



Czech national data on prostate cancer in view of potential effect of organised screening

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INTRODUCTION

Principles of early disease detection (Wilson and Jungner)

1. The condition sought should be an **important health problem**.
2. There should be an **accepted treatment** for patients with recognized disease.
3. **Facilities** for diagnosis and treatment should be available.
4. There should be a **recognizable latent or early symptomatic stage**.
5. There should be a **suitable test or examination**.
6. The test should be **acceptable** to the population.
7. The **natural history** of the condition, including development from latent to declared disease, should be adequately understood.
8. There should be an **agreed policy on whom to treat** as patients.
9. The cost of case-finding (including diagnosis and treatment of patients diagnosed) should be **economically balanced** in relation to possible expenditure on medical care as a whole.
10. Case-finding should be a **continuing process** and not a "once and for all" project.

Wilson JMG, Jungner G. Principles and Practise of Screening for Disease. Geneva: World Health Organization; 1968.

Scientific justification...

- good evidence that prostate cancer screening with PSA testing can **reduce deaths from prostate cancer**
- **overdiagnosis and overtreatment are major harms** in prostate cancer screening, due to the high sensitivity of PSA testing
- imposing an **upper age limit** on screening (possibly around 65–69), and/or a **high-quality MRI scan** or other accurate additional testing for PSA-positive men, will **reduce overdiagnosis** and improve the harm-to-benefit ratio
- **opportunistic, unorganised PSA testing** currently leads to **insufficient use in younger men and overdiagnosis in older men**
- recent evaluations suggest that **there are cost-effective strategies** for population-based prostate cancer screening

SAPEA, Science Advice for Policy by European Academies. (2022). Improving cancer screening in the European Union. Berlin: SAPEA. <https://doi.org/10.26356/cancerscreening>

...implementation in practice: screening pathway

Careful planning and implementation of

- the identification of the population eligible for screening
- invitation and information
- testing
- referral of screen positive and reporting of screen negative results
- diagnosis
- intervention, treatment and follow-up
- reporting of outcomes, analysis and reporting to improve the effectiveness and cost-effectiveness

Goal: Benefits maximized and harms minimized

Screening programmes: a short guide. Increase effectiveness, maximize benefits and minimize harm. Copenhagen: WHO Regional Office for Europe; 2020. Licence: CC BY-NC-SA 3.0 IGO.

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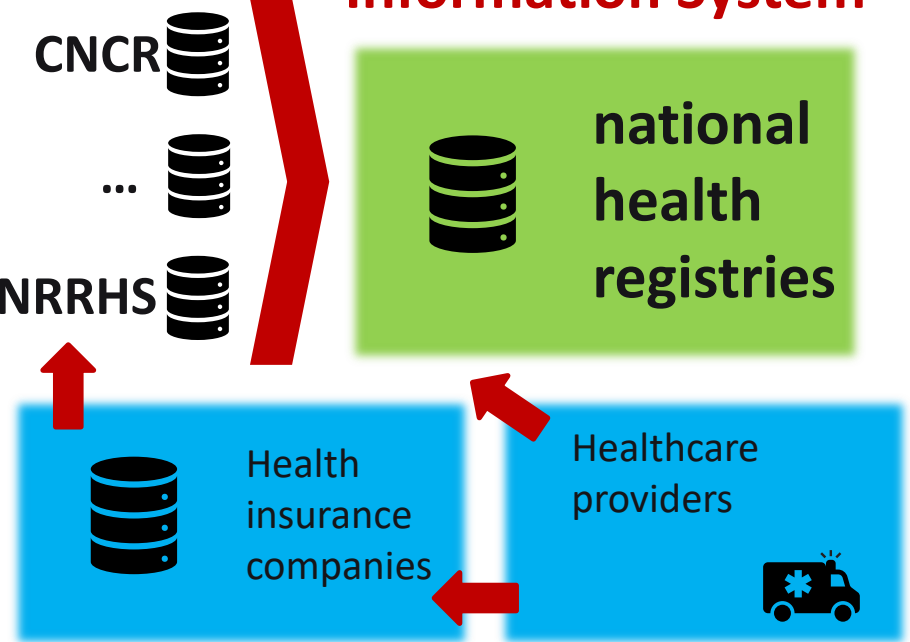
INFORMATION BACKGROUND AND PROSTATE CANCER BURDEN

