

Impact of the NHS Health Check on cardiovascular disease risk: difference-in-differences matching analysis

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Coverage of a national cardiovascular risk assessment and management programme (NHS Health Check): Retrospective database study



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ABSTRACT

Objective. To determine coverage of NHS Health Check, a national cardiovascular risk assessment programme in England, in the first four years after implementation, and to examine prevalence of high cardiovascular disease (CVD) risk and uptake of statins in high risk patients.

Method. Study sample was 95,571 patients in England aged 40–74 years continuously registered with 509 practices in the Clinical Practice Research Datalink between April 2009 and March 2013. Multilevel logistic regression models were used to assess predictors of Health Check attendance; elevated CVD risk factors and statin prescribing among attendees.

National Coverage of NHS Health Check 2009-2013 [Summary of findings]

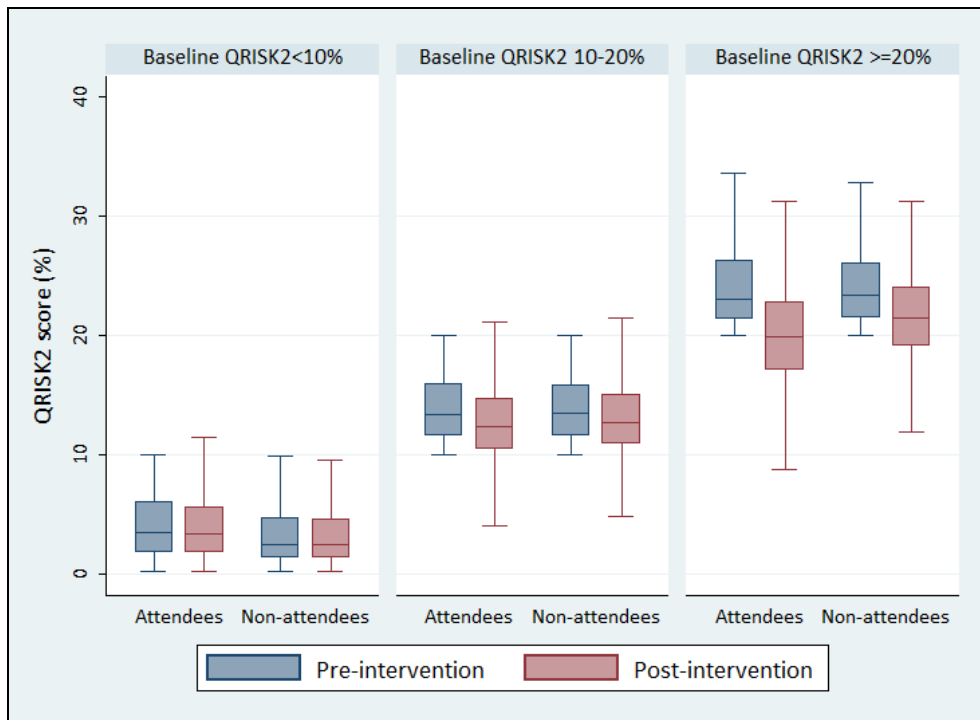
- **Coverage (attended/eligible) = 21.4%**
 - Large variations between practices & between regions
- **More attendance found in**
 - Older patients
 - Patients with family history of premature CHD
 - White British patients compared with missing, not-stated, Black African, Chinese, other White, or other Black ethnic backgrounds
- **No significant difference in attendance between areas of deprivation**
- **1/3 of attendees at high CVD risk were prescribed a statin after Health Check**

How about effectiveness??

Impact of NHS Health Check on CVD risk: difference-in-differences matching analysis

- **Aim:** To assess the impact of NHS Health Check on changes in global CVD risk, individual CVD risk factors, medication prescribing & new diagnosis of vascular disease.
- **Study design:** Quasi-experimental difference-in-differences matching comparing NHS Health Check attendees & non-attendees.
- **Data source:** Retrospective & longitudinal routine care data obtained from the Clinical Practice Research Datalink.
- **Study population:** Randomly selected 138,788 patients aged 40-74 from 462 practices who were eligible for a NHS Health Check between April 2009 and March 2013.
- **Outcome measures:** 10-year CVD risk score (QRISK2), individual CVD risk factors, statin & antihypertensive prescribing, diagnosis of selected vascular diseases.

