard of care (SOC).	Teledialog cost €1,700 more per patient than standard of care, but only gained 0.004 QALYs — making it unlikely to be cost-effective (ICER €484,000).	https://pubmed.ncbi.nlm.nih.gov/26713491/
"Cost-utility and cost-effectiveness of internet-based treatment for adults with depressive symptoms"	A CUA comparing an internet-based cognitive behavioural therapy, an internet-based problem-solving therapy, and standard of care for adults with depressive symptoms.	The study looked at QALYs, where HRQoL was measured using EQ-5D.	Both internet-based interventions appeared to be cost-effective compared to usual care, however the problem-solving therapy was the most cost-effective with a cost per QALY of €11,523.	https://www.jmir.org/2010/5/e53/

Budget Impact Analysis (BIA):

In the English NHS, budget impact analyses (BIA) estimate the financial effect of introducing new interventions, helping decision-makers assess whether they are affordable within the existing budget. Used alongside cost-effectiveness evidence, they support resource planning over a set time period.

Title of Example	Setting/ Intervention	Method/ Perspective	Key findings	Reference link
"Budget Impact Analysis of novel digital therapeutics in type-2 diabetes and hypertension"	The population expected to benefit from the digital behavioural interventions (applications) included individuals with either type-2 diabetes or hypertension, who were receiving standard of care pharmacological treatment.	A study exploring the economic impact of digital behavioural interventions for managing patients with high-cost cardiometabolic diseases, such as type-2 diabetes and hypertension.	Results showed that the digital health interventions would lead to an estimated reduction of 22% in the type-2 diabetes population and 29% in the hypertensive patient population in total health expenditures compared to the standard of care pharmacological care pathways.	https://www.jmir.org/2019/10/e15814/
"NICE Evidence Standards Framework for Digital Health Technologies (2019)"	This guide describes the principles of budget impact analysis (BIA) as part of NICE's evidence standards framework for digital health technologies.	N/A- Reference material	N/A- Reference material	https://www.nice.org.uk/Media/Default/About/what-we-do/our-programmes/evidence-standards-framework/budget-impact-guide.pdf
"NICE Budget Impact template"	This is the recommended budget assessment template document for submitting a budget impact analysis to NICE as part of its health technology assessment programme.	N/A- Reference material	N/A- Reference material	https://www.nice.org.uk/Media/Default/About/what-we-do/NICE-guidance/NICE-technology-appraisals/Company-budget-impact-analysis-submission.docx
"NICE Assessing resource impact process manual"	This manual describes the processes involved in assessing resource impact of health technologies.	N/A- Reference material	N/A- Reference material	https://www.nice.org.uk/Media/Default/About/what-we-do/Into-practice/assessing-resource-impact-process-manual-ta-hst.pdf

Title of Example	Setting/ Intervention	Method/ Perspective	Key findings	Reference link
"Budget impact analysis – principles of good practice: report of the ISPOR 2012 Budget Impact Analysis Good Practice II Task Force."	The study provides a methods guide for conducting a BIA. This includes methodological insights on the analytic framework for BIA, recommendations of data sources to inform budget assessments and guidance on reporting standards.	N/A- Reference material	N/A- Reference material	https://www.sciencedirect.com/science/article/pii/S1098301513042356
"A methodological review of US budget impact models for new drugs"	This study critically assesses the extent to which published BIA studies follow recommended methodological guidelines.	N/A- Reference material	N/A- Reference material	https://pubmed.ncbi.nlm.nih.gov/27334107/
"The Evaluation Toolkit"	An evaluation toolkit developed by BNSSG ICB, NIHR ARC West and Health Innovation West of England which provides several fabricated economic evaluation case study examples.	N/A- Reference material	N/A- Reference material	https://nhsevaluationtoolkit.net/resources/fabricated-economic-evaluation-case-studies/

Cost-effectiveness analysis (CEA):

Cost-effectiveness analysis (CEA) compares the costs and health outcomes of interventions to identify which offers the best value for money. In the UK, bodies like the National Institute for Health and Care Excellence (NICE) use it to decide whether new treatments should be recommended for the NHS, based on cost per quality-adjusted life year (QALY).

