

**Results:** 1217 patients were identified, 69% male and 31% female. Mean age (SD) was 66.3 (10.9). 44% had blood pressure equal or higher than 140/90 mmHg, 58% had LDL-c equal or higher than 100 mg/dl. Younger patients had better control of BP and LDL-c compared to older ones ( $p < 0.05$ ). Only 45% of participants reached target levels on blood pressure and LDL-c values. 82.4% of patients were treated with antihypertensive drugs, and 69.3% were treated with lipid lowering drugs. Logistic regression analysis showed that the most important demographic and clinical determinants of uncontrolled blood pressure were previous diagnosis of hypertension (OR 2.7; 95% CI 1.9-3.8), not being diagnosed of heart failure (OR 1.9; 95%CI 1.3-3.3), being single/divorce/widowed (OR 1.8; 95%CI 1.3-2.6), not being treated with lipid lowering treatment (OR 1.5; 95% CI 1-2), and being diagnosed of stroke and PAD (OR 1.4; 95%CI 1-1.9); for LDL-c the most important determinants of uncontrolled LDL-c were not being treated with lipid lowering drugs (OR 3.5; 95% CI 2.3-5.2), being female (OR 1.8; 95% CI 1.3-2.6), being diagnosed of stroke and PAD (OR 1.7; 95%CI 1.2-2.5), and not being diagnosed of diabetes (OR 1.6; 95%CI 1.1-2.2).

**Conclusion:** Patients diagnosed of IHD have BP and LDL-c better controlled than patients with stroke and PVD. Determinants of optimal control of BP differ from those of optimal control of LDL-c, and should be taken into account when target levels are to be reached.

### NEW RISK INDICATIONS FOR CARDIOVASCULAR DISEASE

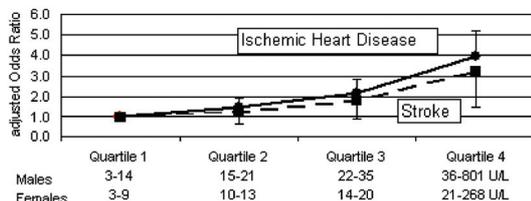
#### 1886 Longitudinal repeated measurements of gamma-glutamyl transferase and the risk for fatal cardio- and cerebrovascular disease

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**Purpose:** There is evidence from recent studies that gamma-glutamyl transferase (GGT) is associated with cardiovascular disease (CVD). However, the longitudinal effects of repeated GGT measurements have never been evaluated.

**Methods:** We present a prospective investigation of GGT and CVD mortality in 140,196 participants of the Vorarlberg Health Monitoring & Promotion Programme followed-up for 17 years. Participants were under age 60 and there were 781 CVD-related deaths. Since participants underwent an unequal number of examinations (four on average), we evaluated the effects of repeated GGT measurements on CVD mortality, utilising a nested matched case-control design allowing an unbiased comparison. Proportional hazards and longitudinal random-effects logistic models, adjusting for established risk factors, were performed to estimate relative risks (RR) and their 95% confidence intervals per log GGT increase and per GGT quartiles.

**Results:** For all participants, based on their first examination GGT measure only, elevated GGT was significantly ( $p < 0.001$ ) associated with fatal CVD events, showing a clear dose-response relationship. Adjusted RR (95%CI) per log GGT increase were 2.03 (1.53-2.69) in men and 2.60 (1.53-4.42) in women. Based on repeated GGT measurements, RR increased to 3.12 (1.76-5.56) in men and to 4.33 (1.49-12.64) in women. As shown in the figure, there was a RR of 3.93 (2.12-7.28) and 3.22 (1.07-9.69) for ischemic heart disease and stroke, respectively, in persons belonging to the highest GGT quartile relative to the lowest.



GGT and the risk for fatal CVD

**Conclusions:** The results provide strong evidence of positive associations between high GGT and mortality from CVD in both cardio- and cerebrovascular events. Multiple elevated GGT measurements further add to the strength of this association.

