



Federaal Kenniscentrum voor de Gezondheidszorg  
Centre Fédéral d'Expertise des Soins de Santé  
Belgian Health Care Knowledge Center

# CARDIOVASCULAR PRE- PARTICIPATION SCREENING IN YOUNG ATHLETES (14-34y)

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Will I drop dead during my sports activity?

Which tests are accurate enough to detect heart problems?

How many people will be tested?

What will cost such a screening program?  
And who will pay?

Am I obliged to be screened?

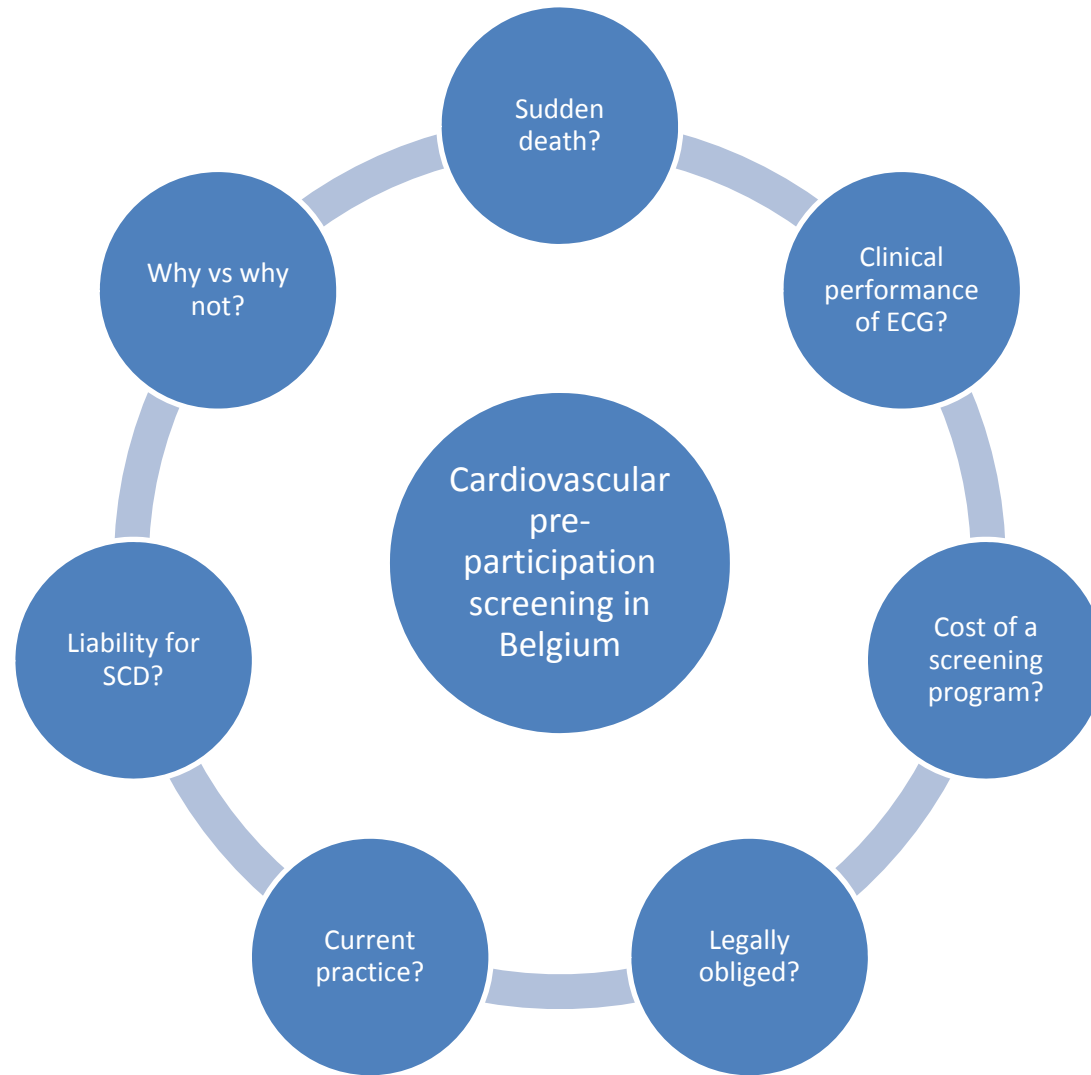
What if I don't perform these tests?