Programme in Czechia: comprehensive and modular data background

Data analysis – quality assurance information system

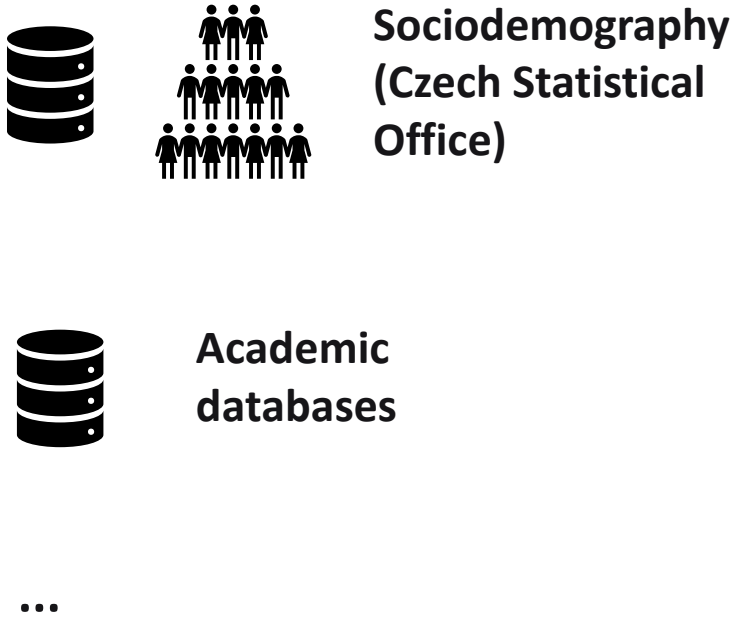
UZIS data collections

National Health Information System

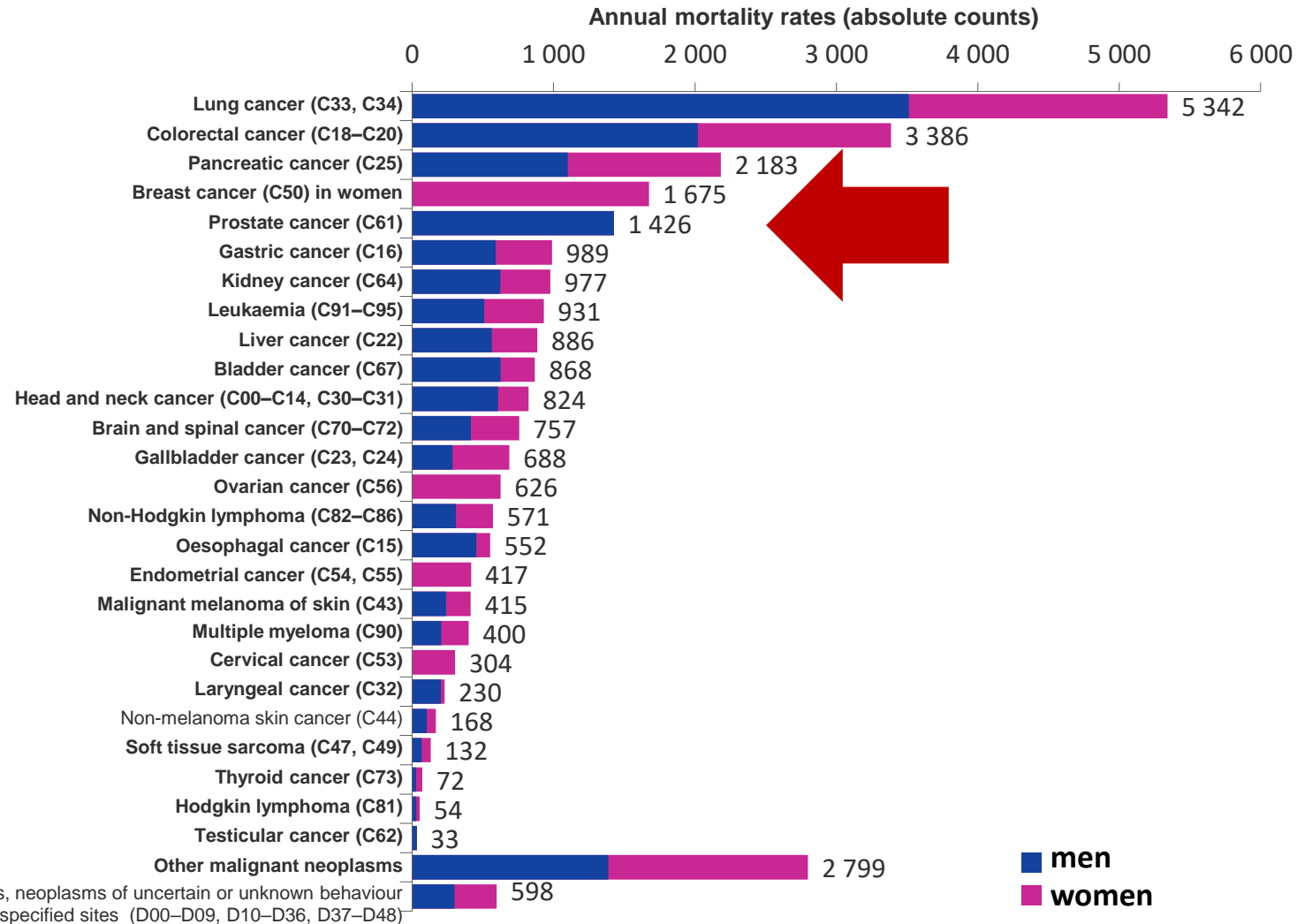


Potential programme database to be established

External sources



Cancer mortality in Czechia in 2016–2020



Source: Czech Statistical Office

Prostate cancer is still one of the most frequent causes of cancer deaths in Czechia.

Prostate cancer burden in the Czech population

Source: ¹Czech National Cancer Registry, ²Czech Statistical Office

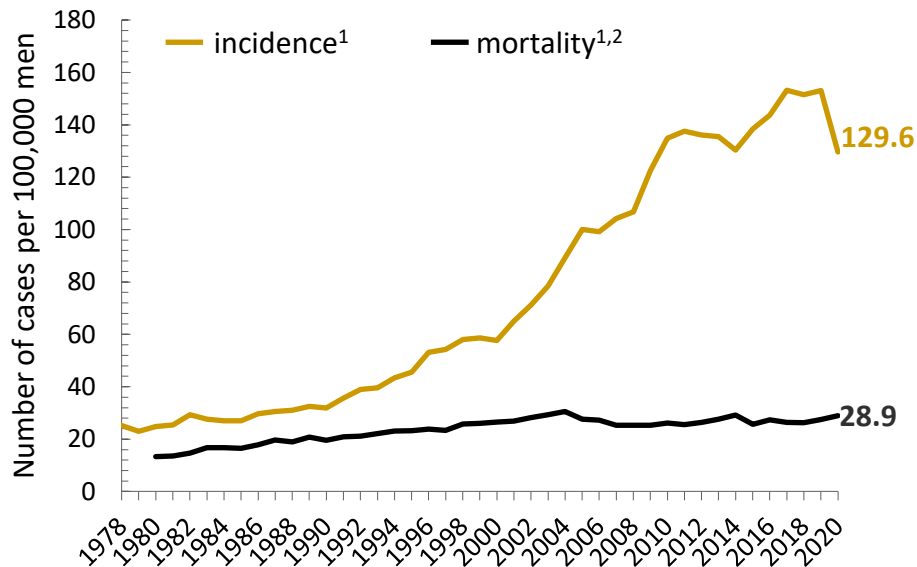
*decrease possibly associated with COVID-19 pandemic

Absolute number	2013	2014	2015	2016	2017	2018	2019	2020	Average annual change 2016–2020
Incidence ¹	6,991	6,741	7,169	7,458	7,977	7,920	8,044	6,836*	-0.6%
Mortality ²	1,422	1,509	1,327	1,421	1,372	1,372	1,443	1,524	+2.9%
Prevalence ¹	46,813	50,159	53,885	57,719	61,860	65,734	69,580	71,592	+5.9%

