First reviewer's comments:

1. The analysis seeks to compare the years of life lost over a lifetime with no treatment to the years of life lost with treatment for five years from the present. This will give an answer to the question about the advantages of starting treatment five years earlier. However it does not appear to answer the question posed in the title: the same patient 5 years later will be at higher risk and the analysis therefore compares treatment of two cohorts of patients of different ages and at different risks.

Reply: We have made the research question clear in the last paragraph of the introduction as the first reviewer has misinterpreted the aim of the study.

2. One method of analysis uses a fixed horizon model, which simply multiplies the case fatality rate by the incidence of CHD. This method assumes that all mortality loss occurs after the first CHD event. However individuals who survive a first CHD event are at higher risk of a second CHD event and consequent mortality. This means the model may underestimate life years lost after CHD events at a younger age.

The Markov model uses a 5 year cycle, but insufficient detail is provided on the number of states: full health, CHD and death are mentioned, but it is unclear how second and subsequent events are treated.

Transition probabilities are provided for health to CHD and for CHD to death but not for CHD to second CHD event or for second CHD event to death.

Reply: The basic method used for both models is now explained in detail in the beginning of Methods. This is followed by two sections, each specific to the particular model.

We explain about second CHD events with a paragraph in the section - Strengths and Weaknesses of the study. This notes that the addition of multi-states increases complexity and assumptions but adds bias and uncertainty to the results.

3. Throughout the paper it is unclear whether a distinction has been made between CVD (all cardiovascular disease) risk and CHD (coronary heart disease) risk. CHD is about 2/3 of CVD risk and is the preferred risk measure in most guidelines.

The model assumes that CHD risk is independent of non-CHD mortality, but it is unclear if CVA is included in non-CHD mortality.

Reply: The paper does differentiate between CVD and CHD and this is noted in the last paragraph of the section - Strengths and Weaknesses of the study.
Second reviewer’s comments:

5. Composition and probability assumptions in the Markov model - more detail and supplementary information is needed in relation to the construction and probability assumptions in the Markov model. At present the results in terms of potential years of life lost (PYLL) seems remarkably short, particularly for younger individuals. This is finding is not consistent with previous modelling research, particularly in low risk younger individuals.[1] It is hard to judge whether this is because of a different construction of the model or different probability assumptions.

Reply: We have expanded the methods section to explain the construction of the models in detail.

The reference suggested by the second reviewer was added and differences in the results explained in the last two paragraphs of the section - Strengths and Weakness in relation to other studies.

6. Patient preference - patient preference and cost were not modelled in the Markov analysis. My understanding is that the conventional approach to Markov modelling incorporates patient preferences, probability estimates and a simulation cohort decision tree. Justification why this approach has not been taken in terms of the Markov analysis that is presented is needed.

Reply: Markov analysis is used to answer many different types of questions and does not need to include patient preferences and costs. We did not include these two factors because they were not relevant to our research question.

7. Originality - the authors haven’t cited previous research in this area that have adopted a similar approach to cardiovascular risk estimation. This is particularly important as these modelling approaches have produced different results from those presented in this paper. The current study should be placed in the context of past research and critical discussion of the differences in results between the studies should be made.

Reply: We have added the reference suggested by the reviewer.

As noted in the introduction and discussion, approaches such as the Norway age-differentiated thresholds and lifetime risk scores are being taken to counteract the powerful impact of age on cardiovascular risk. This research took the novel approach of asking the fundamental question that has not been addressed previously - does a true difference in impact on life years lost in those at different ages but the same cardiovascular risk? The results show that there is no difference and therefore approaches that strive to correct the perceived imbalance towards treatment in the elderly by promoting treatment for the young who are at lower risk are wrong and should not be adopted.