In sports club A a medical certificate is needed and in sports club B not?

Should I know that I have a heart disease?

Is it screening or an individual choice to be tested?

# Research questions



# Cardiac diseases and SCD

**Table 2 – Estimated prevalence of cardiac disease that may induce SCD in the young and corresponding estimated SCD incidence rate**

	Prevalence per million	SCDs per million per year
<b>Genetic disorders</b>		
• Structural cardiovascular disease:		
○ Hypertrophic cardiomyopathy	450 (100 à 790)	≤1
○ Arrhythmogenic right ventricular cardiomyopathy	200 à 500	<1
○ Marfan syndrome	200	<1
○ ...		

**There is no hard data on the best management of asymptomatic individuals (i.e. those typically detected at pre-participation screening) affected by one of those diseases. Imperfect data suggest that asymptomatic individuals will almost never (suddenly) die from it.**

<b>Non-genetic congenital or acquired disorders</b>		
• Wolff-Parkinson-White syndrome	1360 (550 à 2180)	<<1
• Congenital anomalies of the coronary arteries	1000	0.5
• Congenital heart disease		<<1
• Aortic stenosis		<<1
• Myocarditis		<1
• Dilated cardiomyopathy		<<1
• Premature coronary atheromatosis		<<1
• Mitral valve prolapse		<<1
• ...		
<b>TOTAL</b>	<b>3000</b>	<b>&lt;10</b>

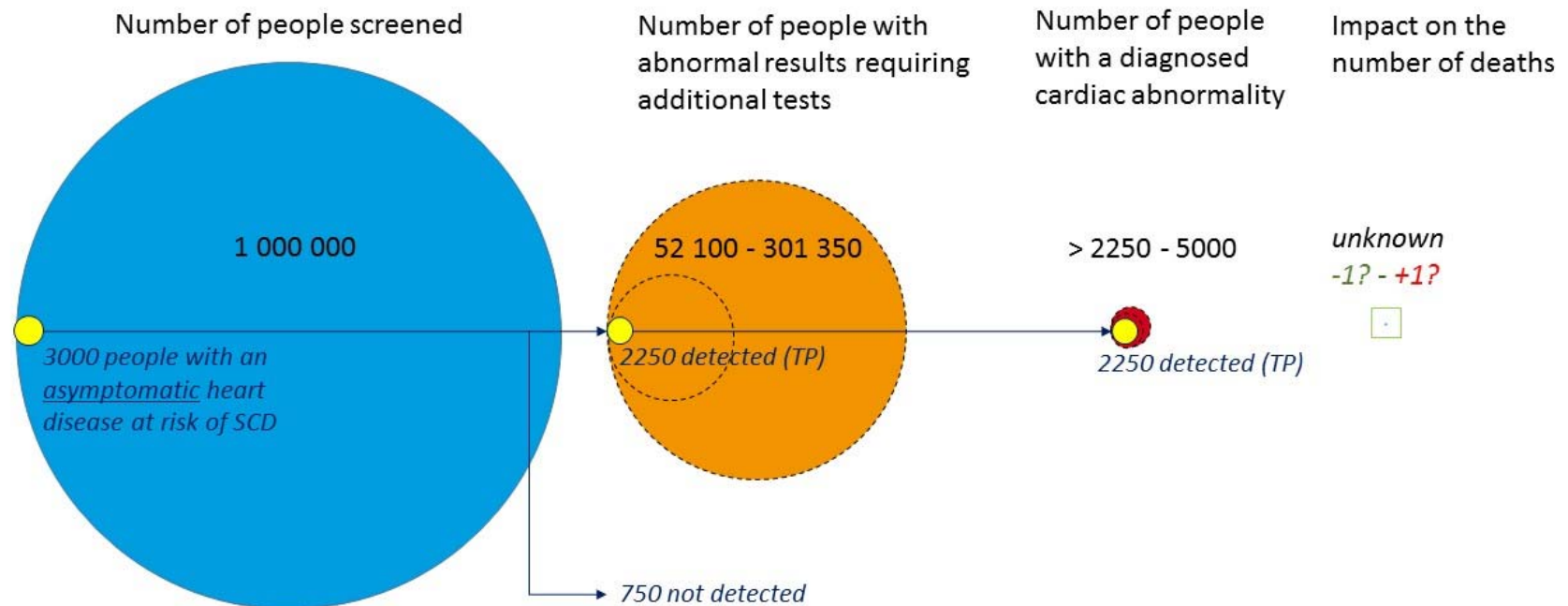
# Diagnostic performance of cardiovascular testing?