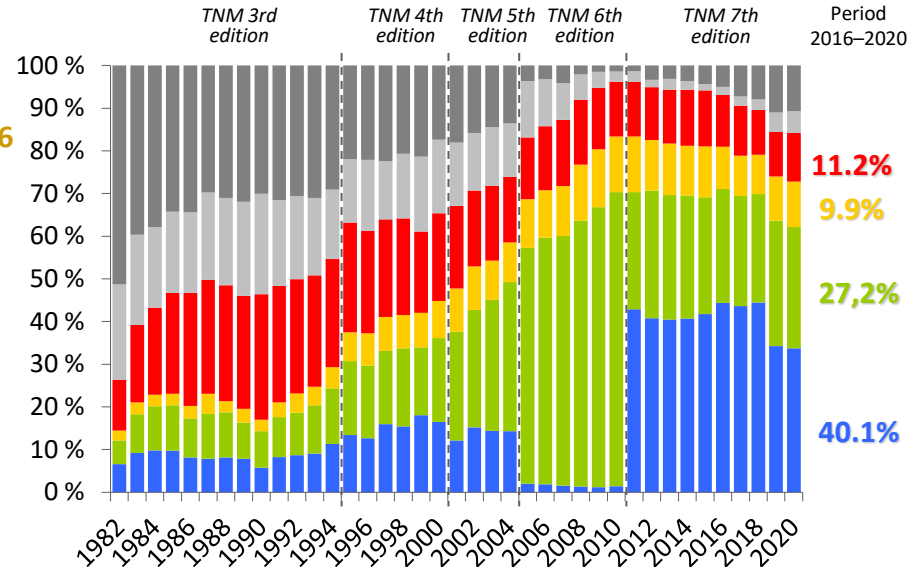
In the Czech Republic, on average, approximately **7,900** patients with a malignant prostate neoplasm (C61) are newly diagnosed annually, which is **more than 150 per 100,000 men**. In 2020, **1,524 men died** of C61 malignancy, which is 28.9 per 100,000 men. Incidence has been increasing for a long time, and the mortality trend is rather stable with a slight increase in recent years.

Most of the diagnosed prostate cancers are in stage I (approximately 40%) or II (approximately 27%).

Incidence and mortality



Clinical stages



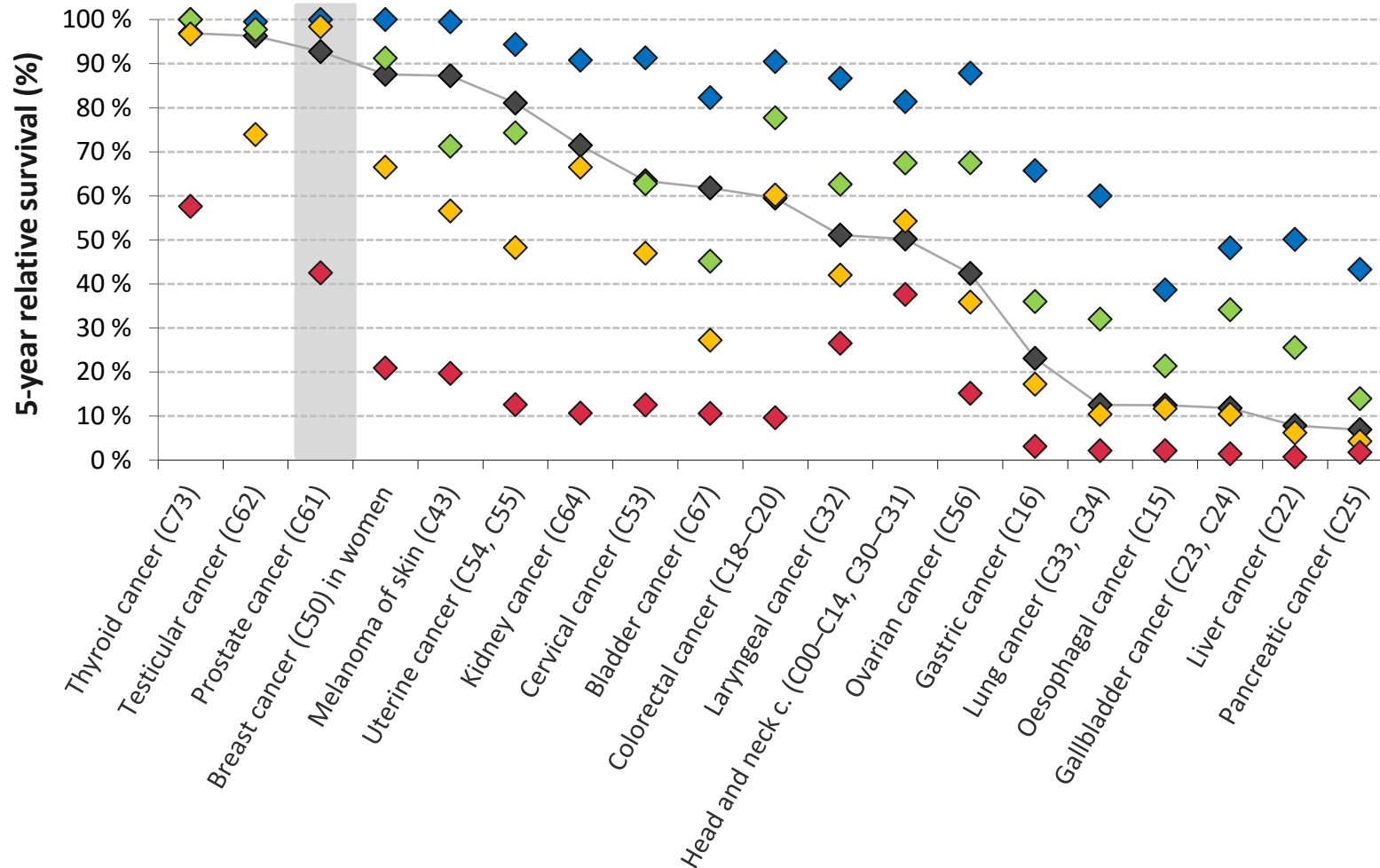
- stage 1
- stage 2
- stage 3
- stage 4
- stage not specified for objective reasons
- stage not specified – incomplete record

5-year relative survival of cancer patients in Czechia according to stages

Source: Czech National Cancer Registry, UZIS

Period analysis 2015–2019, all diagnosed patients

The diagnoses are in descending order according to 5-year overall survival



- ◆ All diagnosed patients
- ◆ Stage I
- ◆ Stage II
- ◆ Stage III
- ◆ Stage IV

Diagnoses C61, C64: Stages I + II merged.
Diagnosis C62: Stage IV not defined.

Prostate cancer is among cancer diagnoses with the most favourable prognosis. Nevertheless, the 5-year relative survival in Stage IV is just about 40%.