Title of Example	Setting/ Intervention	Method/ Perspective	Key findings	Reference link
"Cost-effectiveness analysis of the HELP-Diabetes programme compared to standard of care"	The overall aim of HELP-Diabetes was to improve the management of diabetes, so the main health outcome considered was diabetes-related distress, measured by the Problem Areas in Diabetes (PAID) questionnaire.	A CEA study to assess the cost-effectiveness of the HELP-Diabetes programme compared to usual care for type 2 diabetic patients. The study took the perspective of the UK NHS and PSS (personal social services). Unit costs were taken mostly from the NHS Reference Costs[1] and Unit Costs of Health and Social Care[2].	Results found that HELP-Diabetes was effective at reducing the PAID score at 12 months compared to standard of care, and cost £111 more than standard of care, ultimately being cost-effective compared to standard of care.	https://pubmed.ncbi.nlm.nih.gov/29884608/

Title of Example	Setting/ Intervention	Method/ Perspective	Key findings	Reference link
"Cost-effectiveness analysis of a hospital electronic medication management system"	The effectiveness of eMMS in reducing potential adverse drug events (ADEs) and potential ADEs intercepted were explored compared to standard of care.	A CEA study comparing costs and benefits of paper-based prescribing with a commercial electronic medication management system (eMMS) on one cardiology ward in a major teaching hospital. A 15-year time horizon and a health system perspective were assumed.	Results showed the rate of potential ADEs following eMMS reduced by 71%, the annualised costs for the cardiology ward were ~$62K, showing the eMMS within this setting was more effective and less expensive than paper-based prescribing (the standard of care).	https://pubmed.ncbi.nlm.nih.gov/25670756/
"Cost-effectiveness analysis in telehealth for chronic heart failure management"	A study assessing the cost-effectiveness of home telemonitoring and nurse telephone support compared with usual care in the management of patients with chronic heart failure.	The study took a third-party payer's perspective, and developed a Markov model with a 20-year time horizon to analyse the cost-effectiveness using the original study and various data sources.	The study showed that home telemonitoring and nurse telephone support are viable and cost-effective solutions to support patients with chronic heart failure in comparison with usual care.	https://pubmed.ncbi.nlm.nih.gov/30005749/

Cost benefit analysis (CBA):

CBA puts both costs and benefits into monetary terms, to show whether the financial benefits outweigh the costs. CBA is broader than ROI, as it captures wider social benefits and opportunity costs.

Title of Example	Setting/ Intervention	Method/ Perspective	Key findings	Reference link
"Cost-benefit analysis of the COPD virtual ward programme in South and West Herts Health and Care Partnership (SWHHCP)"	An evaluation of the Chronic obstructive pulmonary disease (COPD) virtual ward programme in SWHHCP was conducted, which included a CBA.	A mixed-methods evaluation, utilising data recorded routinely by SWHHCP clinical systems and by the continuous monitoring technology, supplemented with information from staff interventions and virtual ward patient surveys.	Results found virtual wards represented a cost-beneficial model for caring for patients with acute COPD exacerbations, based on the impact on reducing length of stay and the number of repeat readmissions within 90 days of discharge.	https://www.england.nhs.uk/long-read/rapid-evaluation-report-chronic-obstructive-pulmonary-disease-virtual-ward-enabled-by-technology/

1 Reference costs are the unit costs to the NHS for providing defined services in a given financial year to NHS patients in England. They are collected and published annually.
2 Unit costs represent the total expenditure incurred to produce one unit of output. In health and social care, this could be the cost of one hour of a nurse or GP's time, or a face-to-face appointment with a social worker or perhaps a speech therapist.

