

identifying risk factors for recurrent cardiovascular events (CVEs) in patients with acute coronary syndrome (ACS). This study evaluated risk factors associated with recurrent CVEs at 1 and 3 years in a real-world cohort, post-ACS.

Methods: Medical and pharmacy claims data were analyzed from >40 million patients' records in the HealthCore Integrated Research Database from 2006 to 2011, including 14 large US health plans. ACS events were identified using ICD-9 codes associated with hospitalization for acute myocardial infarction (MI; 410.xx) or unstable angina (411.1x), and excluded if <12 months pre-/post-index plan eligibility or <18 years old. A multivariable Poisson model was used to evaluate the risk of ≥ 1 recurrent CVE, defined as stroke, MI or coronary heart disease-related mortality, at 1 and 3 years following the index ACS event, with adjustment for baseline demographic characteristics, comorbidities, medication use and index ACS characteristics.

Results: Of 140,903 ACS patients identified, mean follow-up was 1.9 years, mean age was 66.8 years and 58.6% were male. Prior to ACS, 46.3% had dyslipidemia, 41.9% diabetes mellitus and 8.6% renal dysfunction. During the index ACS hospitalization, 42.7% reported unstable angina at presentation, mean length of stay was 6.2 days, 40.3% had a CABG and/or PCI, and 3.6% died. During the follow-up period, 22.0% of patients had a recurrent CVE. At 1 and 3 years following index ACS, significant ($P < 0.05$) variables associated with an increased risk were baseline dyslipidemia (adj OR 1yr=1.49, 3yr=1.49); previous MI (adj OR 1yr=1.20, 3yr=1.09); or diabetes mellitus (adj OR 1yr=1.10, 3yr=1.10). Significant ($P < 0.05$) variables indicating a decreased risk were taking a single oral antidiabetic (OAD) agent at baseline (adj OR 1yr=0.91, 3yr=0.93); receiving a PCI (adj OR 1yr=0.85, 3yr=NS); or CABG (adj OR 1yr=0.88, 3yr=0.86) at index. At 3 years, PCI was not associated with a decreased risk of recurrent CVEs (adj OR=0.95, $P > 0.5$), while CABG at 3 years remained significant.

Conclusions: This analysis provides contemporary data on risk factors associated with recurrent CVEs following ACS. Patients with baseline comorbidities had increased risk, while those with baseline OAD treatment and CABG at index had decreased risk of recurrent CVEs at 1 and 3 years following the index ACS. However, PCI significantly reduced risk only at 1 and not 3 years post-index ACS. Ongoing attention to modifiable risk factors and acute treatment strategies is essential in improving health outcomes associated with CVD.

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An evolving pattern of cardiovascular risk in 14,315 men and women attending a nurse-led, cardiac profiling and prevention clinic over a quarter of a century

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Purpose: The burden of cardiovascular disease continues to evolve as the demographic and risk factor profile of affected populations changes over time. In order to document potentially important changes in primary prevention efforts in this regard, we examined the risk profile of >14,000 first time attendees to a nurse-led, cardiac profiling and prevention clinic over a 25-year period.

Methods: Routine demographic and clinical data were collected, in a standardised manner, in 7815 men and 6500 women who visited the free and open public access clinic (located in a cardiology unit of a major tertiary hospital) during the period June 1986 to December 2011. Data were compared on a sex-specific basis according to five-yearly historical periods (1986-1991 [P1 - initial 6 months included], 1992-1996 [P2], 1997-2001 [P3], 2002-2006 [P4], 2007-2011 [P5]).

Results: Overall, the age profile of men (45.2±14.9 vs. 53.2±14.6 years) and women (45.8±15.5 vs. 52.4±14.3 years) attending the clinic was similar but progressively older over time (P1 vs. P5). In men, average blood pressure (BP) reached a peak during P3 (135±18/84±11 vs. 131±16/83±10 mmHg in P1) before declining in P4/P5 and in women peaked during P4 (137±21/80±11 vs. 126±19/79±11 mmHg in P1); $p < 0.001$ for all comparisons. Men and women with elevated BP ($\geq 140/90$ mmHg) peaked in P2 (46.6%) and in P4 (45%), respectively, but declined overall (39.5% to 31.7% and 28.2% to 24% for P1 vs. P5, respectively); $p < 0.001$. In women there were only small changes in average lipid levels, while in men there was an overall fall from P1 to P5 (5.4±1.1 vs. 5.0±1.2 mmol/L; $p < 0.001$). Men and women with elevated lipid levels (total cholesterol ≥ 5.5 mmol/L) generally declined over time (41.8% to 30.8% and 40.3% to 32.1% for P1 vs. P5, respectively); $p < 0.001$. The proportion of current male smokers initially declined (from 14.3% to 11.2% in P3) before rising again (14.4% in P5) and in women progressively declined from 13.3% to 10.4% (P1 to P5); $p < 0.001$. Throughout the study period (P1 to P5) both men (79.1±11.8 vs. 84.7±15.7 kg) and women (63.6±11.1 vs. 70.7±15.6 kg) became progressively heavier; $p < 0.001$. Fasting blood glucose levels peaked in P3 for both men and women (~0.5 mmol/L more than P1) before also declining towards P1 levels in P4/P5.

