

CORRESPONDENCE

Hospital Incidence and Mortality Rates of Sepsis—An Analysis of Hospital Episode (DRG) Statistics in Germany From 2007 to 2013

by Carolin Fleischmann, Daniel O. Thomas-Rueddel, Prof. Dr. rer. nat. Michael Hartmann, PD Dr. med. Christiane S. Hartog, Prof. Dr. med. Tobias Welte, Steffen Heublein, Dr. med. Ulf Dennler, and Prof. Dr. med. Konrad Reinhart in issue 10/2016

Possible Overcoding

As commendable as secondary analyses of routine hospital data are, one should ponder the results in particular if they conflict substantially with everyday experience in the extramural sector—even if these empirical data appear more imprecise. Such a result as presented in the article with an incidence rate of 365 sepsis patients per 100 000 persons in the general population represents just such a discrepancy.

Approximately 1000 patients visit a general medical practice per quarter and around 1700 patients receive ongoing care in the background (since not all patients attend every quarter). As such, a practice should expect 6.2 sepsis cases per year. According to the data published by Fleischmann et al. (1), a quarter of these patients would die—amounting to almost 1.5 patients/year. This does not even include those individuals—an additional 12% according to Fleischmann et al.—who die of the disease after a sometimes rapid fatal course at home or in nursing institutions.

However, according to recollection, the number of patients with sepsis in my own practice—which is in line with data gathered from colleagues—is between five and 10 times lower: between one and three cases in the last 2 years—albeit, as mentioned, only according to recollection. However, a real sepsis is one of those cases that one tends not to forget easily—even if one only learns about it in a medical report from a hospital.

Although Fleischmann et al. point out that some cases could have been coded incorrectly, they attribute no relevance to this. But those responsible for coding, however, have a conflict of interests that I consider to be relevant, given that they are acting on behalf of a hospital geared to revenue. I therefore assume that considerable over-coding takes place. Moreover, the people performing the coding are not deterred in any way from over-coding, since for them this “small sin” is not resulting in any obvious harm.

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REFERENCES

1. Fleischmann C, Thomas-Rueddel DO, Hartmann M, et al.: Hospital incidence and mortality rates of sepsis—an analysis of hospital episode (DRG) statistics in Germany from 2007 to 2013. *Dtsch Arztebl Int* 2016; 113: 159–66.

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Conflict of interests

The author declares that no conflicts of interest exist.

In Reply:

We would like to thank Prof. Dr. Abholz for his comments on our study (1). The question of whether over-coding driven by monetary interests is contributing to a steady rise in sepsis incidence is the subject of international controversy. However, there is clear evidence that, as in other countries, under-coding also occurs in Germany (2).

Germany has particularly strict guidelines on coding practices, which are regularly monitored by the medical service of the health insurance companies in Germany (*Medizinischer Dienst der Krankenversicherung*, MDK). According to these guidelines, only patients for whom a blood culture has been performed can be coded as septic. If positive, two of four SIRS (systemic inflammatory response syndrome) criteria need to be fulfilled: tachycardia, tachypnea, hypo-/hyperthermia, and/or leukocytopenia/leukocytosis. This is more likely to result in under-coding—particularly when compared with the clinical consensus criteria. Moreover, blood cultures are not performed for all patients, and only 50% of those that are performed are positive.

In approximately 12% of SIRS-negative cases, severe sepsis is nonetheless present (3). Considerable under-coding was also demonstrated in a validation study in Jena, Germany, based on an analysis of more than 1000 patient records. This analysis revealed 3.5-fold under-coding compared with the clinical diagnosis in the patient record.

The incidence rate on which the calculation was based relates to the total population, i.e., including individuals that were not treated in an in- or outpatient setting. Thus, a lower incidence in the primary care practice is always possible. Due to the severe deterioration in a patient’s general condition and the onset of organ dysfunction, one can assume that, in the majority of cases, outpatients developing sepsis bypass the primary care practice and present directly to hospital. The other 50% develop sepsis in hospital. Concrete epidemiological studies on the number of sepsis patients in the primary care sector would doubtless be of interest.

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REFERENCES

1. Fleischmann C, Thomas-Rueddel DO, Hartmann M, et al.: Hospital incidence and mortality rates of sepsis—an analysis of hospital episode (DRG) statistics in Germany from 2007 to 2013. *Dtsch Arztebl Int* 2016; 113: 159–66.
2. Henriksen DP, Laursen CB, Jensen TG, Hallas J, Pedersen C, Lassen AT: Incidence rate of community-acquired sepsis among hospitalized acute medical patients—a population-based survey. *Crit Care Med* 2015; 43: 13–21.
3. Kaukonen KM, Bailey M, Pilcher D, Cooper DJ, Bellomo R: Systemic inflammatory response syndrome criteria in defining severe sepsis. *N Engl J Med* 2015; 372: 1629–38.
4. Fleischmann C, Schettler A, Thomas-Rueddel DO, et al.: Validation of icd code abstraction strategies for sepsis in administrative data (abstract). *Infection* 2015; 43 (Suppl 1):1–73.

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Conflict of interest statement

Prof. Reinhart has served as a paid consultant for Adrenomed and has a personal relationship with InflaRx
Carolin Fleischmann states that she has no conflicts of interest.