Title of Example	Setting/ Intervention	Method/ Perspective	Key findings	Reference link
"Cost-benefit analysis of telehealth in pre-hospital care"	The study assessed how software to triage non-emergency cases and direct eligible patients to non-emergency primary care services, compared with the standard of care.	A CBA of the Emergency Telehealth and Navigation (ETHAN) programme looking at the number of admissions to emergency departments over a period of 12 months.	The ETHAN programme was less costly (by $103/ per patient) and provided significant benefits ($64/per patient) compared to usual standard of care.	https://pubmed.ncbi.nlm.nih.gov/27913657/
"Applied methods of cost-benefit analysis in health care"	This book provides a more comprehensive explanation of the methods used in cost benefit analysis, including the different approaches for valuing effects in monetary terms.	N/A- Reference material	N/A- Reference material	https://global.oup.com/academic/product/applied-methods-of-cost-benefit-analysis-in-health-care-9780199237128?cc=gb&lang=en&
"eHealth is worth it – the economic benefits of implemented eHealth solutions at ten European sites"	This study reports on a number of evaluations of eHealth interventions across Europe using cost benefit analysis.	N/A- Reference material	N/A- Reference material	https://www.researchgate.net/publication/264167211_eHealth_is_Worth_it_The_economic_benefits_of_implemented_eHealth_solutions_at_ten_European_sites
"The Evaluation Toolkit"	An evaluation toolkit developed by BNSSG ICB, NIHR ARC West and Health Innovation West of England which provides several fabricated economic evaluation case study examples.	N/A- Reference material	N/A- Reference material	https://nhsevaluationtoolkit.net/resources/fabricated-economic-evaluation-case-studies/

Cost-Consequence Analysis (CCA):

CCA lists costs and outcomes separately rather than combining them into one measure. This helps decision-makers weigh what matters most in their own context, especially for complex interventions.

Title of Example	Setting/ Intervention	Method/ Perspective	Key findings	Reference link
"Management of same-day consultation request in general practice (the ESTEEM study)"	To assess the different costs and effects of alternative management systems for patients requesting same-day appointments in general practices, from the perspective of the healthcare system.	A cluster-randomised control trial (RCT) and cost-consequence analysis (CCA) of three different triage systems for managing same-day consultations in primary care: (1) GP-led triage, (2) nurse-led triage, and (3) the usual consultation system (standard of care)	GP triage was associated with a 33% increase in the mean number of contacts per person over 28 days compared with standard of care, and nurse triage with a 48% increase. Although triage interventions were associated with increased contacts, estimated costs were similar between all 3 groups.	https://www.sciencedirect.com/science/article/pii/S0140673614610588
"CCA to examine the effects of a print-based intervention on the physical activity of UK cancer survivors"	Study looking at the effectiveness of a print-based intervention supported by internet tools at improving physical activity in cancer survivors compared with a standard letter recommendation.	The effectiveness of the intervention at improving physical activity, self-efficacy and HRQoL was evaluated at 12 weeks and 24 weeks in both treatment and control groups.	A total of 6.29 cancer survivors needed to receive the intervention for one cancer survivor to improve their physical activity over a standard letter recommendation. The intervention's delivery cost was £8.19 per person.	https://www.sciencedirect.com/science/article/pii/S0033506193011143
"The role of cost-consequence analysis in healthcare-decision making"	This study provides a comprehensive discussion of the advantages and disadvantages of CCA for informing healthcare decision making.	N/A- Reference material	N/A- Reference material	https://link.springer.com/article/10.2165/00019053-199813030-00002

Return on Investment (ROI):

ROIs were discussed previously in Stage 1 of these reference guides, with an example and worksheets provided. If you used ROI in Stage 1, these additional examples show how ROI has been applied in practice, helping you connect your early proposal-stage work with more advanced HEA approaches.

