Impact of the stepwise approach to cardiovascular disease prevention in patients with established ASCVD from the 2021 ESC Prevention Guideline

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Background: The European Society of Cardiology (ESC) 2021 Guidelines on Cardiovascular Disease Prevention in Clinical Practice advocate a stepwise approach for the treatment of cardiovascular (CV) risk factors to reduce CV-risk in patients with established atherosclerotic cardiovascular disease (ASCVD). The aim of this study was to evaluate CV-risk reduction and residual risk for recurrent CV-events based on stepwise risk factor management.

Methods: In patients with established ASCVD in the UCC-SMART (n = 8,997) and European parts of the REACH registry (n = 18,364) receiving usual care, 10-year risk of recurrent major CV-events was calculated using the SMART2 risk score. The effect of guideline recommended step 1 and 2 treatment options on this risk was modelled using best available evidence from meta-analyses and trials. Step 1 treatment recommendations were smoking cessation, use an antithrombotic drug, LDL cholesterol <1.8 mmol/L, systolic blood pressure (SBP) <140 to 130 mmHg, and in people with type 2 diabetes mellitus a GLP1-receptor agonist/SGLT2-inhibitor. Step 2 treatment recommendations studied were LDL cholesterol <1.4 mmol/L, SBP <130 mmHg, dual pathway inhibition, colchicine, eicosapentaenoic acid (EPA), and in people with type 2 diabetes mellitus a GLP1-receptor agonist/SGLT2-inhibitor in people with type 2 diabetes. Two scenarios were evaluated: one with perfect attainment (ideal) and one with empiric attainment rates (realistic).

Results: The baseline median 10-year residual CV-risk was 26% [14-41%] overall, and 20%, 27%, and 54% in the low, moderate, and pooled high and very high European risk regions, respectively. Baseline risk was lowest in patients with only coronary artery disease and highest in patients with polyvascular disease or comorbid diabetes mellitus. In the ideal scenario, CV-risk was reduced to 14% [9-22%] overall and, 11%, 15%, and 29% following step 1 and 6% [4-10], 5%, 9%, and 12% following step 2. In the realistic scenario, CV-risk was reduced to 24% [16-36%], 20%, 24, and 47% following step 1 and 10% [7-16%], 9%, 9%, and 19% following step 2. In the ideal scenario, 43%, 22% and 4% achieved a residual risk of <10% following step 1 and 87%, 83% and 38% following step 2 in each respective risk region. In the realistic scenario this was 7%, 1%, and 0% after step 1 and 59%, 56%, and 13% after step 2 (Figure shows the realistic scenario for the low risk region & moderate risk region).

Conclusion: Despite the current standard of care, patients with established ASCVD remain at high residual CV-risk across all European risk regions. Step 1 treatment targets may lower this risk substantially, but only if attainment rates are higher than empirically achieved. Intensiﬁed Step 2 treatment options result in marked further reduction of residual CV-risk and should be encouraged to be considered in all patients with established ASCVD.
Realistic scenario low risk region

- 15,877 patients
- Risk with current treatment: 38%
- Residual risk after step 1: 43%
- Residual risk after step 2: 59%

Realistic scenario moderate risk region

- 6,266 patients
- Risk with current treatment: 42%
- Residual risk after step 1: 33%
- Residual risk after step 2: 35%