

Costs of compression therapy in venous leg ulcers in Germany and modelling of the economic effects of regional disparities in health care

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Background

Chronic leg ulcer (fig 1) is defined as a defect in the skin below the level of knee persisting for more than six weeks and shows no tendency to heal after three or more months.¹ The condition affects 1% of the adult population and 3.6% of people older than 65 years.² According to a study carried out in Germany, venous insufficiency was the dominating causative factor in 47.6% of leg ulcers, arterial insufficiency 14.5% and combined arterial and venous 17.6%.³

Medical compression therapy to the lower limb (fig 2-3) is the single most important factor in the conservative treatment of venous leg ulcers and combined etiology where the ulcer is more predominately venous.⁴ Due to the demographic change and the increasing number of vascular diseases with elderly people, an additional increase of chronic leg ulcers is to be expected. The long-term healing prognosis for leg ulcer patients is poor and worst for patients with venous ulcers especially without compression therapy.

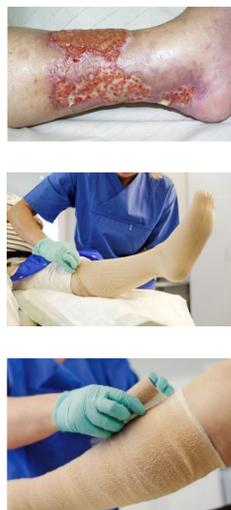


Fig. 1-3: Venous leg ulcer and compression therapy

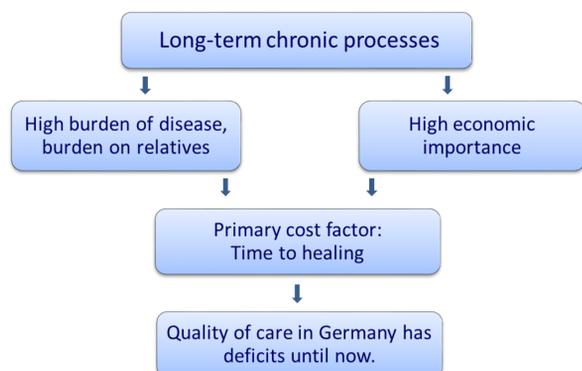


Fig. 4: Consequences of chronic courses of leg ulcers

Despite the proven effectiveness of compression therapy there is still an underuse with compression therapy in venous leg ulcers. According to current data of a statutory health insurance fund in Germany, the proportion of treatment with compression therapy in venous leg ulcers is under 50% (fig 6).⁵ But which regional savings may be achieved by guideline-based implementation with compression therapy? This means, what savings per federal state can be expected by treating all venous leg ulcers with compression therapy?

Methodology I

A discrete event simulation model for conducting health economic evaluations in patients with chronic wounds from the perspective of German statutory health insurances has been developed (fig 5).

The following available data were included in the model:

- healing times of venous leg ulcers to consider the effectiveness of the treatment with vs. without compression therapy⁶
- regional proportions of venous leg ulcer patients treated with compression therapy (data of the Barmer GEK; fig 6)⁵
- data on costs of illness based on the Hamburg wound study⁷
- mortality rates of the German Federal Statistical Office 2014⁸

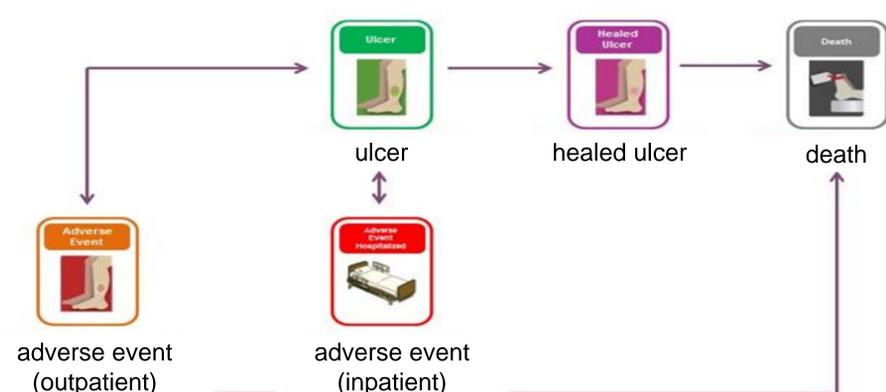


Fig. 5: Discrete Event Simulation Model (SIMUL8 2014 Professionell)

Methodology II

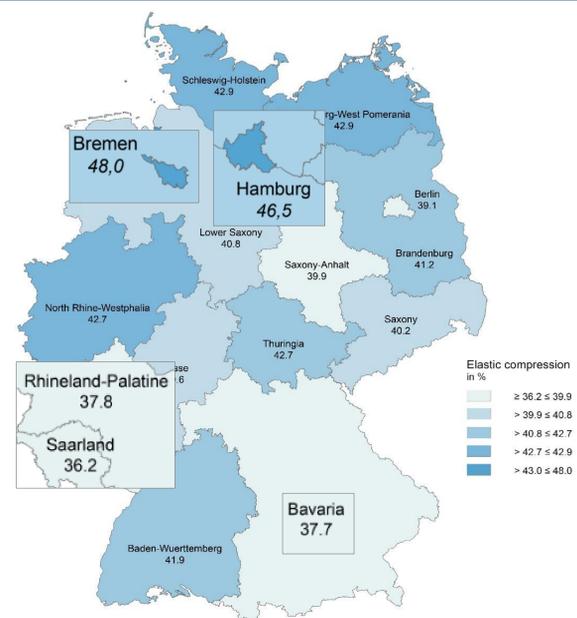


Fig. 6: Use of compression therapy in German regions

Results

The average costs for compression therapy are 230 € per patient and year. Despite the costs, a pilot run of the model analyses indicates that the costs of n = 100 patients per group, who are treated **without** compression therapy, are 40,295 € higher per year than the costs of patients treated **with** compression therapy (fig 7). This difference of 403 € per patient and year is caused by the significant shorter healing times, which were implemented in the model.⁶



Fig. 7: Pilot run of n = 100 patients per group

Tab. 1: Potential savings if all patients with venous leg ulcers would be treated based on guidelines by the example of Hamburg and Bavaria

Federal state	n patients	n patients with compression	% of patients with compression	n (patients without compression) x 403 €
Hamburg	514	239	46.5 %	110,825 € per year
Bavaria	2,972	1,120	37.7 %	746,356 € per year

For example, in Bavaria an increase from 37.7% to 46.5% of patients treated with compression may lead to cost savings of 105,586 € per year (tab 1).

Discussion and Conclusion

Limitations of the model:

- actuality of data
- availability of national data
- different pathways
- sensitivity analyses missing

Another health economic evaluation, which dealt with a similar question in the USA, indicated with the help of a Markov model cost savings of 5,904 € per patient. Unlike the presented pilot run of the discrete event simulation model these costs refer to the lifetime costs of a venous leg ulcer and are not meant per year. Considering that the average duration of a venous leg ulcer is 8.9 years,⁷ also in Germany costs savings in the middle four-figure range per patient can be recorded.

References

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