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EVALUATING THE POTENTIAL IMPACT



Design of the programme: HTA and evidence brief preparation

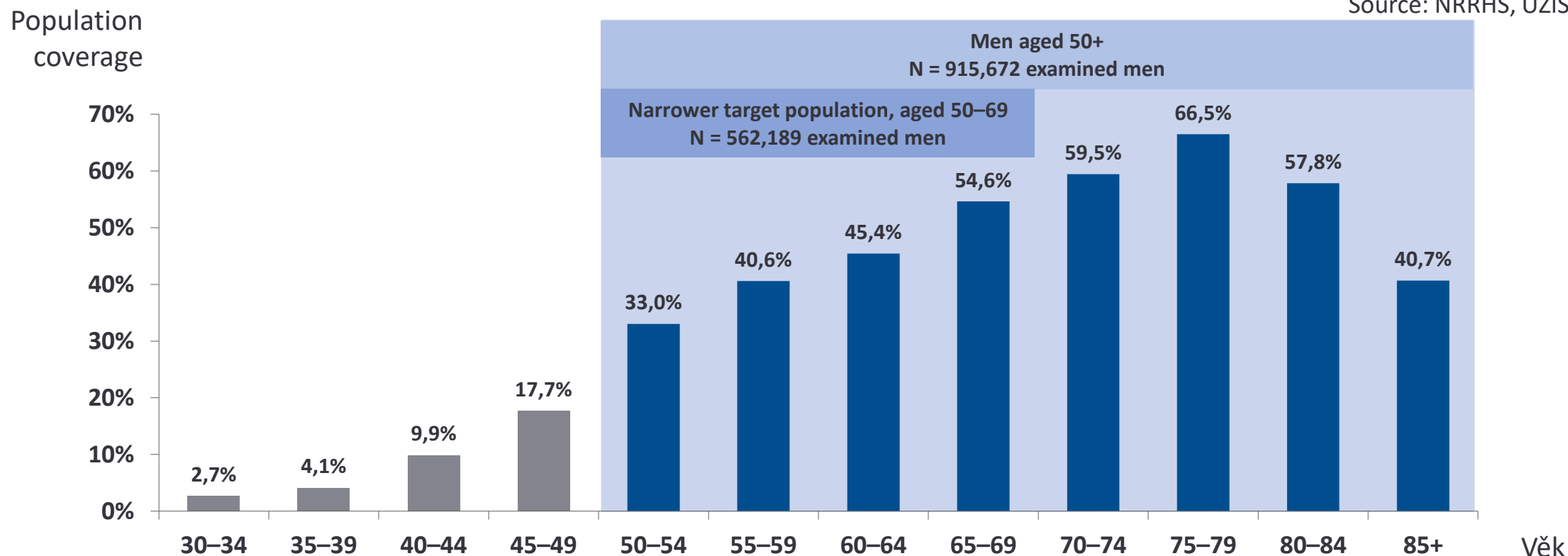


Preparatory work started in 2022

- Multi-stakeholder engagement
- Structure of population and its prostate cancer burden
- *Current status of PSA testing and prostate cancer early detection*
- *Small scale pilot projects (ongoing)*
- *Analysis of potential impact of organised programme (ongoing)*
- *Preparation of strategy and implementation guidelines for population pilot project (ongoing)*

Half of men 50+ already undergo a PSA test in Czechia

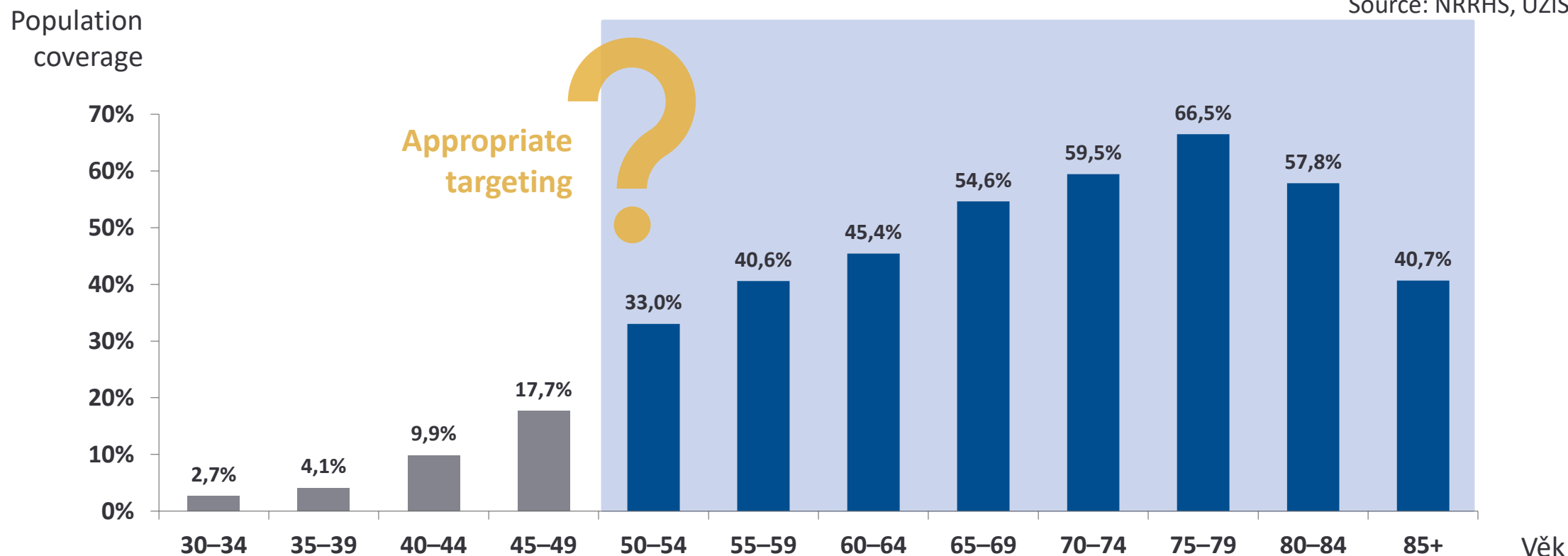
PSA examination (93225)
(2020–2021, men over 30, N = 1,067,199)
Source: NRRHS, UZIS



The coverage of the target population aged 30 and over in 2021 reaches 29.8% within the two-year interval, increasing substantially from the 50-54 age group and **reaching the highest values in the 75-79 age group (66.5%)**. Coverage of the target population **aged 50 and over in 2021 is 48.1% within the two-year interval.**

