Health economic aspects

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Rationale and aims of health economic sub-study

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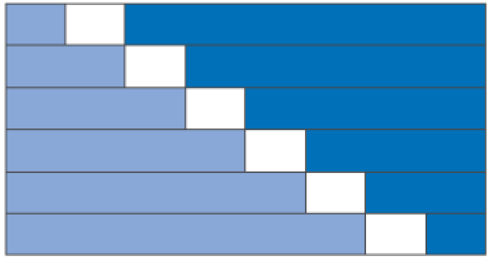
- The Swiss healthcare system is under financial pressure
  - Imperative to use the available healthcare budgets efficiently
  - Necessitates assessment of costs and of the cost-benefit relationship from the perspective of the Swiss healthcare system
- Hospitals, in particular, are under financial pressure
  - Necessary to understand the financial implications of quality improvement measures for hospital budgets
  - Demonstration of positive financial impact will increase and sustain the support for CIBOSurg
  - It will justify and facilitate wider dissemination, ideally to the point of national-level rollout

Specific aims

- ‘Classic’ approach
  - Would include a cost and cost-effectiveness analysis, the latter assessing cost per life year gained or cost per quality-adjusted life-year gained
  - By definition not feasible in the CIBOSurg project, in the absence of longer-term follow-up
- ‘Tailored-to-purpose’ approach and objectives
  - Estimation of CIBOSurg implementation and maintenance costs
  - Assess impact on medical resource use: to assess the impact on key within-hospital medical resource use parameters (e.g. length of hospital stay by type of ward, hospital re-admissions)
  - Assess net cost impact (‘return on investment’) from the healthcare system and hospital perspectives
    - The hospital perspective implies to compare the real costs of the hospitals to provide the services (surgeries and surgical hospital stays) with the reimbursements they receive
  - Contrast the net cost impact with effectiveness outcomes (cost-consequence analysis)

Methodological approach

- Comparison of the situation in the before-period (prior to implementation) and the after-implementation period



- Statistical models will consider the clustered and stepped-wedge nature of the quality-improvement project
  - Consistent with the approaches to clinical analysis
  - The distributional characteristics of health economic outcome variables will be specifically considered
- Time horizons: initial hospital stay, 90 days
- Estimated per-patient costs of implementing and maintaining CIBOSurg will be factored in
- Tentative extrapolation to the hospital and national levels will be performed
- Covered by CIBOSurg ethics and contracts with centres

Health economic data collection elements

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- Excerpts from the CIBOSurg project clinical database
- Cost- and reimbursement data from hospital administrations
  - Will be provided by all 9 participating hospitals
  - Test data and/or before-phase data have been received from 7 of 9 hospitals
- Implementation and maintenance cost data collected at Uni Hospital Basel and Cantonal Hospital Lucerne, CHUV

Cost and resource data on surgeries, surgical inpatients stays

- Information on patient numbers

CIBOSurg implementation and maintenance costs

Cost results considering per-patient implementation and maintenance costs

Or analyses provided by clinical team
(CAVE: analysis sets may differ)

Clinical outcomes for contrasting with cost results (cost-consequence analysis)

Cost collection tool - example USB

variable #	Variable	Label	Values accepted/Format	Unit
0	Pseudo patient identifier	pseudo_pid	any positive integer	*NA*
1	Start **date** of initial inpatient admission	adm1_stdat	DD.MM.YYYY	*NA*
2	End **date** of initial inpatient admission	adm1_endat	DD.MM.YYYY	*NA*
3	Number of **days** in general ward during initial admission	adm1_gen	0 or any positive integer	day
4	Number of **days** in intermediate ***care*** during initial admission	adm1_int	0 or any positive integer	day
5	Number of **days** in ICU ward during initial admission	adm1_icu	0 or any positive integer	day
6	Start date of **2nd inpatient admission**	adm2_stdat	DD.MM.YYYY	*NA*
7	End date of **2nd inpatient admission**	adm2_endat	DD.MM.YYYY	*NA*
8	Number of days in general ward during **2nd admission**	adm2_gen	0 or any positive integer	day
9	Number of days in intermediate *care* during **2nd admission**	adm2_int	0 or any positive integer	day
10	Number of days in ICU ward during **2nd admission**	adm2_icu	0 or any positive integer	day
16	**Swiss DRG code** for initial inpatient admission	adm1_drg	"XYYX"	*NA*
17	**Case weight** for initial inpatient admission	adm1_cw	"xx.xxx"	*NA*
18	Swiss DRG code for **admission 2**	adm2_drg	"XYYX"	*NA*
19	Case weight for **admission 2**	adm2_cw	"xx.xxx"	*NA*
22	Hospital **real costs** for initial inpatient admission	cost_adm1_real	0 or any positive number	CHF
23	Hospital **reimbursements** for initial inpatient admission	cost_adm1_reim	0 or any positive number	CHF
24	Hospital real costs for **2nd inpatient admission**	cost_adm2_real	0 or any positive number	CHF
25	Hospital reimbursements for **2nd inpatient admission**	cost_adm2_reim	0 or any positive number	CHF
28	**Start date** for post-surgical **outpatient** case 1	out1_stdat	DD.MM.YYYY	
29	**End date** for post-surgical **outpatient** case 1	out1_endat	DD.MM.YYYY	
30	**Hospital real costs** for post-surgical **outpatient** case 1	cost_out1_real	0 or any positive number	CHF
31	**Hospital reimbursements** for post-surgical **outpatient** case 1	cost_out1_reim	0 or any positive number	CHF
32	Start date for post-surgical outpatient **case 2**	out2_stdat	DD.MM.YYYY	
33	End date for post-surgical outpatient **case 2**	out2_endat	DD.MM.YYYY	
34	Hospital real costs for post-surgical outpatient **case 2**	cost_out2_real	0 or any positive number	CHF
35	Hospital reimbursements for post-surgical outpatient **case 2**	cost_out2_reim	0 or any positive number	CHF

- Real costs and reimbursements
- Initial hospitalization and re-hospitalisations
- Outpatient episodes until end of follow-up also of interest
- Methods issues:
  - Related versus unrelated care episodes
  - Care episodes, cases may overlap end of follow-up period

Implementation costs – time-driven activity-based costing

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ORIGINAL PAPER

Check for updates

An 8-step framework for implementing time-driven activity-based costing in healthcare studies

Ana Paula Beck da Silva Etges[1,2,3] · Luciane Nascimento Cruz[1,4] · Regina Kuhmmer Notti[4] · Jeruza Lavanholi Neyeloff[1,3] · Rosane Paixão Schlatter[1,3] · Claudia Caceres Astigarraga[3,4,6] · Maicon Falavigna[4] · Carisi Anne Polanczyk[1,3,4,5,7]

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Process identification

Process Mapping: Activities

Resource identification

Time spent per unit activity

Total time spent on activity

Price per unit time

Total cost

- Cover CIBOSurg Core Team, Implementation Teams
- Cover staff costs (including staff attending trainings), material and service costs
- Preparation, communication, training,other implementation activities, documentation
- Information collected by USB, LUKS, CHUV

Next steps

- Finalize Health Economic Analysis Plan
- Pre-program analyses based on partial data
- Pursue, support, complete collection of cost data from hospital administrations and implementation cost data > please continue to support us here, so that after the closure of the clinical study database, the economic analyses can be pursued and completed in a timely manner
- Final analyses, scientific report and health-economic publication(s)
- Dissemination within the CIBOSurg group and beyond