

CHEERS 2022 Checklist

Title			
Title	1	Identify the study as an economic evaluation and specify the interventions being compared.	Title, Page 1, line 1 - 3. The study is identified as decision analytical modelling study
Abstract			
Abstract	2	Provide a structured summary that highlights context, key methods, results, and alternative analyses.	Abstract, Page 3, line 39 - 61. The abstract is structured and includes objective, design, setting, outcome measures, results and conclusions
Introduction			
Background and objectives	3	Give the context for the study, the study question, and its practical relevance for decision making in policy or practice.	Introduction, Page 5, line 83 - 113.
Methods			
Health economic analysis plan	4	Indicate whether a health economic analysis plan was developed and where available.	n.a.
Study population	5	Describe characteristics of the study population (such as age range, demographics, socioeconomic, or clinical characteristics).	Methods, Selected elective procedures paragraph, Page 7 - 8, line 126-141.
Setting and location	6	Provide relevant contextual information that may influence findings.	Methods, Selected elective procedures and empirical example paragraph, Page 7 - 8, line 126 - 141 and page 11, line 216 - 223.
Comparators	7	Describe the interventions or strategies being compared and why chosen.	Methods, Selected elective procedures paragraph, Page 7 - 8, line 126-141.
Perspective	8	State the perspective(s) adopted by the study and why chosen.	Methods, Costs paragraph, Page 9 - 10, line 175 - 186.

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Time horizon	9	State the time horizon for the study and why appropriate.	Methods, Costs paragraph, Page 9 - 10, line 175 - 186.
Discount rate	10	Report the discount rate(s) and reason chosen.	n.a
Selection of outcomes	11	Describe what outcomes were used as the measure(s) of benefit(s) and harm(s).	Methods, Quality of life, costs and analysis paragraphs, Page 9 - 11, line 160 - 186 and line 194 - 215.
Measurement of outcomes	12	Describe how outcomes used to capture benefit(s) and harm(s) were measured.	Methods, Quality of life, costs and analysis paragraphs, Page 9 - 11, line 160 - 186 and line 194 - 215.
Valuation of outcomes	13	Describe the population and methods used to measure and value outcomes.	Methods, Data acquisition and validation paragraph and appendices, Page 8, line 144 - 158.
Measurement and valuation of resources and costs	14	Describe how costs were valued.	Methods, Costs paragraph, Page 9 - 10, line 175 - 186.
Currency, price date, and conversion	15	Report the dates of the estimated resource quantities and unit costs, plus the currency and year of conversion.	Methods, Costs paragraph and online tool, Page 9 - 12, line 175 - 186 and line 224 - 236.
Rationale and description of model	16	If modelling is used, describe in detail and why used. Report if the model is publicly available and where it can be accessed.	Methods, Entire methods section, Page 7, line 115 - 124.
Analytics and assumptions	17	Describe any methods for analysing or statistically transforming data, any extrapolation methods, and approaches for validating any model used.	Methods, Entire methods section, Page 10 - 11, line 194 - 215.
Characterising heterogeneity	18	Describe any methods used for estimating how the results of the study vary for subgroups.	n.a

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Characterising distributional effects	19	Describe how impacts are distributed across different individuals or adjustments made to reflect priority populations.	n.a
Characterising uncertainty	20	Describe methods to characterise any sources of uncertainty in the analysis.	n.a
Approach to engagement with patients and others affected by the study	21	Describe any approaches to engage patients or service recipients, the general public, communities, or stakeholders (such as clinicians or payers) in the design of the study.	Methods, Patient and Public Involvement, Page 12, line 237 - 238
Results			
Study parameters	22	Report all analytic inputs (such as values, ranges, references) including uncertainty or distributional assumptions.	Results, Entire results section, Page 13 - 16, line 239 - 289
Summary of main results	23	Report the mean values for the main categories of costs and outcomes of interest and summarise them in the most appropriate overall measure.	Results, First 4 paragraphs of the results section, Page 13 - 16, line 239 - 274
Effect of uncertainty	24	Describe how uncertainty about analytic judgments, inputs, or projections affect findings. Report the effect of choice of discount rate and time horizon, if applicable.	n.a
Effect of engagement with patients and others affected by the study	25	Report on any difference patient/service recipient, general public, community, or stakeholder involvement made to the approach or findings of the study	n.a
Discussion			

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Study findings, limitations, generalisability, and current knowledge	26	Report key findings, limitations, ethical or equity considerations not captured, and how these could affect patients, policy, or practice.	Discussion, Entire discussion section, Page 17 - 21, line 290 - 400
Other relevant information Source of funding	27	Describe how the study was funded and any role of the funder in the identification, design, conduct, and reporting of the analysis	Declarations, Role of the funding source statement, Page 24, line 457 - 463
Conflicts of interest	28	Report authors conflicts of interest according to journal or International Committee of Medical Journal Editors requirements.	Declarations, Competing interests statement, Page 23, line 433 - 438

From: Husereau D, Drummond M, Augustovski F, et al. Consolidated Health Economic Evaluation Reporting Standards 2022 (CHEERS 2022) Explanation and Elaboration: A Report of the ISPOR CHEERS II Good Practices Task Force. *Value Health* 2022;25. doi:10.1016/j.jval.2021.10.008

Supplement S2: Search strategy for model data**OR Time / Length of stay after OR**

- Disease
- Surgery type
- Length of stay / hospital stay
- Optional: Netherlands, Europe, UK, Germany

Pubmed:

1. "<Disease>" AND "<Surgery type>" FILTER RCT
2. "<Disease>" AND "<Surgery type>" AND ("length of stay" OR "hospital stay")
3. Patient information folder