Half of men 50+ already undergo a PSA test in Czechia

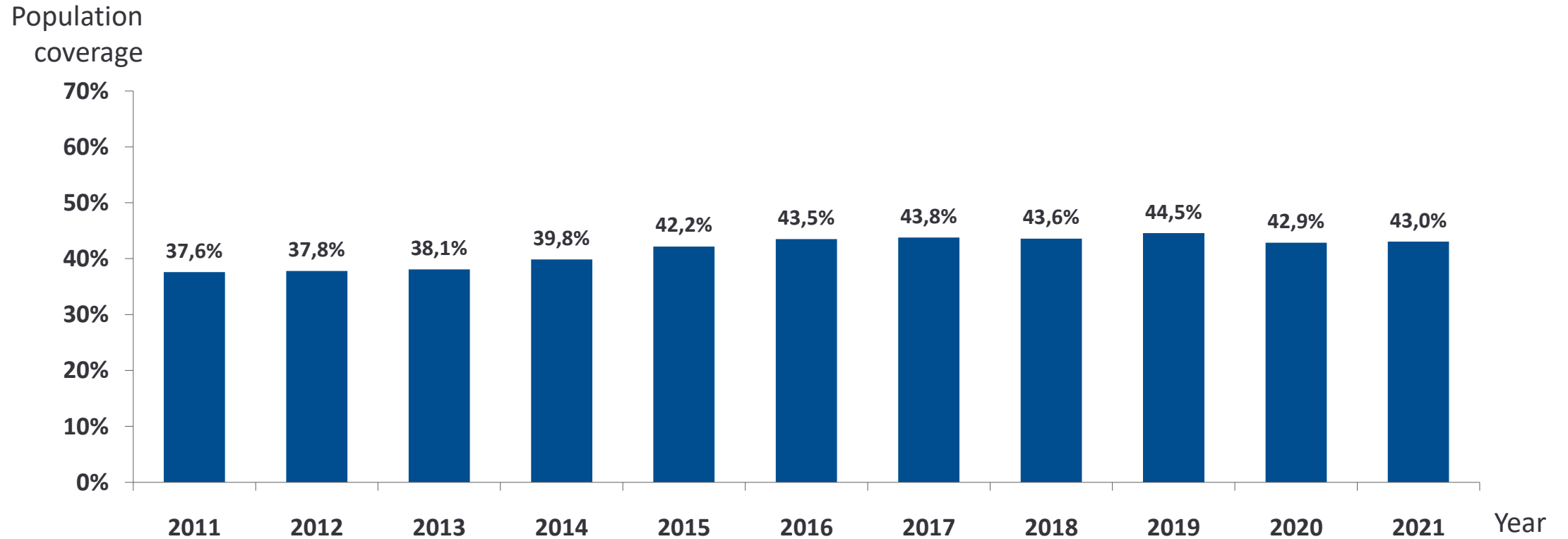
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Coverage by PSA test in two-year interval in men aged 50-69

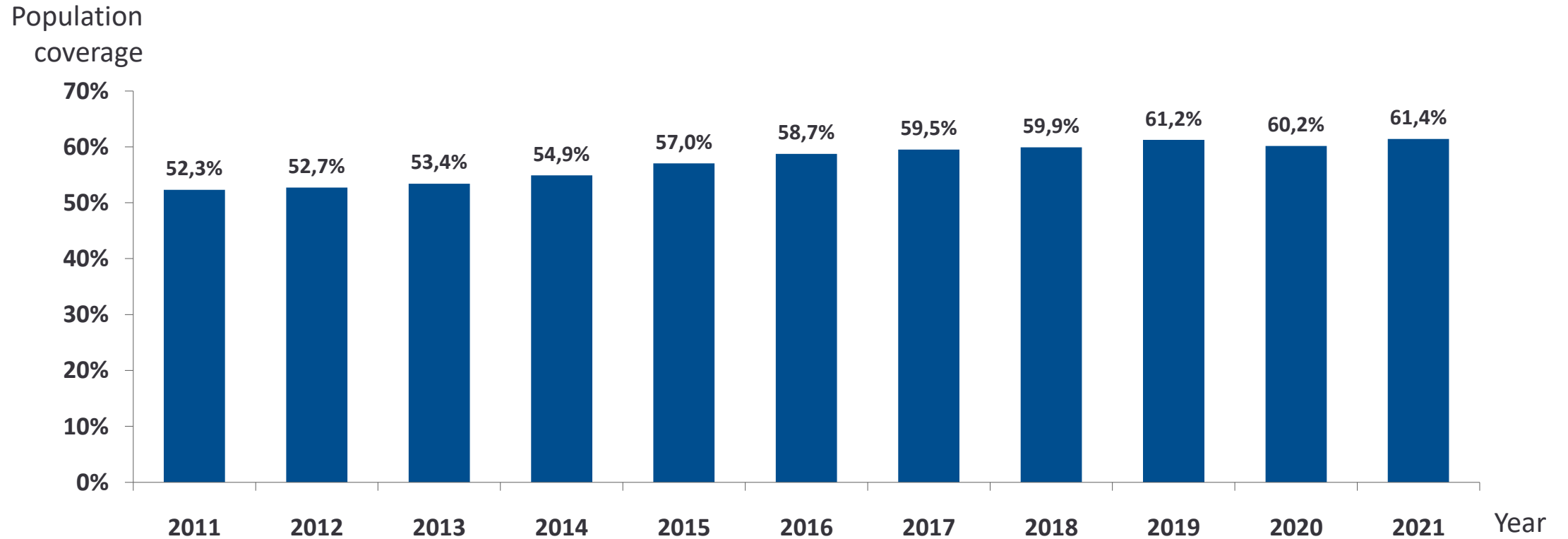
PSA examination (93225)
(men aged 50-69)
Source: NRRHS, UZIS



Coverage of the target population **aged 50-69** in 2021 reaches **43.0%** during 2year interval.

Coverage by PSA test in two-year interval in men aged 70-84

PSA examination (93225)
(men aged 70-84)
Source: NRRHS, UZIS



Coverage of the target population **aged 70-84** in 2021 reaches **61.4%** during 2year interval.

Average number of examinations in 2019–2021 by age

PSA examination (93225)
(2019–2021, men aged over 30)

Source: NRRHS, UZIS

Age	2020–2021	2019–2021
30–34	1.15	1.21
35–39	1.18	1.26
40–44	1.25	1.39
45–49	1.31	1.49
50–54	1.38	1.61
55–59	1.55	1.87
60–64	1.75	2.18
65–69	1.96	2.50
70–74	2.13	2.81
75–79	2.25	3.00
80–84	2.21	2.92
85+	2.06	2.64
Total 30+	1.79	2.23
Total 50+	1.88	2.38

