LONG-TERM HEALTH BENEFITS OF STROKE PREVENTION WITH APIXABAN VERUS VITAMIN K ANTAGONIST WARFARIN IN PATIENTS WITH NON-VALVULAR ATRIAL FIBRILLATION IN GERMANY: A POPULATION-BASED MODELLING STUDY

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Background

- The incidence of stroke in patients with non-valvular atrial fibrillation (NVAF) is nearly five-fold higher than that of the general population, resulting in enormous personal, social and economic costs.
- The risk of stroke can be effectively reduced by oral anticoagulation (OAC). Anticoagulation with vitamin K antagonists (VKAs) like warfarin is highly effective, but is limited by a narrow therapeutic range and risk of intracranial bleeding.
- Since 2011 non-vitamin K antagonist oral anticoagulants (NOACs) are available for stroke prevention in patients with NVAF.
- In the ARISTOTLE (Apixaban for Reduction in Stroke and Other Thromboembolic Events in Atrial Fibrillation) trial the NOAC Apixaban has demonstrated superior efficacy and reduced risk of major bleeding compared to the VKA warfarin [1].

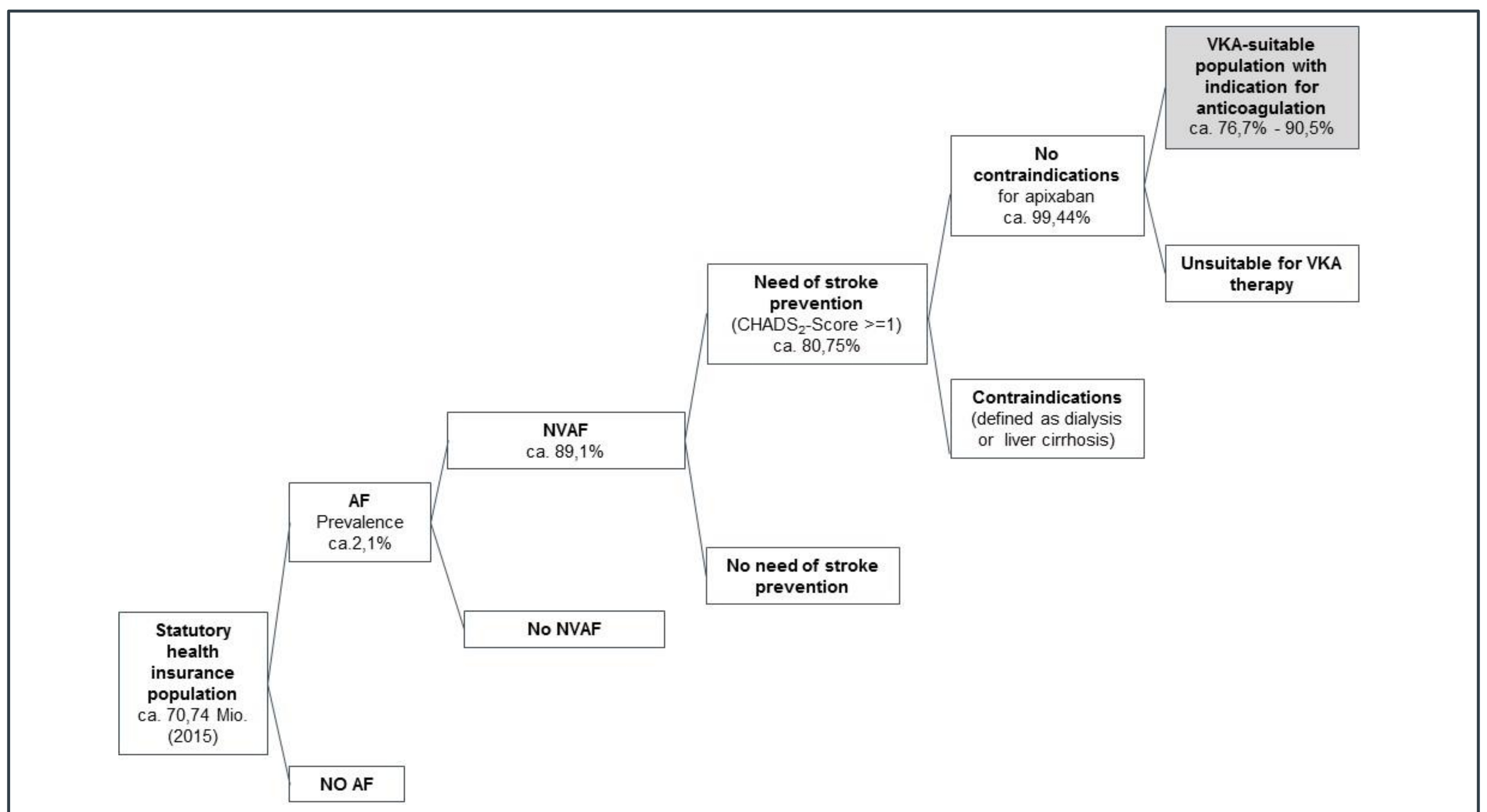
Objectives

- To quantify the potential societal health benefits of using apixaban instead of VKA in the German NVAF population from 2017 to 2030.

Methods and Data

- Potential health benefits of using apixaban instead of the VKA warfarin were modelled by using an existing Markov model [2] and a dynamic population approach.
- To account for the German setting, several modification to the Markov model were made:
  - The underlying baseline mortality risk was adjusted to German-specific mortality rates.
  - Time in therapeutic range (TTR) was adjusted to German-specific TTR data [3].
- The NVAF target population was determined according to a German survey [4] and specific inclusion and exclusion criteria as depicted in *Figure 1*.
- The target population was adjusted according to the expected market share of apixaban within the NVAF patient population from 2017 to 2030.

Figure 1: Identifying the target population



Information about the relevant proportions derived from: AF Prevalence: [4]; NVAF [5]; Need for stroke prevention: weighted average from [6] and [7]; No contraindications for Apixaban: [7–9]; VKA-suitable population: [5, 7, 10] .

