

ORAL PRESENTATION

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Ongoing health care expenditure in survivors of sepsis in the intensive care unit

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Introduction

Direct costs associated with an intensive care unit (ICU) admission for sepsis are approximately €30,000 [1]. However, total cost for society is likely to be much higher, because survivors of sepsis may suffer from long-term sequelae that generate ongoing need for health care resources [2].

Objectives

To estimate the difference in annual health care expenditure before and after an ICU admission for sepsis.

Methods

Data were derived from a prospective cohort study in two tertiary ICUs in the Netherlands in 2011 and 2012. Patients were included if they had survived one year following a sepsis episode in the ICU. Health care consumption and reimbursed costs were derived from a database of a Dutch health insurance company. The medical ethics committee of the UMC Utrecht approved the study and waived the need for informed consent (IRB-number 14-095).

Results

Of the 396 eligible patients, for 21 (5.3%) there was no information on costs available in the study period, leaving 375 subjects for analysis. An overview of reimbursed costs is given in table 1. For each stage of sepsis severity, total costs were significantly higher in the year following a sepsis admission compared to the year before ($p < 0.001$ for all stages, figure 1). This overall increase in costs was due to the increased use of long-term (home) care ($p < 0.001$ for all stages), and consultations of the general

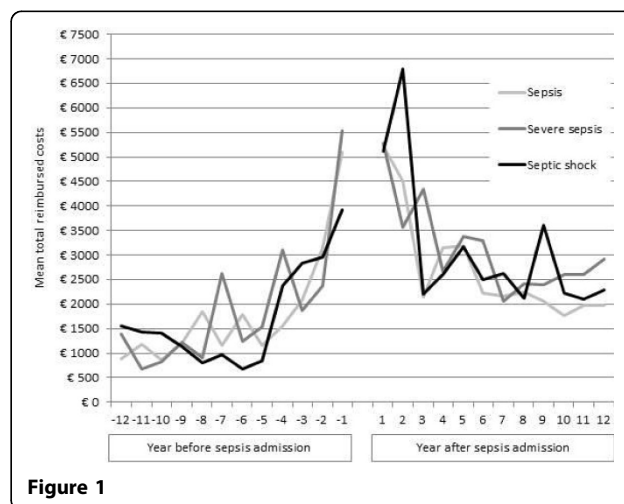


Figure 1

practitioner, paramedic, or mental health professional ($p < 0.001$ for sepsis, $p = 0.008$ for severe sepsis, and $p < 0.001$ for septic shock). In the year after the sepsis episode more patients (46%) resided in a long-term care facility or received home care than before the event (10%). Likewise, the proportion of patients receiving paramedical and mental health care increased from respectively 26% to 34% and from 3% to 9%. Hospital costs following the sepsis episode were significantly higher for patients who had septic shock during their ICU stay ($p = 0.038$), but not for patients who had sepsis ($p = 0.436$) or severe sepsis ($p = 0.292$). The opposite was seen for drug use, with a significant increase in costs for patients who had sepsis ($p = 0.002$) or severe sepsis ($p = 0.021$), and a non-significant increase for patients who had shock ($p = 0.167$). We observed no differences in total health care expenditure by disease severity ($p = 0.323$).

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Table 1. Health care reimbursement before, during, and after ICU admission for sepsis

Severity of disease *	Costs per category	Year before sepsis admission **	Hospital admission ***	Year after sepsis admission	Annual change
Sepsis	Total	11,318 (2,282 – 29,191)	3,924 (228 – 9,109)	17,316 (5,522 – 48,251)	2,937 (-4,490 – 26,205)†
	Hospital care	7,293 (1,020 – 18,560)	3,661 (208 – 9,065)	7,193 (1,680 – 22,299)	19 (-7,101 – 10,884)
	Long-term (home) care	0 (0 – 0)	NA	0 (0 – 6,745)	0 (0 – 4,015)†
	Consultations ****	91 (36 – 276)	NA	213 (58 – 1,064)	48 (-22 – 482)†
	Pharmacy	722 (199 – 2,611)	NA	1,148 (412 – 2,758)	99 (-182 – 802)†
Severe sepsis	Total	9,805 (1,837 – 28,273)	4,878 (367 – 9,159)	21,539 (6,971 – 50,380)	5,023 (-5,259 – 26,339)†
	Hospital care	7,077 (814 – 22,107)	4,407 (89 – 9,155)	8,637 (1,392 – 24,051)	139 (-6,768 – 14,277)
	Long-term (home) care	0 (0 – 0)	NA	59 (0 – 8,987)	0 (0 – 8,436)†
	Consultations ****	100 (31 – 257)	NA	152 (48 – 635)	22 (-45 – 261)†
	Pharmacy	876 (322 – 1,858)	NA	1,228 (369 – 4,413)	64 (-358 – 1,186)†
Septic shock	Total	7,709 (1,758 – 28,812)	6,187 (2,987 – 13,206)	25,435 (9,943 – 46,466)	9,760 (-1,940 – 33,664)†
	Hospital care	5,623 (563 – 19,213)	6,087 (2,471 – 13,202)	10,882 (2,353 – 29,411)	1,706 (-5,563 – 15,293)†
	Long-term (home) care	0 (0 – 0)	NA	0 (0 – 6,163)	0 (0 – 5,477)†
	Consultations ****	73 (29 – 154)	NA	191 (56 – 833)	67 (-12 – 446)†
	Pharmacy	824 (213 – 1,948)	NA	1,133 (481 – 2,905)	96 (-401 – 1,016)

All costs are presented in Euros as median (25th – 75th percentile). NA: not applicable.
 * Maximum severity of disease during ICU admission.
 ** Due to the system of Dutch health care declarations, some costs listed in this column might be related to the sepsis event itself; this may result in an underestimation of the annual change in costs.
 *** Reimbursed costs only; true hospital expenditures are higher.
 **** Including consultations of the general practitioner, paramedic, and mental health professional.
 † Statistical significant (p-value <0.05), tested with the Wilcoxon signed rank sum test.

Figure 2

Conclusions

After successful initial ICU treatment, survivors of sepsis generate substantial health care costs in the year following admission.

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