

# Economic Evaluation of Abdominal Aortic Aneurysm Screening in the Czech Republic

Kateřina Hejčmanová<sup>1,2</sup>, Renata Chloupková<sup>1,2</sup>, Martin Köcher<sup>3</sup>, Pavel Němec<sup>1,2</sup>, Dagmar Obšilová<sup>1</sup>, Ondřej Ngo<sup>1,2</sup>, Karel Hejduk<sup>1,2</sup>, Ondřej Májek<sup>1,2</sup>

<sup>1</sup>National Screening Centre, Institute of Health Information and Statistics of the Czech Republic, Prague 2, Czech Republic;

<sup>2</sup>Institute of Biostatistics and Analyses, Faculty of Medicine, Masaryk University, Brno, Czech Republic;

<sup>3</sup>Department of Radiology, Palacký University Medical School and Hospital, Olomouc, Czech Republic

Katerina.Hejchmanova@uzis.cz

## Introduction

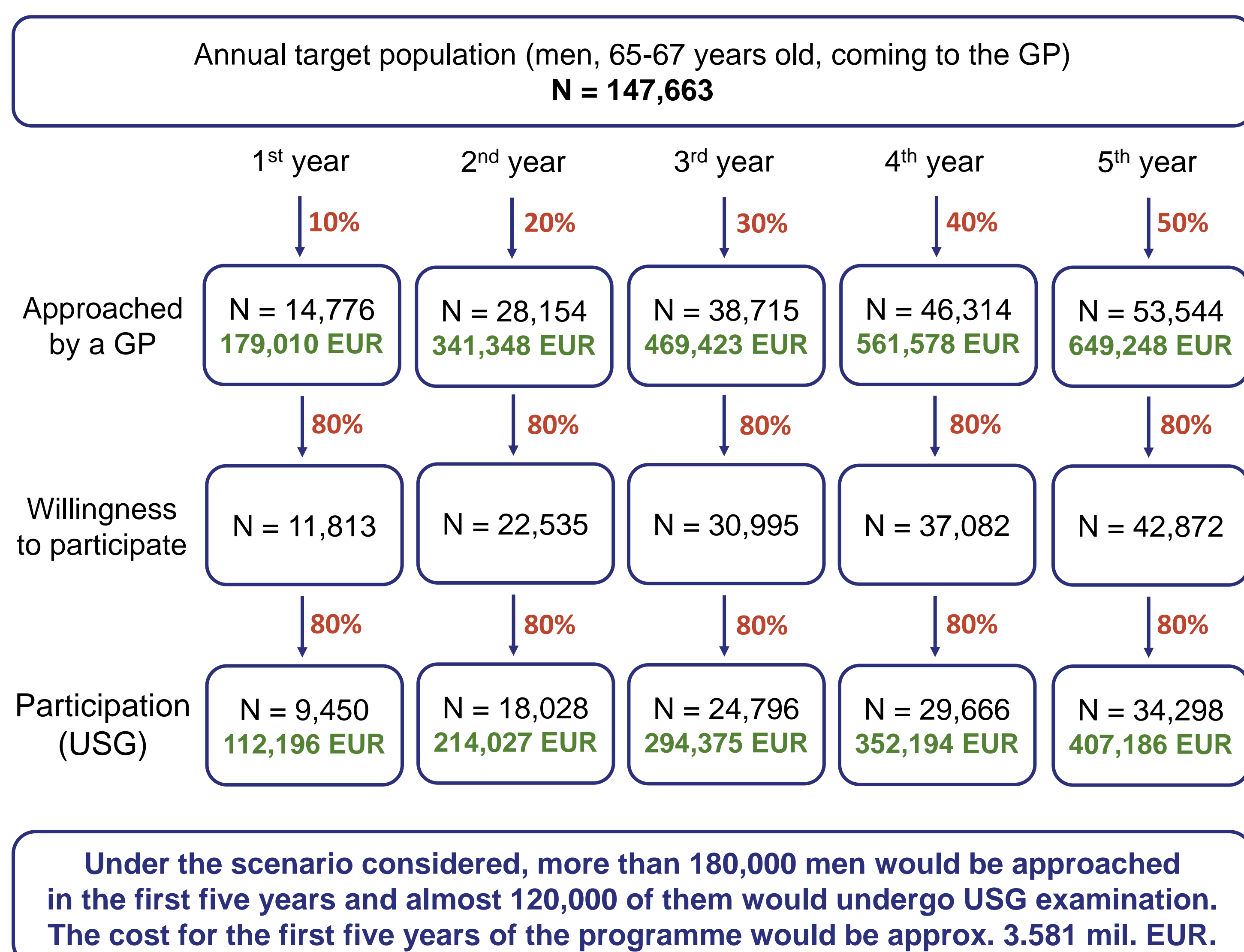
- Abdominal aortic aneurysm (AAA) is a disease that occurs **most often in older men**.
- AAA can be **effectively detected** using imaging methods, including ultrasonography (USG).
- A well-targeted screening can identify AAA at a stage when **prophylactic treatment can be initiated**, and the **rupture of the AAA prevented**.
- The aim of this study was to describe the economic evaluation of a screening programme that is being prepared in the Czech Republic.**
- The economic evaluation had two parts:
  - Budget impact analysis (BIA)** – an estimate of the number of men screened and the costs incurred in the first five years of the programme.
  - Simplified cost-effectiveness analysis (CEA)** – modelling a cohort of 65-year-old men for the rest of their lives and estimating the benefits in terms of the number of AAA ruptures and deaths prevented in the context of the costs incurred.
- The **inputs** were estimated based on the literature, expert opinion and reimbursement mechanisms in the Czech Republic. A more detailed description of the inputs can be found under the **QR code** on the right side of the poster.

