Lower limb amputations in Sweden: Incidence, time trends, and regional variations

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Aim: To examine the national time trend and regional variation in incidence of lower limb amputations (LLA) in Sweden.

Methods

We identified incident (lifetime first) LLA on people 18 years and older in the national inpatient register between 2008 and 2017. Amputations were categorized into three levels:
1) high proximal (through or above the knee),
2) low proximal (below the knee), and
3) partial foot amputations (excluding toe amputations).

Poisson regression or negative binomial regression models were used to estimate incidence rate ratios (IRRs) and 95% confidence intervals (CI) for annual changes in incidence rate, adjusting for age (10-year groups) and sex. Regional variation in incidence and time trend were also examined. Rates are shown per 100,000 inhabitants.

Figure 1. Time trend for national incidence of LLA

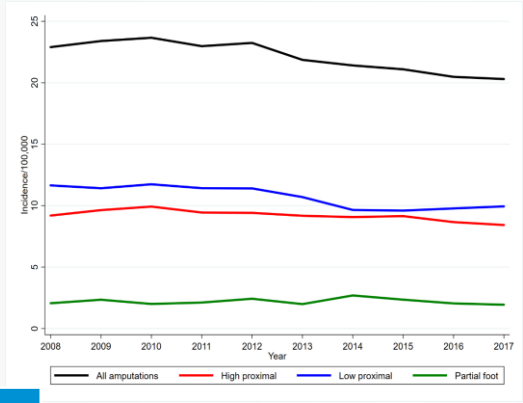


Figure 2. Regional variations in LLA incidence/100,000 inhabitants (unadjusted numbers)

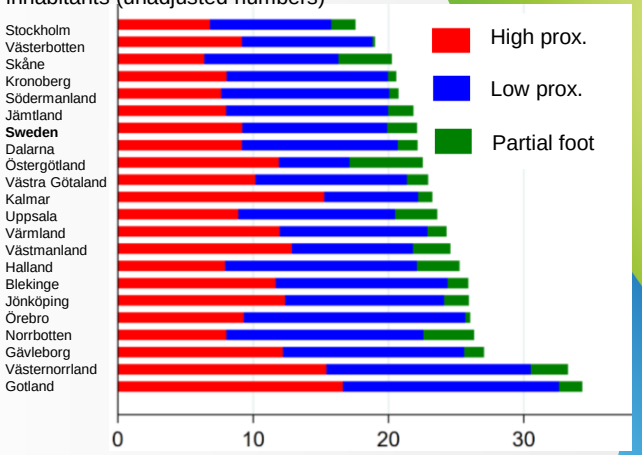


Table 1. National amputation incidence and trends over time adjusted for age (10-year groups) and sex.

Amputation levels	N (%)	Incidence /100,000	Incidence change/year, IRR (95% CI)
All amp.	16,941 (100)	22.1	0.984 (0.973 – 0.994)
High proximal	7,051 (41.6)	9.2	0.985 (0.974 – 0.995)
Low proximal	8,207 (48.4)	10.7	0.973 (0.962 – 0.984)
Partial foot	1,683 (9.9)	2.2	0.994 (0.974 – 1.014)

Results

The LLA incidence (all levels combined) significantly decreased annually by 1.6% during 2008-2017 (Table 1, Fig. 1). This trend seemed to be driven by decreases of high proximal and low proximal amputations. No significant change of partial foot amputations incidence was observed. The decline in incidence of all LLA was not shared by all regions; 9 regions showed declines and 12 regions showed stable trends. There was a substantial regional variation in the choice of amputation level (Fig. 2): a high proximal amputation level was chosen in 31-66%, a low proximal amputation level in 23-63% and a partial foot amputation level was chosen in 1-24% of cases.

Conclusion

Amputation incidence has decreased in Sweden but regional variations in incidence, time trends, and amputation levels call for more research.

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