- **History-taking + physical examination:**  
**low sensitivity (0.03 to 0.44) and specificity (0.69 to 0.85)**
  
- **Rest-ECG:**  
**sensitivity 0.75 and specificity 0.95**  
**(if performed by expert sports electrocardiographers)**  
**→ imperfect data**
  
- **History-taking + physical exam + rest-ECG:**  
**sensitivity 0.75 and specificity 0.70**

# Appropriateness of a screening program: ongoing discussion



# Diagnostic performance of a cardiovascular screening program



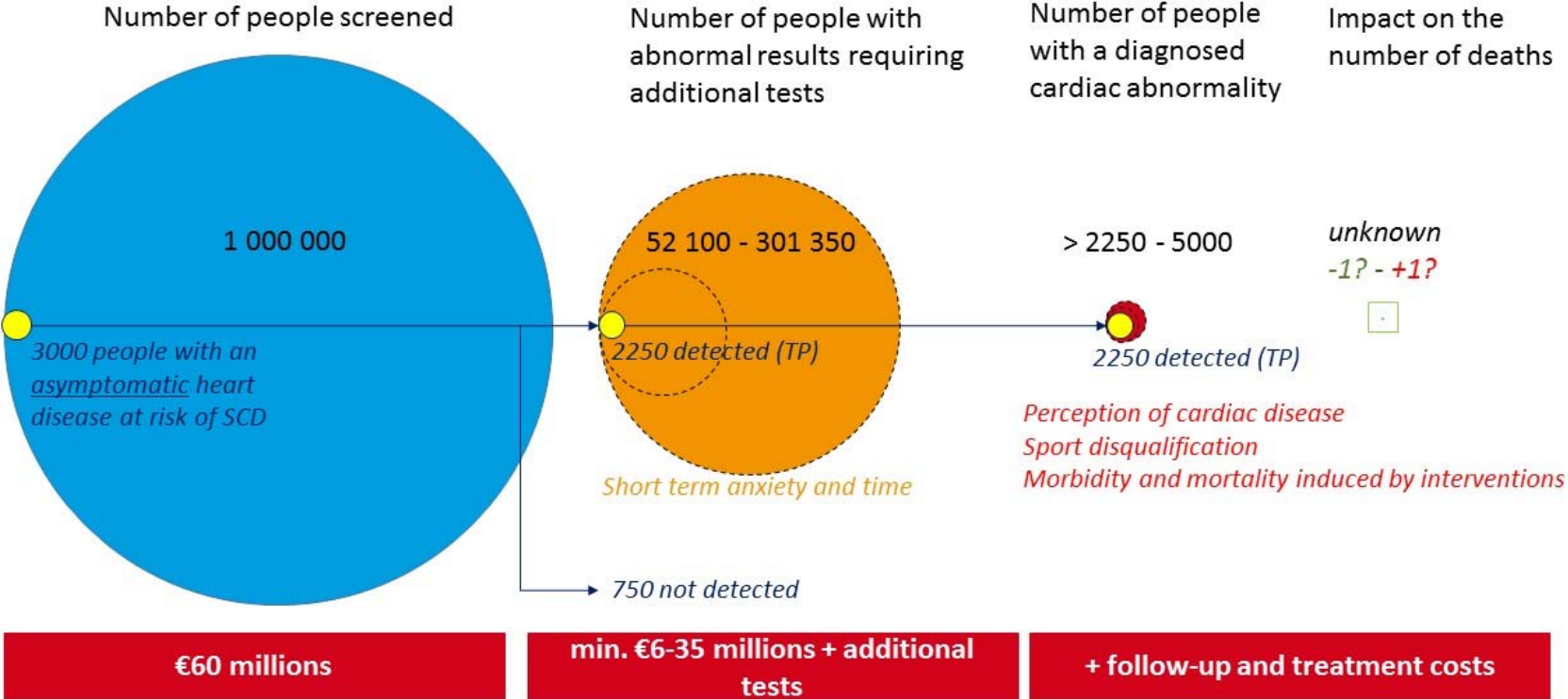
Scenario 1: sensitivity 0.75; specificity 0.95  
 Scenario 2: sensitivity 0.75; specificity 0.70

