

COST OF ACUTE CORONARY SYNDROME IN SWITZERLAND



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Objectives

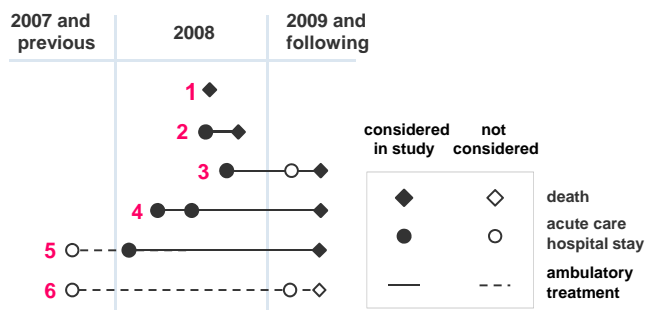
Acute coronary syndrome (ACS) is the most important clinical consequence of coronary artery disease and a leading cause of death worldwide. This study aims to assess the costs of ACS from a social and health insurance perspective evaluating direct costs, production losses and intangible costs in terms of quality adjusted life years (QALYs) lost.

Methods

A bottom-up incidence approach was used. ACS-patients with one or more ACS events were extracted from a national hospital database [1] and from mortality statistics [2] (figure 1). Remaining life years of surviving patients were modelled on age, gender and life expectancy statistics.

Inpatient costs include acute care and rehabilitation in 2008. Outpatient costs include costs for ambulance, visits to GP and cardiologist, outpatient diagnostics, medication and rehabilitation. Production losses calculated according to human capital approach, include absenteeism, permanent disability and premature death. Intangible costs were calculated based on literature data [3]. Cost data are derived from official price lists, literature and experts. Validation of clinical data was conducted using the AMIS-PLUS registry.

Figure 1: ACS events and consequent treatments considered our study



All inpatient treatments in 2008 are considered as well as outpatient treatments from ACS in 2008 until death. Note that the study does not consider inpatient treatments provided in 2009 and following years (example 3) nor possible ambulatory treatment before a 1st ACS event in 2008 (example 5).

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Results

14'955 patients experienced an ACS event in 2008; 2'752 died as a consequence (table 1). ACS lead to 19'064 hospital stays with an average length of stay in acute care of 8.9 days per patient. Total direct costs amounted to 690 Mio Swiss Francs (CHF) for the society (table 2) and 523 Mio CHF for health insurers. 44% belong to inpatient and 56% to outpatient services. Production losses were 519 Mio. CHF and intangible costs resulted in 37'457 QALYs lost. Results appear robust in sensitivity analysis.

Table 1: Number of patients with ACS in 2008

13'231	patients in hospital with at least one ACS [1]
-1'028	of which died in hospital [1]
2'752	fatalities due to ACS [2]
14'955	patients with at least one ACS event in 2008

sequence of stay	UAP	NSTEMI	STEMI	rehab	total
1	2'884	4'818	5'529	0	13'231
2	341	1'067	1'427	1'459	4'294
3	60	213	330	605	1'208
4-9	28	59	59	185	331
total	3'313	6'157	7'345	2'249	19'064

Many patients experience multiple inpatient stays in course of ACS treatment (e.g. transfer to other hospital or rehabilitation clinic).

Table 2: Total costs of ACS in 2008

direct medical costs (Mio. CHF)	
9.34	1.4 before hospitalisation
270.34	39.2 acute care hospital
30.29	4.4 inpatient rehabilitation
41.48	6.0 outpatient 1st year
26.11	3.8 outpatient 2nd year
312.92	45.3 outpatient from 3d year on
690.48	100.0 total direct costs
production losses (Mio. CHF)	
518.98	100.0 total production losses
intangible costs (QALYs)	
37'457	100.0 total QALY loss

Conclusions

ACS causes considerable costs in terms of direct medical expenditures, lost production and premature death, even without taking into account costs for its chronic consequences such as congestive heart failure. Distinction between cost per patient and cost per hospital stay is crucial for cost-effectiveness analysis.

- [1] FSO, *Medical Statistics of Hospitals (detailed data)*. 2010, Federal Statistical Office: Neuchâtel.
- [2] FSO, *Cause of Death Statistics (detailed data)*. 2010, Federal Statistical Office: Neuchâtel.
- [3] Ara, R. and J.E. Brazier, *Populating an Economic Model with Health State Utility Values: Moving toward Better Practice*. Value in Health, 2010. 13(5): p. 509-518.