Title of Example	Setting/ Intervention	Method/ Perspective	Key findings	Reference link
"Cardiovascular disease prevention"	A return on investment tool that synthesizes evidence on the effectiveness and associated costs for interventions aimed at preventing cardiovascular disease (CVD) in individuals with associated risk factors	The tool allows users to answer the following questions: • What happens when I improve detection or management of key CVD risk factors? • What happens when I improve usage of the key interventions for people at risk of CVD?	N/A- Reference material	https://www.gov.uk/government/publications/cardiovascular-disease-prevention-cost-effective-commissioning

Title of Example	Setting/ Intervention	Method/ Perspective	Key findings	Reference link
"A Return on Investment tool: Colorectal cancer"	A tool to help local commissioners understand the economic case for early diagnosis of bowel cancer, colon cancer, and rectal cancer.	The ROI tool brings together CCG data with research about the costs and long-term benefits of early diagnosis of colorectal cancer.	N/A- Reference material	https://www.gov.uk/government/publications/return-on-investment-tool-colorectal-cancer
"End of life care economic tool"	An economic analysis tool to help clinical commission groups (CCGs) make decisions around commissioning palliative and end of life care.	The tool allows you to see evidence on the cost and impact of interventions and services for patients at the end of their lives, explore the cost implications and potential trade-offs of moving end of life care away from acute care to primary, community or social care settings, and estimate the ROI and impact of interventions in a local area, for specific interventions which have been effective elsewhere.	N/A- Reference material	https://www.gov.uk/government/publications/end-of-life-care-economic-tool
"The NHS Diabetes Prevention Programme Return on Investment Tool"	The Healthier You NHS Diabetes Prevention Programme (NHS DPP) was a joint endeavour to deliver an evidence-based intensive lifestyle intervention to individuals at high risk of type 2 diabetes due to diabetic hyperglycaemia.	The NHS DPP Return on Investment Tool aims to help users to understand the costs, savings, and health benefits likely to be produced by implementing the DPP in a local authority or clinical commissioning group.	N/A- Reference material	https://dpp-roi-tool.shef.ac.uk/

Burden of Disease (BOD):

A burden of disease study aims to quantify the impact of diseases, injuries, and risk factors on a population's health by measuring morbidity, mortality, and disability. This helps inform public health priorities, policy decisions, and resource allocation.

Title of Example	Setting/ Intervention	Method/ Perspective	Key findings	Reference link
"BOD Study for England"	The study assesses the scale of health lost from diseases and injuries in 2013 and estimates of the attributable impact of risk factors.	It reports health lost by UK country, 9 English regions, age, gender and deprivation. It estimates of the main causes of death and disability, attributable risk factors, and the effect of deprivation modelled for England its regions.	The study shows the main causes of health loss in a country or area, causes which are getting worse or are improving, compares causes between different areas and countries, assesses where the greatest potential is to reduce burden, and assesses the effect of deprivation and other risk factors on disease patterns.	https://www.gov.uk/government/publications/burden-of-disease-study-for-england

Econometric Analyses:

Econometric analyses can be applied to a wide range of public health issues. There are a myriad of examples in the literature of econometric analysis performed related to health or healthcare. A few examples of the types of analysis you could pursue are listed below, though this list is by no means exhaustive:

Example: Health Technology

Econometric methods use statistical techniques to estimate the real-world impact of policies or interventions when randomised trials aren't possible.

Econometric analysis can be instrumental in evaluating the impact and cost-effectiveness of a specific health technology innovation. For example, you could consider the rollout of **digital remote monitoring systems** for patients with chronic conditions such as heart failure or diabetes within the NHS. Suppose a new remote monitoring device is introduced that allows patients to regularly upload their health metrics (e.g., blood pressure, glucose levels, weight) to an NHS platform, where clinicians can intervene if needed.

- An econometric analysis might use **a difference-in-differences (DiD)** approach to assess the impact of this innovation by comparing outcomes (such as hospital readmission rates or A&E visits) between patients in NHS trusts that adopted the technology early versus those that did not, before and after implementation.
- By controlling for patient characteristics and regional health trends, this analysis could estimate the causal effect of the remote monitoring system. The results might show, for example, that patients with access to the technology had a statistically significant reduction in emergency admissions, suggesting both clinical benefit and potential cost savings.
- Further **cost-benefit analysis** or **instrumental variable techniques** could be applied to account for selection bias (e.g., if sicker patients are more likely to be offered the technology), strengthening the evidence base for wider NHS adoption.