#### 1887 Periodontal infections and coronary heart disease: role of periodontal bacteria and importance of total pathogen Burden. The coronary event and periodontal disease (CORODONT) study

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**Purpose:** Chronic inflammation from any source is associated with increased cardiovascular risk. Periodontitis is discussed as a possible trigger of chronic inflammation. The aim of the present study was to investigate the possible association between periodontal disease and coronary heart disease (CHD) focusing on microbiological aspects.

**Methods:** A total of 789 subjects, 263 patients with angiographically confirmed, stable CHD and 526 population-based, age and gender matched controls, without a history of CHD, were included in this study. Subgingival biofilm samples were analyzed for the main periodontal pathogens, such as *A. actinomycetemcomitans*, *B. forsythus*, *P. gingivalis*, *P. intermedia* and *T. denticola*, using DNA-DNA hybridisation. The need for periodontal treatment in each subject was assessed using the community periodontal index of treatment needs (CPITN).

**Results:** In multivariable analyses, we found a statistically significant association between the periodontal pathogen burden ( $\log_{10}$  of the sum of all pathogens)(Odds ratio (OR) 1.92, 95% confidence interval (CI) 1.34-2.74,  $p = 0.0004$ ) or the number of *A. actinomycetemcomitans* in periodontal pockets ( $\log_{10}$ )(OR 2.70, 95% CI 1.79-4.07,  $p < 0.0001$ ) and the presence of CHD. In addition, a statistically significant association between an increase in mean CPITN by one and the presence of CHD (OR 1.67, 95% CI 1.08-2.58,  $p = 0.02$ ) was observed.

**Conclusions:** Our findings suggest an association between periodontitis and presence of CHD. Periodontal pathogen burden, and particularly infection with *A. actinomycetemcomitans*, may be of special importance.

#### 1888 Resting heart rate and its changes over years as a risk factor for mortality in the general population: the Paris Prospective Study I

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**Background:** Whether resting heart rate (HR) is a risk factor for mortality remains discussed. The aim of the study was to investigate whether HR changes are related to mortality in the population.

**Methods:** 4783 native Frenchmen aged 42 to 53 years were recruited between 1967 and 1972, and had yearly examinations during the next 5 years in the same standardized conditions. Subjects had electrocardiograms and physical examinations conducted by a physician, provided blood samples for laboratory tests, and answered questionnaires administered by trained interviewers. Resting HR was determined by measurement of the radial pulse during a one-minute recording, after a five-minute rest in supine position.

**Results:** During the follow-up period ( $> 20$  years) 1018 men died. Subjects were divided into 9 groups according to their baseline HR ( $< 66$  bpm, 66-75, and  $> 75$  bpm) and to the difference between HR at year 5 and baseline HR (decrease  $> 8$  bpm, low variation ie between - 8 and +8 bpm, and increase  $> 8$  bpm). Relative risks of mortality were estimated by Cox model after adjustments for age, physical activity, smoking status, body mass index, systolic blood pressure, glycemia, cholesterol and triglycerids. Compared to the reference group (baseline HR between 66 and 75 bpm and low variation at year 5), baseline HR but also changes over years were both associated with the risk of death (table).

Heart rate variation after 5 years of follow-up

	Decrease	Low variation	Elevation
Baseline heart rate:			
< 66	0.85 (0.40- 1.82)	0.82 (0.68- 0.99)	0.88 (0.68- 1.15)
66-75	1.08 (0.81- 1.44)	1 (ref.)	1.52 (1.14- 2.03)
>75	1.10 (0.86- 1.40)	1.53 (1.23- 1.90)	2.62 (1.86- 3.68)

RR and 95% CI were estimated by Cox proportional hazard model adjusted for confounding factors.

**Conclusion:** Our results show that resting HR and its changes are independent risk factors of mortality in the general population.