Results

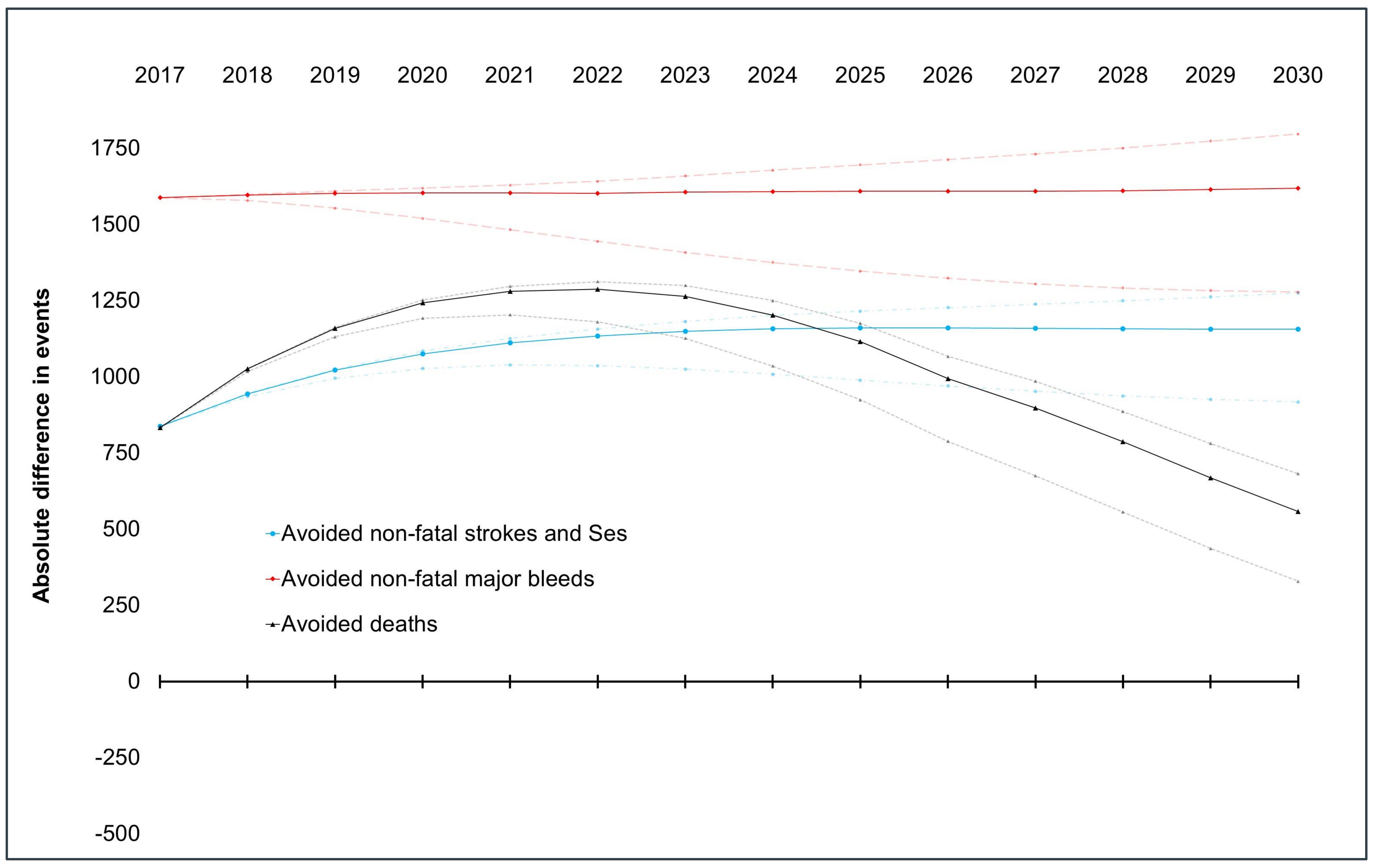
Population size

- The size of the modelled apixaban population steadily increases from **314,638 patients** in 2017 to **780,583 patients** in 2030.
- The population increases due to rising incidence rate of NVAF caused by changes in the age structure of Germany's population.

Predicted differences in clinical events

- *Figure 2* shows the results of the Markov model and dynamic population approach.
- In comparison with the VKA warfarin, apixaban may prevent an additional **52,185 major clinical events** from 2017 until 2030 in the German NVAF population, which equals 4,349 major clinical events per year.
- This includes
  - **15,383** non-fatal strokes or SEs,
  - **22,483** non-fatal major bleeds and
  - **14,319** all-cause deaths
- The predicted prevention of the 14,319 all-cause deaths correspond to an estimated **109,887 gained life years** in the German NVAF population.

Figure 2: Difference in clinical events for the apixaban scenario compared to the VKA scenario



Similar to the steady increase of the population size, the number of strokes or SEs as well as major bleeds per year would slightly increase over time. Dashed lines represent the upper and lower boundaries of the predicted market share of apixaban and VKA therapy. **Positive values mean that fewer events occurred in the scenario with apixaban then with the VKA warfarin.** The upper boundary depicts a scenario in which the share of NOACs in NVAF patients would rise to 90% whereby the share of apixaban within the NOACs increases from 41% in 2017 up to 50% until 2022. The total number of predicted avoided clinical events in this scenario would be 16,027 non-fatal strokes or SEs, 23,483 major bleeds and 15,012 deaths. In the lower boundary, the share of NOACs in NVAF patients and the share of apixaban within NOACs remain on their 2017 values (72% and 41% respectively) until 2030. This would lead to 13,597 avoided strokes or SEs, 19,779 prevented major bleeds and 12,429 avoided deaths.

Conclusion

Considering the functional impairment and long-term consequences associated with the estimated number of avoided events in Germany, the findings indicate that apixaban might have a significant medical impact on the German NVAF population.

By providing these more tangible figures of the potential benefit of apixaban over the VKA warfarin, our analysis may help physicians to make informed decisions in clinical practice.

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