To complement the difference-in-differences analysis, **a cost-benefit analysis** could quantify the net economic impact by comparing the costs of implementing the remote monitoring system (e.g., devices, software, clinician time) against the savings from reduced hospital admissions and improved patient outcomes.

Additionally, if there's concern about selection bias (e.g., more tech-savvy or engaged patients being more likely to use the system), **an instrumental variable (IV) approach** could be employed—using an instrument like the distance to a digitally equipped NHS trust or the timing of regional rollout—to isolate the causal effect of the technology on health outcomes.

Example: Behavioural health (sugar tax, smoking bans, alcohol)

Researchers could evaluate the impact of the sugar tax (Soft Drinks Industry Levy) on obesity rates by comparing trends in body mass index (BMI) before and after the tax, using difference-in-differences methods across different regions.

Another example is examining the effect of smoking bans or minimum unit pricing of alcohol on hospital admissions for related conditions.

Example: Socioeconomic status

Researchers could also explore the influence of socioeconomic status on access to NHS services or mental health outcomes, using panel data from longitudinal surveys such as the UK Household Longitudinal Study (Understanding Society). These studies help inform whether current health policies reduce inequalities or if further interventions are necessary.

Benefits of performing econometric analysis:

By performing analysis for a public health programme, researchers or external organisations gain access to rigorous, unbiased evaluation of policy or intervention effectiveness. This analysis can help quantify the causal impact of programmes—such as vaccination campaigns, smoking cessation initiatives, or mental health interventions—by using robust statistical techniques tailored to real-world data.

This provides evidence not only on whether a programme works, but **how well, for whom, and at what cost,** supporting data-driven decisions for scaling, funding, or redesigning public health strategies.

By performing econometric analysis on a health technology innovation, such as a new digital triage tool or remote patient monitoring system, researchers gain robust, data-driven insights into its real-world effectiveness and value. You can assess the causal impact of the technology on key outcomes—like hospital admission rates, waiting times, or patient health—while controlling for confounding factors.
This helps determine not just whether the technology works, but how much **it improves outcomes, for which populations, and whether it's cost-effective**, guiding evidence-based decisions for wider adoption or further investment.

Summary

Stage 3 illustrates how different types of HEAs have been applied in practice, from cost-utility and cost-effectiveness studies to budget impact and burden of disease analyses. These examples are designed to inspire and guide you, not to serve as templates to copy directly. By reviewing them, you can see how the concepts introduced in Stage 1 (ROI) and scoped in Stage 2 (HEA options) translate into real-world evaluations.

Together, the three stages of this toolkit provide a structured pathway — from proposal, to scoping, to implementation — to help you embed economic thinking in your research and strengthen your case for funding and impact.

Next Steps: How to get in touch for Health Economics Support

If you're exploring the impact of a healthcare intervention and would like to understand its economic value—whether through a basic return on investment (ROI) estimate or a more formal health economic analysis—we can help.

We specialise in supporting academic researchers by using high-quality NHS secondary care data, accessed within the secure data environment (SDE) for the East of England, to deliver meaningful and rigorous evaluations. You don't need to have a background in health economics—we're here to translate your research goals into economic questions and guide you through the process.

Avenues of Support

We offer a flexible range of support, depending on where you are in your research and what kind of economic input you need.

1 If you're applying for a funding call

and need **a quick, high-level return on investment (ROI) estimate** to include in your application or case for support, we can typically turn this around from **4-6 weeks**, depending on the complexity of the intervention and the data available.

- This kind of estimate is often based on published evidence, simple modelling assumptions, and local data where possible, providing enough rigour to strengthen a funding bid without requiring a full economic analysis.

2 For more in-depth support

such as **scoping or delivering a formal health economic assessment**, we can offer a range of tailored options.

- This might include identifying appropriate comparators, mapping out patient pathways using local data, and advising on appropriate modelling approaches (e.g. cost-effectiveness, budget impact).
- These projects are more bespoke and often evolve alongside your research, so timelines can vary. Typically from **6–8 weeks for a scoping piece**, to **4–6 months or more** for a full health economic evaluation depending on data access, methods, and study complexity.
- We're happy to collaborate on funding proposals, contribute to research design, or be involved as co-applicants or project partners where appropriate.

