The calculation of Lower Extremity Amputation Rates in Diabetes

Results from the HCQI data collection 2015

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In 2014, the HCQI Expert Group agreed to conduct a specific R&D activity aimed at improving the data collection for this indicator, based on different sets of definitions.

The following was agreed:

- Major and minor amputations to be collected separately
- Additional estimates of diabetes prevalence to be collected to test usage of people with diabetes at denominator
- Further exclusion criteria to be applied (eg tumour-related amputations)
- All age groups to be collected
The 2015 HCQI data spreadsheet allowed 6 different indicators:

Admission-based:
- Number of Major amputations in diabetes on the Total population
  - N=19 countries
- Number of Minor amputations in diabetes on the Total population
  - N=14 countries
- Number of Major amputations among people with diabetes
  - N=9 countries
- Number of Minor amputations among people with diabetes
  - N=9 countries

Patient-based:
- Percentage of total population experiencing a major amputation
  - N=6 countries
- Percentage of people with diabetes experiencing a major amputation
  - N=5 countries

Age below 15 did not seem relevant and was excluded from analysis.
Results of HCQI data collection 2015 (1)

Dispersion plots

- Major over the Total Population - OECD 2000 - 2013
- Minor over the Total Population - OECD 2000 - 2013
- Major among People with Diabetes - OECD 2000 - 2013
- Minor among People with Diabetes - OECD 2000 - 2013
- Major Patient-based among People with Diabetes - OECD 2000 - 2013
As expected, different algorithms showed a different ability to discriminate between trends over time and differences between countries.

By far, using major amputations in a patient-based fashion showed the most marked reduction of amputation rates over time.

The total number of major amputations among people with diabetes also show a consistent decrease.

Measures over the total population show a steady state after 2006, which can indicate a “masking effect” of diabetes prevalence, i.e. countries where it increased continued to be successful in reducing the number of amputations.

Results are reinforced by a separate examination of the algorithms.
Results of HCQI data collection 2015 (2)
Trend of average values and coefficient of variation using alternative definitions
Despite the additional difficulty, a substantial number of countries responded favourably to the R&D.

Few countries (N=8) were able to deliver patient-based results that required stratified figures for diabetes prevalence by sex, age.

The output seems to indicate valid avenues for a finally refined version of this indicator that can be used for international comparisons of quality of care.
Results of HCQI data collection 2015 (3)
Ranking according to alternative definitions
Conclusions

- Our results seem relevant both from a methodological and an epidemiological perspective.
- Improving the measure of amputation rates may definitely help increasing our ability to draw inferences on quality of care and health systems performance.
- An increased ability to discriminate between major and minor amputations, coupled by a clearer definition of individual pathways, will help highlighting successful practices for in OECD countries.
- The publication of lower extremity amputation rates in diabetes in “Health at a Glance” may be extremely important to raise the attention of policy makers on a matter of utter importance for public health and safety.