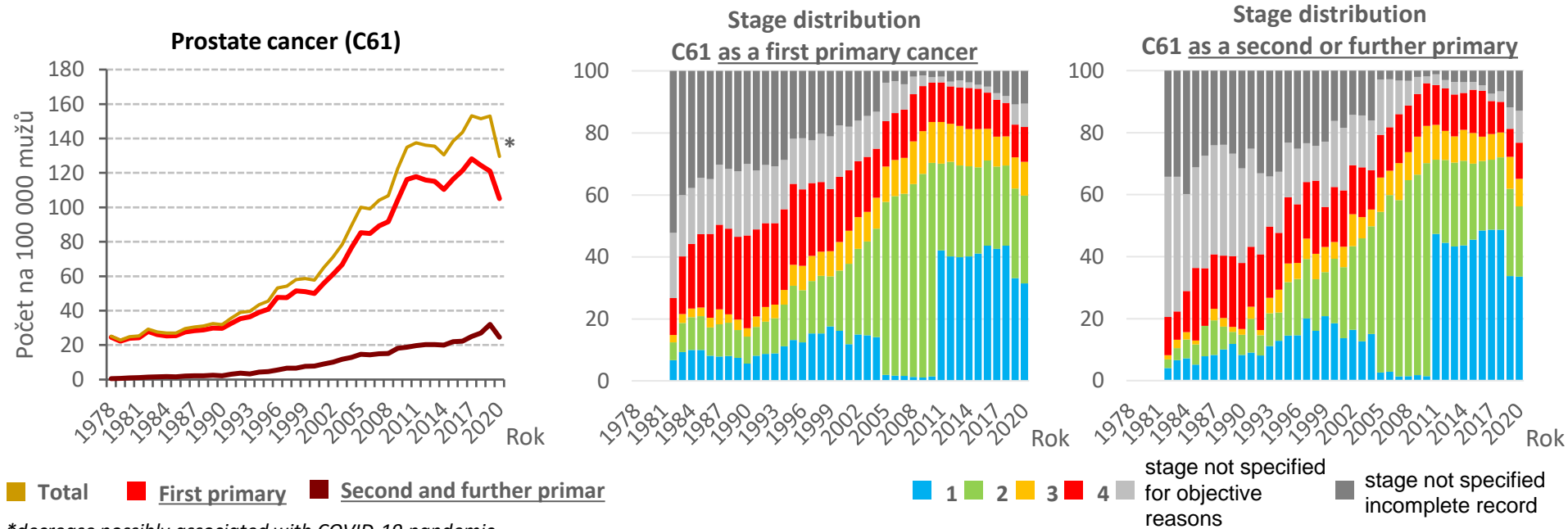
Average number in individuals
undergoing PSA

In **2020–2021** average number of PSA tests in men aged 30+ was **1.8**, in men aged 50+ **1.9**.

In **2019–2021** average number of PSA tests in men aged 30+ was **2.2**, in men aged 50+ **2.4**.

Czech small-scale selective screening pilot project: Prostate cancer as a second primary cancer

Source: Czech National Cancer Registry, UZIS, supplemented with DRG markers



*decrease possibly associated with COVID-19 pandemic

16 percent of prostate cancer cancers are second and further primary cancers.

The stage distribution is very similar to the first primary prostate cancers.

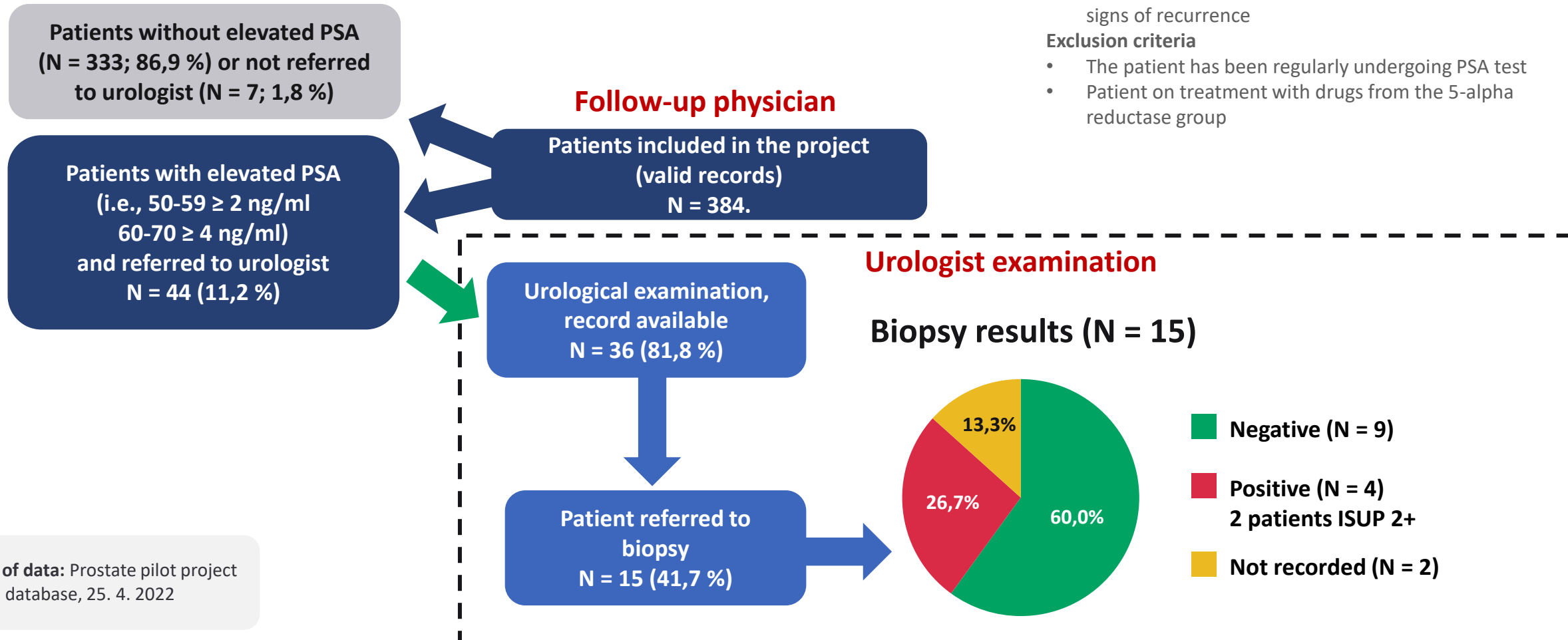
Czech small-scale selective screening pilot project: Prostate cancer as a second primary cancer

Inclusion criteria

- Male, 50-70 years old
- Estimated lifespan of at least 10-15 years
- In dispensary care for oncological diseases (solid tumour)
- Patient without prostate cancer
- Completed primary antitumor treatment and no signs of recurrence

Exclusion criteria

- The patient has been regularly undergoing PSA test
- Patient on treatment with drugs from the 5-alpha reductase group



Analysis of potential impact of organised programme (ongoing)

Background and methodology:

- Costs for current situation in 2021 have been estimated on the basis of reported procedures (PSA testing, urological examinations, MRI, ultrasounds, biopsies) in the National Registry of Reimbursed Health Services (UZIS).
- Costs for the potential first year of the organised screening programme (2024) have been estimated on the basis of published literature, expert opinion and current situation. The prices for every procedure have been set according to the list of the medical procedures, or according to design of the new procedure by an expert medical society.

