

## Epidemiology

### 2.23 Development of Heart Failure in Hypertension: Analysis of Recent

#### Clinical Trials

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**Introduction:** During the last decades, clinical trials demonstrated that lowering blood pressure is effective in reducing risk of major cardiovascular events, including heart failure (HF). Scientific societies and mostly physicians, however, tend to give priority to preventing other major cardiovascular endpoints, i.e. myocardial infarction and stroke, rather than HF.

**Aim:** In the present analysis we specifically analysed incidence per year of new onset HF among other major cardiovascular events in recent clinical studies on hypertension.

**Methods:** For this purpose, we identified international clinical studies, performed on hypertension or in patients at high cardiovascular risk with a predominant presence of hypertensive patients. These studies had to provide specific information on demography, blood pressure levels, diagnosis and absolute incidence of HF as a predefined endpoint and type of antihypertensive treatment.

**Results:** A total of 21 studies were selected for the present analysis, which included 188.895 patients (mean age  $65.3 \pm 5.7$  years). During a mean follow-up of 4.4 years, a total of 24.518 major cardiovascular events have been recorded, of which 7.111 (29.0%) cases of HF, 10.136 (41.3%) cases of myocardial infarction and 7.271 (29.7%) cases of stroke. The incidence per year of HF was quite comparable to that of stroke, accounting for 6.6 and 6.7 events per year, respectively, being MI the most frequent event (9.4 event per year) in the selected studies. Development of HF was more frequent in old versus young hypertensive patients [RR 0.38, 95% CI (0.34-0.41)]; old versus young hypertensive patients [RR 0.38, 95% CI (0.34-0.41);  $P < 0.0001$ ], as well as in black versus non-black subjects [RR 4.23, 95% CI (4.14-6.20);  $P < 0.0001$ ] and, mostly, in diabetics than in non-diabetic patients [RR 3.66, 95% CI (3.19-4.19);  $P < 0.0001$ ]. Finally, development of HF increased from high to very high cardiovascular risk hypertensive patients [RR 0.37, 95% CI (0.35-0.39);  $P < 0.0001$ ].

**Conclusion:** In clinical studies on hypertension development of HF is quite comparable to that of other cardiovascular events, particular in high-risk, diabetic individuals. These results may support to need to better improve integrated antihypertensive strategies aimed at preventing the progression from hypertension to overt cardiac disease and end-stage HF.