Results: Impact on 10-year CVD risk

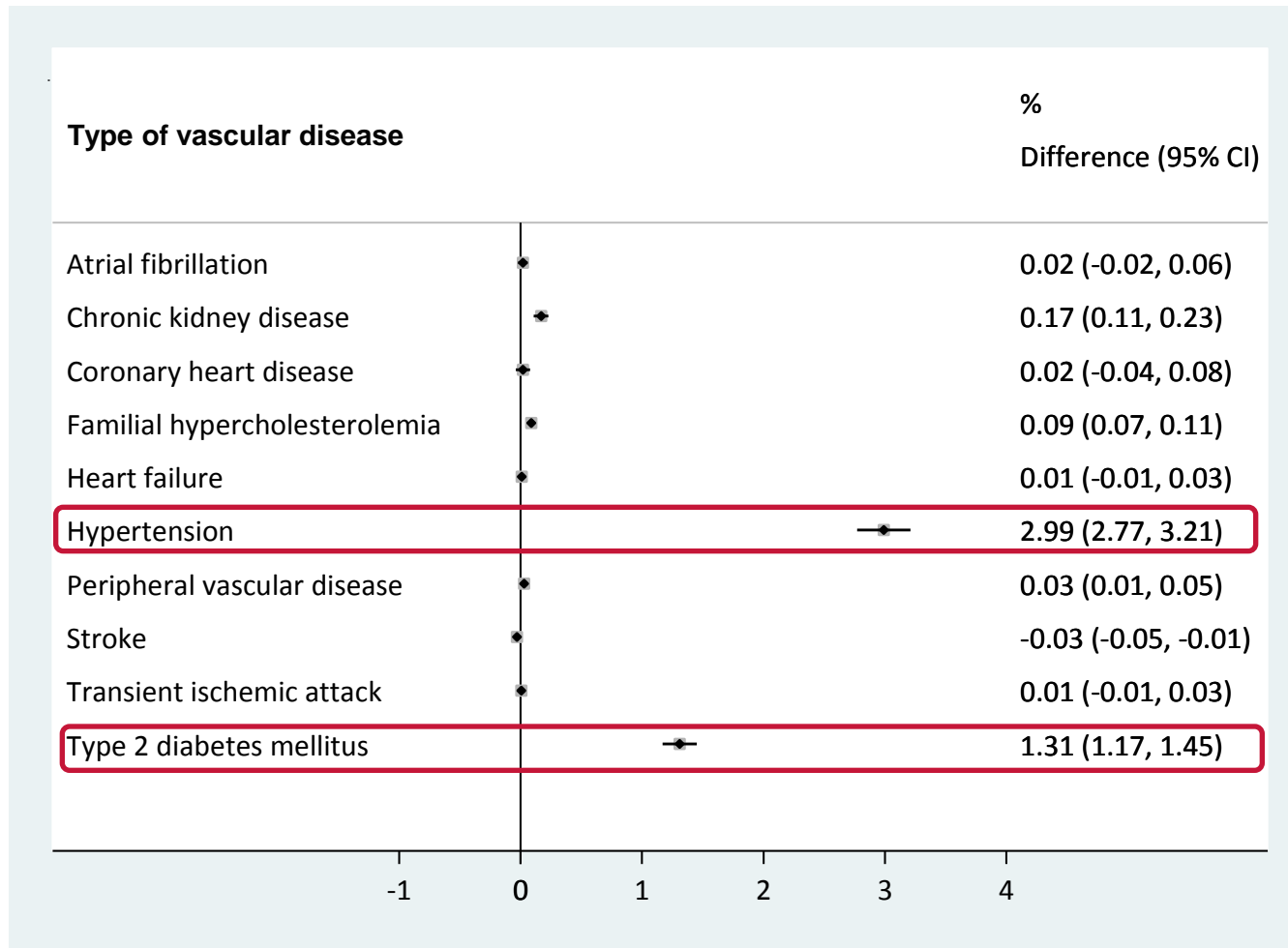


- 21.4% attended a Health Check
- Overall programme impact on 10-year CVD risk was **-0.21% (95%CI: -0.25, -0.19)**
- For people whose baseline risk was $\geq 20\%$, impact was **-0.54% (95%CI: -0.93, -0.15)**
- For people whose baseline risk was 10-20%, impact was **-0.34% (95%CI: -0.44, -0.24)**
- For people whose baseline risk was $< 10\%$, impact was **-0.14% (95%CI: -0.16, -0.12)**

Results: Impact on CVD risk factors & medication prescribing

- NHS Health Check was associated with reductions in:
 - Systolic BP by -2.51 mm Hg (95%CI: -2.77 to -2.25)
 - Diastolic BP by -1.46 mm Hg (95%CI: -1.62 to -1.29)
 - BMI by -0.27 kg/m² (95%CI: -0.34 to -0.20)
 - Total cholesterol by -0.15 mmol/L (95%CI: -0.18 to -0.13)
- NHS Health Check was NOT associated with
 - Smoking prevalence (-0.11%, 95%CI: -0.35 to 0.13)
- NHS Health Check was associated with increases in:
 - Statin prescribing by 3.83% (95%CI: 3.52 to 4.14)
 - Antihypertensive prescribing by 1.37% (95%CI: 1.08 to 1.66)

Results: Impact on new diagnosis



Conclusion

- Impact of the NHS Health Check was statistically significant but clinically modest.
- Our findings for the before-after analysis in Health Check attendees were largely consistent with previous research studies, but we further considered a control group.
- Given limited benefit observed from the programme in the first 4 years, substantial improvements are needed via better planning, management & monitoring the NHS Health Check.

Final Remarks

- **Many thanks to co-authors:** John Tayu Lee, Eszter Panna Vamos, Michael Soljak, Desmond Johnston, Kamlesh Khunti, Azeem Majeed & Christopher Millett
- **References:**
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 - Chang KC-M, Soljak M, Lee JT, Woringer M, Johnston D, Khunti K, Majeed A, Millett C. Coverage of a national cardiovascular risk assessment and management programme (NHS Health Check): Retrospective database study. *Preventive medicine* 2015;78:1-8.

