Population rates of cardiac catheterization and yield of high-risk coronary artery disease

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Background: The optimal population rate of cardiac catheterization is unknown. One potential way to determine it would be to examine whether there is a population rate beyond which the yield of high-risk coronary artery disease (CAD) does not rise.

Methods: Using a detailed clinical registry that captures all patients undergoing cardiac catheterization in Alberta, we determined annual population rates of cardiac catheterization and the corresponding yield of cases of high-risk CAD in each of Alberta's 17 health regions from 1995 to 2002. Least squares linear regression analysis and hierarchical modelling methods were then used to assess the linear relation between catheterization rates and rates of high-risk CAD.

Results: The age-adjusted average rate of cardiac catheterization among men ranged from 404.9 to 638.1 per 100 000 population aged over 20 years. Among women, the average rate ranged from 171.8 to 314.0 per 100 000. For both sexes, increased regional rates of catheterization were associated with a linearly increasing yield of high-risk CAD, with no evidence of a plateau in yield when more procedures were performed. One additional case of high-risk CAD was identified for every 2.5 additional cardiac catheterization procedures performed among men, and for every 3.7 additional procedures performed among women.

Interpretation: The increasing yield of patients with high-risk CAD associated with increased regional population rates of cardiac catheterization, together with the absence of a plateau in yield, suggests that Alberta's population rates of cardiac catheterization are suboptimal to detect people with high-risk CAD.