### Model inputs



## Budget impact analysis (BIA)

- The BIA considered the first five years of the programme and **estimates the number of participating men** and the associated **cost of the screening process**.
- The model assumed **increasing adherence of participating GPs (10-50% in the first five years)**. Furthermore, an **80% willingness to participate** of the approached men.
- The cost of **approaching** a man for the programme was **9 or 14 EUR** (depending on the willingness to participate). The cost of a **USG examination** was **12 EUR**.

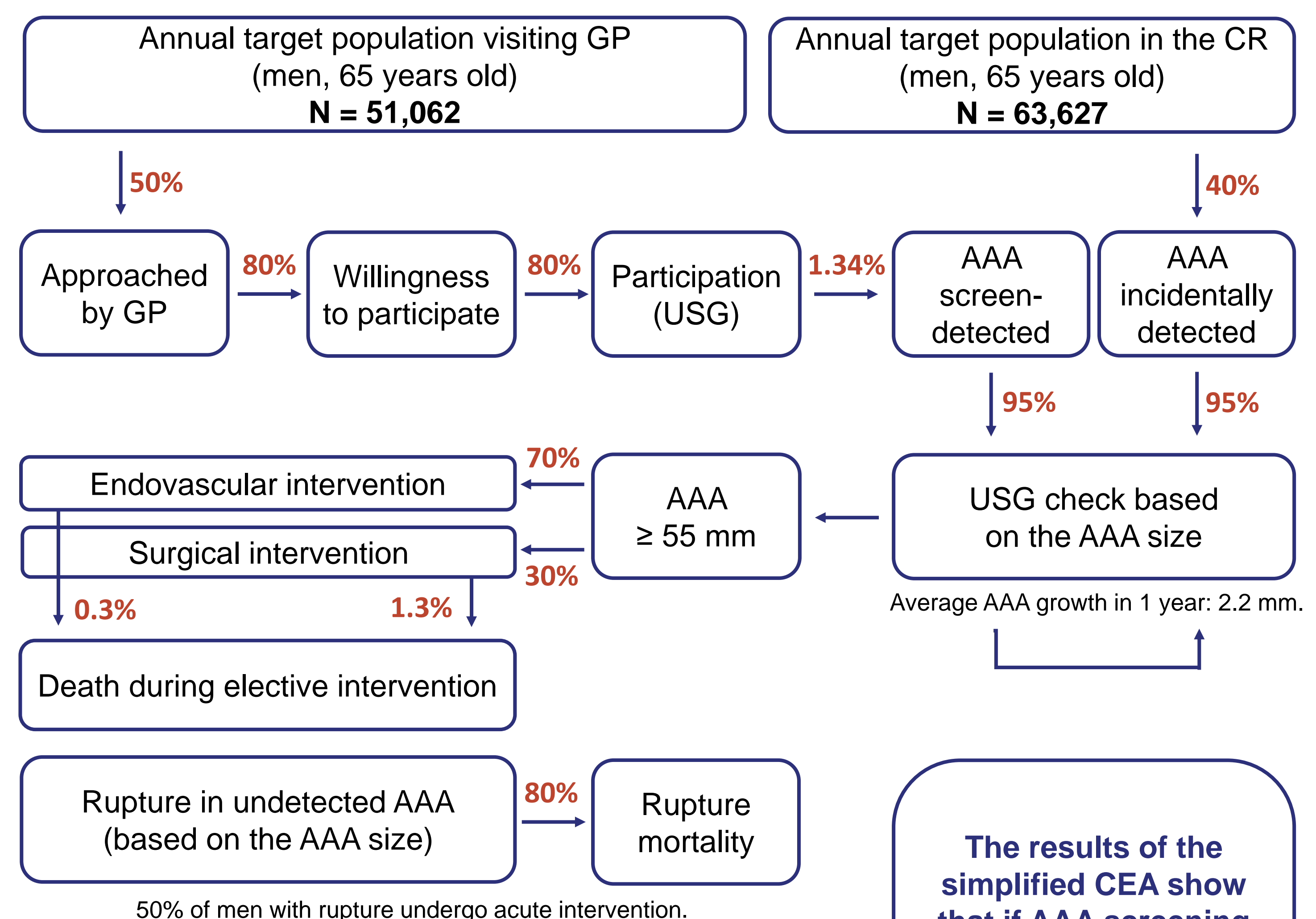


## Conclusions

- In the **first year**, approx. 15,000 men would be approached, and more than 9,000 would participate. The cost of screening is estimated at 291,206 EUR.
- In the **fifth year**, more than 53,000 men would be approached, and more than 34,000 would participate. The cost of screening is estimated at 1,056,434 EUR.
- The cost for **the first five years** of the programme will be approx. **3.581 mil. EUR**.
- Modelling a cohort of 65-year-old men for the rest of their lives, it was estimated that **initiating screening** would increase costs by approx. **16.7%** while reducing AAA deaths by **25.4%**.
- The increase in the cost of screening and related tests would be partially offset by a reduction in hospitalisation costs.
- AAA screening **appears to be cost-effective** based on the **results of an economic evaluation** and the **national reimbursement practice**. With adherence to the programme design, **prevention of AAA rupture** could be expected in many Czech men.
- Both of **the** presented models were developed rapidly to inform the decision to introduce the pilot phase of screening, and they will be **further improved along with the real-world data collection**. **Sensitivity analysis** will be carried out as part of the simplified CEA.
- Another limitation is that the discount factor was not used.