This is a preliminary proposal for initial clarification and discussion

Current situation (2021):

Costs for men under the age of 50:
71 mil CZK

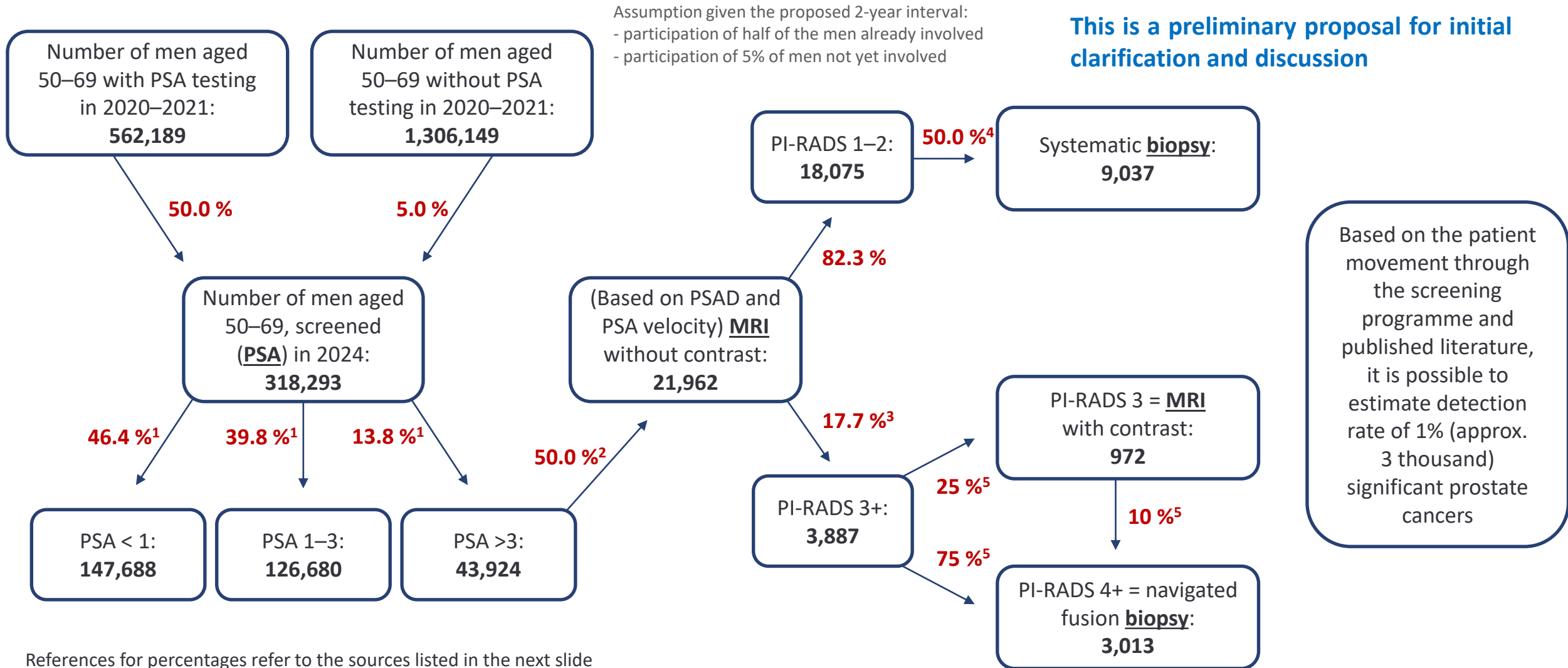
Costs for men aged 50–69:
404 mil CZK

Costs for men aged 70 and over:
356 mil CZK

Estimate for the first year of the potential programme (2024):

Costs for men aged 50–69:
425 mil CZK

Estimated number of participants and their movement through a potential organised screening programme in 2024



References for percentages refer to the sources listed in the next slide

References of input parameters used to estimate the participants movement through screening programme

This is a preliminary proposal for initial clarification and discussion

¹ An estimate of the proportion of men with specific PSA level was derived from results of the pilot project Programme for an early detection of prostate cancer in the population of men who have been followed up after cancer treatment.

² An estimate of the proportion of men who would undergo MRI without contrast medium was derived from published literature:

MANNAERTS, Christophe K., et al. Prostate cancer risk assessment in biopsy-naïve patients: the Rotterdam prostate cancer risk calculator in multiparametric magnetic resonance imaging-transrectal ultrasound (TRUS) fusion biopsy and systematic TRUS biopsy. *European urology oncology*, 2018, 1.2: 109-117.

ALBERTS, Arnout R., et al. Risk-based patient selection for magnetic resonance imaging-targeted prostate biopsy after negative transrectal ultrasound-guided random biopsy avoids unnecessary magnetic resonance imaging scans. *European urology*, 2016, 69.6: 1129-1134.

³ An estimate of the proportion of men with PI-RADS 3+ after MRI without contrast medium was derived from published literature (this population is not pre-selected, the proportion in the proposed model is likely to be higher, it is necessary to validate this parameter during the pilot phase):

ELDRED-EVANS, David, et al. Population-Based prostate cancer screening with magnetic resonance imaging or ultrasonography: the IP1-PROSTAGRAM study. *JAMA oncology*, 2021, 7.3: 395-402.

⁴ An estimate of the proportion of men with PI-RADS 1–2 (MRI without contrast medium), who would subsequently undergo systematic biopsy was determined according to an expert opinion.

⁵ The other estimates were determined according to an expert opinion.

According to the results of the published literature (Eklund et al., 2021), we can assume a positive predictive value of PSA for significant prostate cancer (Gleason 7+) of approximately 20%, Gleason 4+3 represents 7%, up to 3 000 significant prostate cancer in the proposed model, but probably less in the practice due to the pre-selection of the participants in the screening process.