Conclusions: Over 25 years or more of clinical experience, men and women being profiled for the prevention of cardiovascular disease via a nurse-led clinic have become older and heavier. Consistent with population trends, historical highs in BP and lipid levels have now passed, but risk levels (particularly metabolic-related) remain high.

CARDIOVASCULAR RISK APPRAISAL AND PREDICTION

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Diagnostic and prognostic performance of the INTERHEART-cholesterol score in patients admitted for chest pain

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Introduction: The INTERHEART study was a case-control study of myocardial infarction. In 2011 the study investigators published the INTERHEART-cholesterol score designed to predict specifically the incidence of acute myocardial infarction but its validation in the daily clinical setting is unknown.

Methods: Prospective and observational study of all consecutive patients admitted in a single cardiology unit for chest pain. The INTERHEART-cholesterol score was assessed according to the original publication: age (males > 55 or females > 65 : 2 points), LDL-c (< 77 mg/dl: 0, 77-116 mg/dl: 1, 116-151 mg/dl: 2, > 151 mg/dl: 5), HDL-c (< 40 mg/dl: 2), Smoking (former: 2, current 1-5 cig/d: 2, current 6-10 cig/d: 4, current 11-20 cig/d: 7, current > 20 cig/d: 11), diabetes (yes: 7) and hypertension (yes: 6)

Results: We included 1240 patients and 584 (47.1%) were discharged with the diagnosis of non-ischemic chest pain, 467 with non-ST elevation ACS and 189 ST-elevation ACS. Mean INTERHEART-cholesterol score was 11.74 (5.69) and was lower in patients with non-ischemic chest pain compared to ACS: 10.02 (5.42) vs. 13.27 (5.48) ($p < 0.001$). When divided in tertiles of the INTERHEART-cholesterol score it could be observed an increasing pattern of cardiovascular risk, cardiac and non-cardiac vascular disease and fewer non-ischemic chest pain in the highest tertiles. The upper limit of the inferior tertile (10.0) obtained a sensitivity of 79% and 55% sensibility for the exclusion of ACS (C-statistic 0.67 IC 0.64-0.71; $p < 0.001$); the diagnostic accuracy was lower for ST-elevation ACS. A complete follow-up was obtained for 96% of the cohort and a clear increasing tendency was noted according to INTERHEART-cholesterol in all-cause mortality (4.8%, 10.0% y 13.4%; $p < 0.01$), cardiovascular mortality (2.6%, 7.1% y 11.1% $p < 0.01$) and non-fatal ACS or mortality (6.1%, 16.8% y 22.5% $p < 0.01$). The multivariate analysis of follow-up was performed by Cox-regression analysis including age, previous coronary heart disease, heart failure or stroke and discharge treatments. This analysis identified that the lowest tertile was independently associated to lower all-cause mortality (HR: 0.55 95% CI 0.31-0.93; $p = 0.04$), cardiovascular mortality (HR: 0.38 95% CI 0.18-0.81; $p = 0.01$) and non-fatal ACS or mortality (HR: 0.56 95% CI 0.36-0.87; $p < 0.01$). Age and previous heart failure also were significantly associated with these end-points.

Conclusions: The INTERHEART-cholesterol score has a low diagnostic value in patients admitted for chest pain but, conversely, has a reliable prognostic power to identify low-risk patients in the following year.

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Age- and gender-specific differences in the prognostic value of resting heart rate for cardiovascular events in patients referred for coronary angiography

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Background: Resting heart rate (HR) is independently associated with atherosclerosis and increased cardiovascular (CV) morbidity and mortality. However, little is known about gender differences in the prognostic importance of HR.

Aim: To evaluate the predictive value of HR for mortality in a large population of patients with suspected or proven coronary artery disease (CAD) with an extended follow-up, stratified in four subpopulations according to gender and age (50th percentile corresponding to 67 years).

Design and patients: We studied 3559 subjects (2603 males, age: 66±11 years, mean±SD) who underwent coronary angiography for proven or suspected CAD, which demographic, clinical, instrumental and follow-up data were collected from the Institute electronic databank.

Results: During a mean follow-up period of 35±25 months, 296 (8%) patients died; there were 173 (5%) cardiac deaths. HR predicted cardiac mortality in male patients ≥ 67 years, and overall death in males, both age < 67 and ≥ 67 years and in female patients ≥ 67 years (log-rank test in all groups, $p < 0.01$). However, HR provided no prognostic value in female patients aged < 67 years. After adjustment in the multivariate Cox regression model HR remained predictive of overall mortality females ≥ 67 years (HR=1.7, CI 1-2.8, $p \leq 0.05$) and in males < 67 and ≥ 67 years (HR=2.5, CI 1.5-4.2, $p < 0.001$ and HR=1.6, CI 1.2-2.3, $p < 0.01$, respectively), also conferring an higher risk of cardiac death in males ≥ 67 years (HR=1.8, CI 1.2-2.7, $p < 0.01$).

Conclusion: The prognostic role of HR may differ based upon a patient's gender and age, suggesting significant differences in cardiovascular physiopathology between female and male patients.