# Economic evaluation

- **Literature review**
  - No reliable economic evaluations with convincing results
- **Cost consideration in a Belgian setting**
  - Lack of robust data
  - No reimbursement from NIHDI or additional insurances



# Belgian cost considerations



Scenario 1: sensitivity 0.75; specificity 0.95  
 Scenario 2: sensitivity 0.75; specificity 0.70

# Sports policy in the Communities

- **Flemish Community:**

- Sports federations/clubs/organisers: free to recommend or to impose pre-participation screening
- Quality standards can be imposed or recognised by the government
- VASO-protocol & Domus Medica guideline

- **French Community:**

- Medical certificate is required for competition sports and other categories (spec risks)
- Content defined by government (Commission for prevention of risks for health in the domain of sports)
- Other categories: Declaration of honour

# Current practice in selection of sports federations

- **Small survey in 10 most popular sports**
- **Results:**
  - **Heterogenous practice**
  - **(no) Obligation by insurance companies**

# Liability

- **Physicians' liability: not probable**
  - No guidelines
  - Considerable harms induced by screening
- **Liability of sports clubs/organisations/personnel:**
  - duty to take reasonable steps to avoid foreseeable harm for the athlete
  - Omission to impose screening cannot be seen as a lack of duty of care
- **Liability of athlete: duty of care**
  - Patients' Rights: to be informed, informed consent, free choice of healthcare provider, minors/incapacitated adults, duty of collaboration
  - Health Data Protection Act: aptitude for sports vs medical data

# Ethical considerations

## **If screening program is implemented:**

- **Risk of limitation of ‘direct’ individual freedom (i.e. to practice sports)**
- **Risk of limitation of ‘indirect’ individual freedom (i.e. to do an activity which is good for health)**
- **Risk of reinforcement of social, economic and cultural inequalities**
- **Financial consequences (accessibility, budget impact)**

# Policy recommendations (1/3)

## To the involved authorities, the responsible of the sports federations and the concerned physicians

- Within the current available scientific knowledge, KCE recommends that no cardiovascular pre-participation screening should be requested in young, non-professional athletes by enrollment in a sports federations or sports mass event. After all not sufficient elements are available to presume that the trade-off between benefits and harms of such a screening would be beneficial.

## Policy recommendations (2/3)

- **This report does not concern screening in athletes older than 34 years neither on the usefulness of screening to prevent other sports injuries. KCE recommends that before guideline or regulations are developed on these topics, an independent evaluation of the benefits and harms should be performed.**

## Policy recommendations (3/3)

- **The KCE recommends that independent and scientific underpinned information material should be developed on the potential benefits and harms of cardiovascular pre-participation screening. This information should be available for the athletes, the parents, the sports federations, the physicians, the physiotherapists and other involved care professionals.**





# THANK YOU!

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# Colophon

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