The impact of community-acquired acute respiratory tract infection: disutility estimates for sixteen European countries

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Introduction

Community-acquired acute respiratory tract infections (CA-ARTI) are among the most common reasons for primary care consultations, due to presenting symptoms such as sore throat, cough, chest pain or fever (1,2). Due to the high incidence of CA-ARTI during the winter season, the impact on quality of life at the population level could be substantial. However, estimating the health impact on a population level is challenging due to the limited availability of CA-ARTI related utility estimates.

Studies reporting a cost-utility analysis on CA-ARTI interventions apply quality of life estimates from outdated sources (dating to the year 2006 or earlier) or sources that are not easily retrieved/traceable (3,4). Additionally, utility estimates are used irrespective of the country, thereby ignoring differences in country-specific value sets (5).

Building on empirical data, this study aims to update utility estimates for CA-ARTI in 16 European countries that have an EQ-5D-5L or crosswalk value set available.

Methods

The current analysis was based on the health-related quality-of-life data from the PRUDENCE trial, a multi-country, prospective, individually randomized clinical trial in primary care. A total of 1624 patients with a CA-ARTI were included in the current analysis.

EQ5D-5L value sets

Country-specific value sets (6) were applied to the EQ-5D-5L data to derive utility estimates based on the 5-digit number. The utility estimates were calculated for European countries that have an EQ-5D-5L value set available, which are Germany, France, Italy, Spain, Poland, Romania, the Netherlands, Belgium, Sweden, Portugal, Hungary, Denmark, Ireland, Slovenia and Russia. For the UK, the EQ-5D-3L crosswalk was applied. The country-specific value-sets were applied to the EQ-5D-5L data of the full included patient population.

Calculation of disutility

To assess the effect of a CA-ARTI on the quality of life of a patient, a disutility, which is the loss of utility due to a CA-ARTI, was calculated by the difference between the utility when the patients returned to their daily activities (represented by the EQ-5D-5L score from day 14 or day 28, the first one after the patients returned to their daily activities) and the utility at the day of inclusion (i.e., the day of the first GP visit).

Sub-analysis

The results of the EQ-5D-5L questionnaire were assessed by the GP-rated disease severity at the day of inclusion in a sub-analysis.

Results

QALY loss of 0.0069 per CA-ARTI episode

The average overall disutility was 0.221 (median=0.205; standard error [SE]=0.0045), based on the UK crosswalk value set. The average disease duration was 11.45 days (SE=0.17; 5.96 days before inclusion and 5.49 days thereafter) which resulted in a QALY loss of 0.0069 per CA-ARTI episode.

Large between-country differences

There were clear differences in the disutility between countries, ranging from 0.098 in Poland to 0.221 in the UK.

Country	Average disutility (SE)	Country	Average disutility (SE)
Poland	0.098 (0.003)	Denmark	0.163 (0.005)
Sweden	0.109 (0.004)	Italy	0.165 (0.005)
France	0.110 (0.004)	Spain	0.168 (0.004)
Romania	0.120 (0.003)	Belgium	0.182 (0.004)
Russia	0.129 (0.003)	Slovenia	0.182 (0.005)
Portugal	0.148 (0.004)	Ireland	0.194 (0.005)
Hungary	0.153 (0.005)	Netherlands	0.198 (0.005)
Germany	0.154 (0.004)	United-Kingdom	0.221 (0.005)

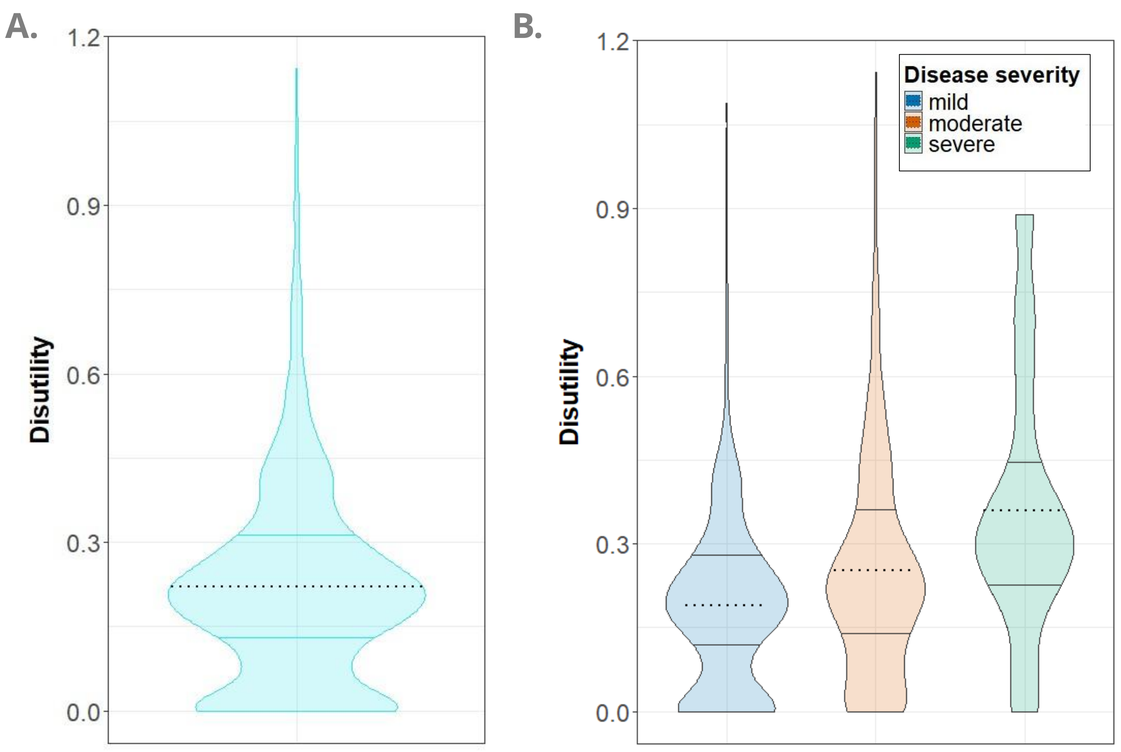

Figure 1. Disutility based on UK value set. A) Overall disutility, B) Disutility per GPs' severity rating. *Dotted line = mean, solid lines = quartiles.

The mean disutility increased with the GP-rated disease severity (see Figure 1B) which indicates that on average the GP-rated disease severity was in accordance with the disutility based on the EQ-5D-5L.

GP-rated disease severity	Mean disutility (SE)	Mean disease duration (SE)	Mean QALY loss
Mild	0.189 (0.005)	10.37 (0.20)	0.0054
Moderate	0.253 (0.007)	12.67 (0.28)	0.0088
Severe	0.359 (0.044)	12.76 (1.69)	0.0126

Conclusion

The between-country differences highlight the importance of applying country-specific disutility estimates in HTAs to align the health-impact of an intervention with the health preferences of the population.

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