Please get in touch to discuss your needs. We're happy to provide advice on the most appropriate level of input and offer a clearer estimate once we understand your project in more detail.

We can be best reached at:
healthinformatics@healthinnovationeast.co.uk

Glossary

Incremental cost effectiveness ratio (ICER): ICERs help to determine whether the additional benefit of a treatment is worth the additional costs compared to an alternative option. The ICER represents the additional cost for each additional unit of effectiveness (e.g., an additional QALY) gained from one intervention over another.

- A lower ICER suggests that a treatment is more cost-effective, meaning it provides more benefit per unit of cost.
- A higher ICER suggests that the treatment is more expensive for the additional benefit it provides.

$$ICER = \frac{Cost\ of\ Intervention\ A - Cost\ of\ Intervention\ B}{Effectiveness\ of\ Intervention\ A - Effectiveness\ of\ Intervention\ B}$$

Example:

Imagine two treatments for a disease:
Treatment A costs $50,000 and provides 2.5 QALYs.
Treatment B costs $30,000 and provides 2 QALYs.

Using the ICER formula:

$$ICER = \frac{50{,}000-30{,}000}{2.5-2} = \frac{20{,}000}{0.5} = 40{,}000$$

Meaning: the ICER is GBP 40,000 per additional QALY gained by using Treatment A instead of Treatment B.

Quality adjusted life year (QALY): attempts to combine the effects of an intervention on both mortality (how long people live for) and morbidity (how well people are). One QALY represents one year of life in full health. It helps to compare options by considering both survival and quality of life, and to prioritize treatments or public health programmes based on the greatest health gain per dollar spent. To calculate QALYs, you will need to measure life years and HRQoL.

Example: If a new treatment gives a patient 5 extra years of life at a quality of 0.8 (80% of full health):

$$QALYs = 5 \times 0.8 = 4.0$$

Disability adjusted life year (DALY): a measure used in public health to assess the overall burden of disease. A DALY represents one lost year of "healthy" life due to either premature death or living with illness or disability. DALYs are used in public health prioritization, to compare the burden of different diseases and conditions, while helping governments and NGOs decide how to allocate health resources effectively.

Example: If someone dies at age 40 and the life expectancy is 80, that's 40 years of life lost (YLL). If they lived for 10 further years with a disability that has a weight of 0.5, that's 5 years lived with a disability (YLD). Therefore, **total DALYs would be 40 + 5 = 45 DALYs lost.**

Life years are estimates of how far an intervention extends life.

Health related quality of life (HRQoL) reflects an individual's perceptions of their own health, shown as specific health states or dimensions. There are many ways to measure HRQoL, the most widely used are generic measures such as the EQ-5D and the SF-36.

EQ-5D: a patient questionnaire developed by EuroQol for use in clinical and economic appraisal and population health surveys representing a measure for health-related quality of life[1]. It consists of two parts: a descriptive system and a visual analogue scale (VAS).

- The descriptive system comprises five dimensions: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Each dimension has 5 levels: no problems, slight problems, moderate problems, severe problems, and extreme problems.
- The EQ VAS (visual analogue scale) records the patient's self-rated health on a vertical visual analogue scale where the endpoints are labelled 'The best health you can imagine' and 'The worst health you can imagine'. The VAS can be used as a quantitative measure of health outcome that reflects the patient's own judgement.

SF-36: a short form health survey comprised of 36 items, developed by RAND[2].

- It assesses 8 health concepts: limitations in physical activities because of health problems, limitations in social activities because of physical or emotional problems, limitations in usual role activities because of physical health problems, bodily pain; general mental health (psychological distress and well-being); limitations in usual role activities because of emotional problems; vitality (energy and fatigue); and general health perceptions.
- It asks for participants to reply to questions according to how they have felt over the previous week using Likert-type scales.

1 EQ-5D-5L - EuroQol
2 36-Item Short Form Survey (SF-36) | RAND

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