Utility scores

- Utility score / EQ5D /Quality of Life
- Disease
- Surgery type
- Conservative treatment / conservative care / watchful waiting
- Optional: Netherlands, Europe, UK, Germany

Pubmed:

"Utility score" OR "EQ5D" OR "Quality of Life" AND

1. "<disease name>" OR "<surgery type>"
2. "Conservative treatment" OR "Conservative care" OR "Watchful waiting"

Costing data

- Costs / Resource use / Resources / Resource utilisation / Healthcare utilization
- Disease
- Surgery type
- Conservative treatment / conservative care/watchful waiting
- Optional: Netherlands, Europe, UK, Germany

Pubmed:

"Costs" OR "Resource use" OR "Resources" OR "Resource utilization" OR "Healthcare utilization" AND

1. "<disease name>" OR "<surgery type>"
2. "Conservative treatment" OR "Conservative care" OR "Watchful waiting"

Supplement S3. Impact of surgical delay for the Netherlands

Surgical procedure	Average number of surgeries per week	Costs associated with delay					Net monetary loss per week				
		% of surgeries delayed					% of surgeries delayed				
		10%	20%	30%	40%	50%	10%	20%	30%	40%	50%
Inguinal hernia repair	535.9	€0	€0	€0	€0	€0	€-2061	€-4122	€-6183	€-8244	€-10305
Laparoscopic sleeve gastrectomy	1.5	€5	€9	€14	€18	€23	€-13	€-25	€-38	€-51	€-63
laparoscopic Roux-and-Y gastric bypass	2.7	€8	€17	€25	€34	€42	€-21	€-42	€-63	€-84	€-105
Partial colectomy – Non-acute Crohn’s disease	25.5	43	€86	€128	€171	€214	€-239	€-478	€-718	€-957	€-1196
Partial colectomy – Ulcerative colitis	9.8	€16	€31	€47	€62	€78	€-61	€-121	€-182	€-243	€-303
Sphincteroplasty	0.8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total hip replacement	574.3	€553	€1106	€1660	€2213	€2766	€-6539	€-13078	€-19617	€-26156	€-32695
Total knee replacement	552.5	€532	€1065	€1597	€2129	€2661	€-5207	€-10415	€-15622	€-20830	€-26037
Total shoulder replacement	56.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Arthroscopic partial meniscectomy	406.8	€-65	€-131	€-196	€-262	€-327	€-731	€-1462	€-2193	€-2923	€-3654
Septoplasty	181.2	€-14	€-27	€-41	€-55	€-69	€-404	€-809	€-1213	€-1618	€-2022
Male sling procedure	2.6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Tension-free vaginal tape procedure	66.5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total per week*	2290	€1,077	€2,155	€3,232	€4,310	€5,388	-€15,764	-€31,529	-€47,293	-€63,058	-€78,823

*only including procedures with available cost and NML data
n.a. not available, NML: net monetary loss

Supplement S4. Waiting lists and net monetary losses of a large regional hospital in The Netherlands on 30 June 2020, 2019 and 2018.

Surgical procedure	2018				2019				2020			
	Patients waiting for surgery	Waiting time	Costs associated with delay	Net monetary loss	Patients waiting for surgery	Waiting time	Costs associated with delay	Net monetary loss	Patients waiting for surgery	Waiting time	Costs associated with delay	Net monetary loss
Inguinal hernia repair	25	4	€ 0	-€ 3,441	40	4	€ 0	-€ 6,851	36	12	€ 0	-€ 16,397
Laparoscopic sleeve gastrectomy	11	6	€ 1,943	-€ 5,316	3	5	€ 491	-€ 1,342	19	10	€ 5,682	-€ 15,543
laparoscopic Roux-and-Y gastric bypass	13	5	€ 2,046	-€ 5,095	7	6	€ 1,262	-€ 3,143	30	12	€ 10,798	-€ 26,890
Partial colectomy – Non-acute Crohn’s disease	0	1	€ 0	€ 0	0	3	€ 0	€ 0	0	6	€ 0	€ 0
Partial colectomy – Ulcerative colitis	3	2	€ 100	-€ 387	1	2	€ 36	-€ 140	1	2	€ 34	-€ 131
Sphincteroplasty	0	3	n.a.	n.a.	1	6	n.a.	n.a.	1	0	n.a.	n.a.
Total hip replacement	57	7	€ 4,153	-€ 47,285	66	9	€ 6,016	-€ 68,489	202	17	€ 33,501	-€ 381,404
Total knee replacement	71	8	€ 5,836	-€ 55,216	71	11	€ 7,605	-€ 71,956	193	21	€ 39,770	-€ 376,299
Total shoulder replacement	4	6	n.a.	n.a.	3	8	n.a.	n.a.	11	14	n.a.	n.a.
Arthroscopic partial meniscectomy	17	4	-€ 112	-€ 1,227	19	5	-€ 139	-€ 1,527	15	13	-€ 317	-€ 3,475
Septoplasty	40	7	-€ 283	-€ 6,258	72	12	-€ 870	-€ 19,217	103	23	-€ 2,417	-€ 53,365
Male sling procedure	12	7	n.a.	n.a.	6	13	n.a.	n.a.	11	14	n.a.	n.a.
Tension-free vaginal tape procedure	4	14	n.a.	n.a.	2	32	n.a.	n.a.	2	17	n.a.	n.a.
Total	257		€ 13,682*	-€ 124,224*	291		€ 14,399*	-€ 172,664*	624		€ 87,049*	-€ 873,504*

* *only including procedures with available cost and NML data
n.a. not available, NML: net monetary loss