- The simplified CEA has a number of assumptions, e.g. it does not consider deaths from other causes. Another assumption is that men diagnosed with AAA who undergo follow-up examinations will not have AAA rupture.

## Simplified cost-effectiveness analysis (CEA)

- A simplified CEA **compared the situation with and without screening** in a cohort of 65-year-old men, in the context of **prevented AAA ruptures and deaths** and costs incurred.
- In addition to screen-detected AAA, the model also handled **AAA detection outside screening** (40% probability) and **rupture in undetected AAA** (based on the AAA size).
- In addition to screening costs, the model included the cost of repeated **USG check** (21 EUR), the cost of **elective intervention** (17,082 EUR) and **acute intervention** (22,646 EUR).



Model without screening		
Costs	10,316,087 EUR	
Number of AAA deaths	315	
Model with screening		
Costs	12,042,736 EUR	
Number of AAA deaths	235	
Comparison		
Change in costs	1,726,649 EUR	+ 16.7%
Change in deaths	- 80	- 25.4%
Cost per death prevented: 21,583 EUR		

The results of the simplified CEA show that if AAA screening is introduced, the cost of diagnosing and treating AAA will increase by approx. 16.7%. However, it can also be assumed that up to 25.4% of deaths due to AAA will be prevented if such costs are incurred.

## AAA screening will be launched in 2025

- AAA screening national pilot **will be launched in 2025 in the Czech Republic**.
  - Target population: men aged 65-67 years
- Professional medical associations (five areas of medical expertise), in cooperation with the National Screening Centre, the Ministry of Health of the Czech Republic and health insurance companies, have developed a **screening methodology**.
- Committee for Preparation of the Abdominal Aortic Aneurysm Screening Programme** has been established to bring all stakeholders together.
- The monitoring and evaluation framework is currently in the preparation phase.



THANKS TO NUMEROUS COLLABORATORS AND STAKEHOLDERS