Modeling the Burden of Abdominal Aortic Aneurysm (AAA) in Europe in 2013

Mark Stuntz, MPH
Deerfield Institute, New York, NY

Introduction
• Abdominal aortic aneurysm (AAA) is a pathological condition characterized by an abnormal, localized dilatation of the lower part of the aorta. The general consensus for defining an AAA is aortic diameter ≥1.5 times the normal diameter at the level of the renal arteries, which typically equates to a minimum diameter of 3.0 cm to be considered an AAA.

Objective
• The objective of this study is to estimate the number of prevalent cases of AAA and deaths attributable to AAA.

Materials and Methods
• A disease-modeling software program, DisMod II (World Health Organization), was used to assess AAA burden via a multi-state life table where differential equations define relationships between incidence, prevalence, and disease-specific mortality.
• Input data included age- and sex-specific population, age- and sex-specific all-cause mortality, and cubic spline interpolation of size- and sex-specific relative risk (RR) of death estimates for persons with AAA compared with persons without AAA, adjusted for age, ethnicity, height, weight, smoking, and cardiovascular disease history. Confidence intervals were calculated via a monte carlo simulation (parametric bootstrapping).

Results
• There were 2,484,058 prevalent cases of AAA in the EUS in 2013 (90% CI: 2,282,702–2,638,106), resulting in 48,805 deaths attributable to AAA (90% CI: 39,924–54,291).
• Small AAAs (infrarenal diameter 3.0–3.9 cm) accounted for 76.0% of the total prevalent cases in the EU5 and 59.8% of attributable deaths, compared with large AAAs (infrarenal diameter ≥4.0 cm) accounting for 24.0% of the total prevalent cases and 40.2% of deaths.
• Females constituted 20.2% of prevalent cases and 43.2% of deaths, compared with males constituting 79.8% of prevalent cases and 56.8% of deaths.
• Deaths attributable to AAA represented 1.65% of all-cause deaths in the EU5 in 2013, with individual countries ranging from 1.28% (Germany) to 2.26% (Italy).
• France had the lowest number of prevalent cases (81.8 per 100,000 population) and deaths (11.0 per 100,000 population) among the 5EU markets, while Italy had the highest number of prevalent cases (1,103.7 per 100,000 population) and deaths (22.3 per 100,000 population).
• The number of deaths attributable to AAA in Italy represented 28.0% of the 5EU total, despite Italy accounting for only 19.3% of the 5EU population in 2013.

Conclusions
• The burden of AAA is most severe in Italy, which accounted for the highest number of both prevalent cases and deaths attributable to AAA in the EUS.
• This study reveals that throughout the EUS, females account for a disproportionately high percentage of deaths despite constituting a low percentage of prevalent cases.
• Screening guidelines should be amended to target both sexes, rather than males only.

References:

Contact Information:
Mark Stuntz
Deerfield Institute
780 Third Avenue, 37th floor
New York, NY 10017
mstuntz@deerfield.com

Presented at the 18th Annual Congress of the International Society for Pharmacoeconomics and Outcomes Research
7-11 November 2015
Milan, Italy