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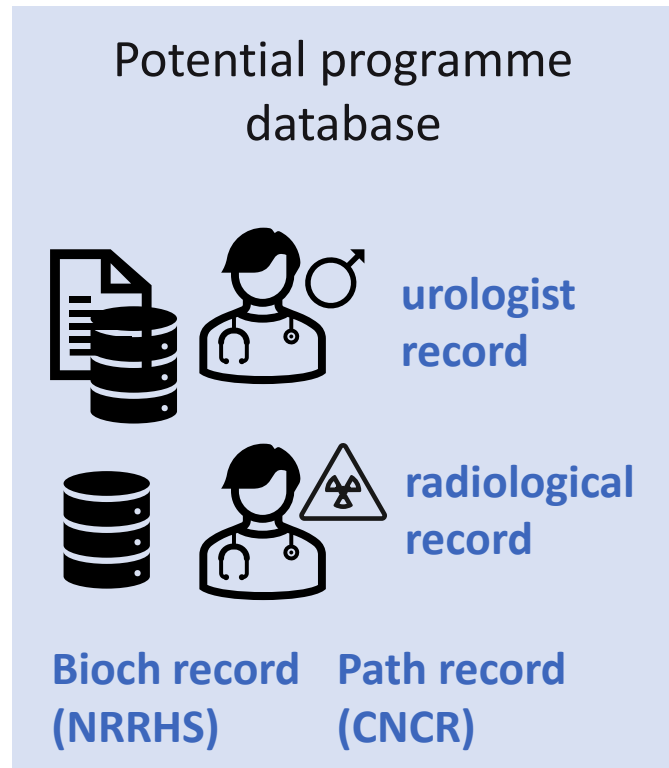
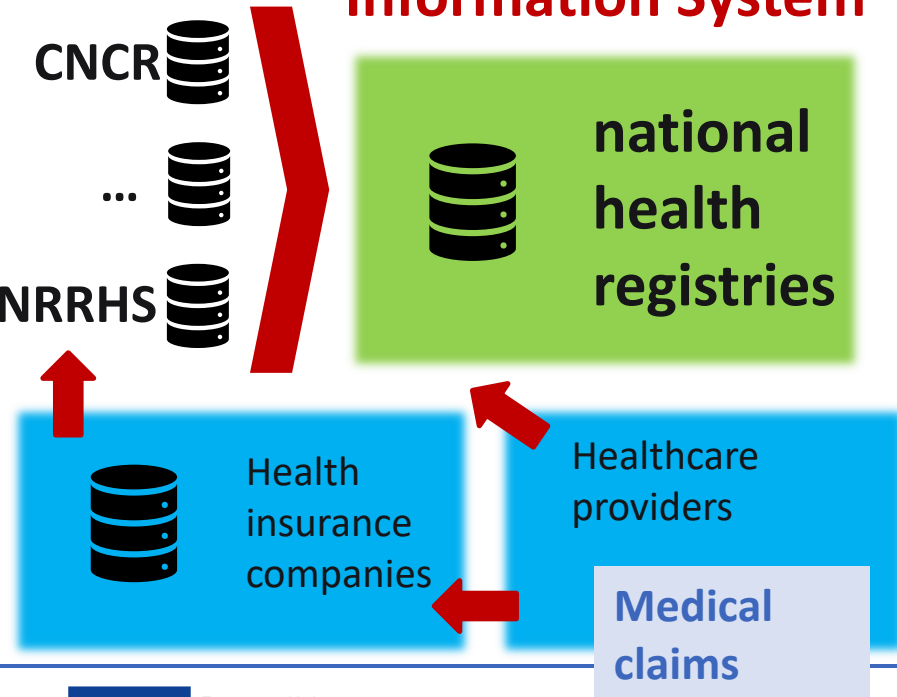
NEXT STEPS

New data collections needed to validate the assumptions

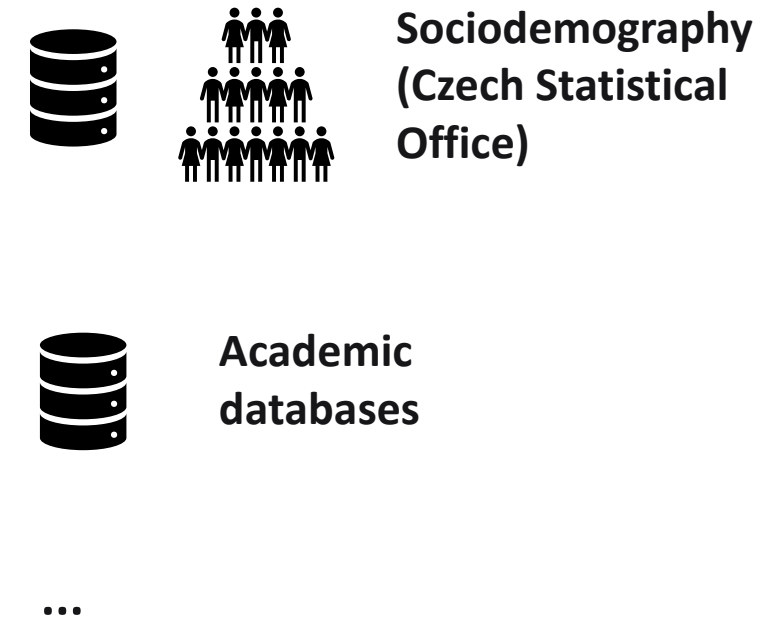
Data analysis – quality assurance information system

UZIS data collections

National Health Information System



External sources



Importance of international collaboration

- **Setting of standards**
 - Council recommendation
 - European guidelines and Quality assurance schemes
 - Sharing of data (primary use, secondary use, European systems)
- **Supporting national implementation**
 - sharing of experience
 - tools for national planning and implementation
- **Research support and collaboration**
- **Support awareness of citizens**

Modern Cancer Control: Saving Lives through Smart Solutions (conference in July 2022, under the auspices of the Czech presidency)

- Call to action document supported by health ministers



Taking the above-mentioned considerations into account, we call on the European Commission, EU Member States and all stakeholders to consider and support the following:

- Recognize the need to further discuss and consider the Council Recommendation amending Council Recommendation of 2 December 2003 on cancer screening, to promote EU-wide state of the art provision of evidence-based cancer screening.
- Timely availability of promising new technologies for cancer screening in a stepwise evidence-based manner, allowing for implementation and health services research for further optimization of existing and new screening programme pathways.
- The European Commission should promote the development and the implementation of European Guidelines and Quality Assurance Schemes, so that countries can adhere to the best evidence-based recommendations, while at the same time recognising their local circumstances, resources’ constraints, etc.

<https://www.mzcr.cz/category/czpres/kalendar-akci/modern-cancer-control-saving-lives-through-smart-solutions/>

Prague Prostaforum 2022 declaration for improving prostate cancer early detection in Europe

Prague Prostaforum 2022 declaration for improving prostate cancer early detection in Europe

November 24, 2022

During their Meeting in Prague in September 2022, the Ministers of Health expressed their support for the Call to Action on Oncology, which was the main output from the presidency Expert Conference on Oncology: "Modern Cancer Control: Saving Lives through smart solutions", which took place on 13 – 14 July 2022 in Brno, Czech Republic¹, and which called on all stakeholders to consider support of EU-wide accessibility of quality cancer screening programmes.

Prostate cancer is in many European countries the most frequently occurring cancer in men and one of the most common causes of cancer death in men. Estimated prostate cancer incidence rates vary twofold and mortality rates threefold in 2020 across EU-27². Detecting prostate cancer at an early stage,



<https://prostaforum.uzis.cz/en/prague-prostaforum-declaration/>

Thank you for your attention!

Thanks to numerous collaborators
and stakeholders



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