Summary

Cardiovascular diseases (CVD) account for a major share of overall morbidity and mortality worldwide and significantly strain healthcare budgets. In reducing some of this burden, pharmacological interventions for preventing CVD can be considered. Notably, the decisions to implement pharmacological interventions in clinical practice have to be made with respect to both health and economic consequences associated with their use.

In this thesis, some of the methodological challenges in simulating and synthesizing pharmacoeconomic evidence in CVD prevention were assessed and potential solutions to those challenges were proposed. This includes a set of recommendations for enhancing the robustness of pharmacoeconomic analyses that apply CVD risk prediction models. The application of these recommendations was also explored in a simplified model of primary CVD prevention with antihypertensives. Another challenging issue relates to the robustness of evidence on the health-related quality of life (HRQoL) values used in pharmacoeconomic analyses. Here, evidence-synthesis was suggested as a relevant approach to, where appropriate, synthesize HRQoL values in specific CVD disorders as well as to indicate the level of heterogeneity across those values and possibly its sources. As an example, evidence-synthesis of instrument-specific HRQoL values in coronary heart disease and its underlying disease-forms was explored. In this study large heterogeneity within and between the instrument-specific values and inherent uncertainty if applied within pharmacoeconomic analysis, were found.

This thesis also derives pharmacoeconomic evidence on the use of oral anticoagulants (i.e. vitamin K antagonists (VKAs) and novel oral anticoagulants (NOACs) e.g. apixaban, dabigatran) for secondary CVD prevention that may have direct societal relevance and implications in the Dutch setting. Firstly, optimizing the standard anticoagulant care with VKAs was explored. Secondly, the health and economic consequences associated with the use of apixaban for the prevention of stroke in non-valvular atrial fibrillation, and dabigatran for treatment and prevention of venous thromboembolism indicated that both apixaban and dabigatran were favourable alternatives to treatment with VKAs.

In conclusion, several studies in this thesis emphasize that standardizing methodological requirements and recommendations for conducting and reporting pharmacoeconomic studies in CVD prevention including the ones proposed in this thesis may enhance the quality and validity of pharmacoeconomic evidence and reduce possible bias. Furthermore, this thesis provides pharmacoeconomic evidence that NOACs may present a valuable alternative to VKAs for thromboprophylaxis in the Dutch setting.