GALAXY

GUT-AND-LIVER AXIS IN ALCOHOLIC LIVER FIBROSIS
GRANT NUMBER 668031

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1. AIMS

1.1 Wider social and economic costs and benefits of the treatments analyzed in cost-benefit model:
In order to quantify not only the medical impact of the treatments, but also their wider social and economic costs and benefits, we will perform a cost-benefit analysis of the interventions. These benefits include reduced need for long term care, reduced health care spending and will be estimated using the average costs of these services in the different countries. Based on both the medical and social costs and benefits we will calculate the net benefit of the treatment using a Markov model approach. Finally, we will quantify the uncertainty using probabilistic sensitivity analysis, derive the probability that the interventions will be profitable at different thresholds (acceptability curves) and identify the most important factors driving the results.

1.2. Submitted article to an international journal on the costs and benefits of the treatments

1.3. Final results made available on the web

1.4. Co-organized a conference to disseminate the results to policy-makers and commercial interests

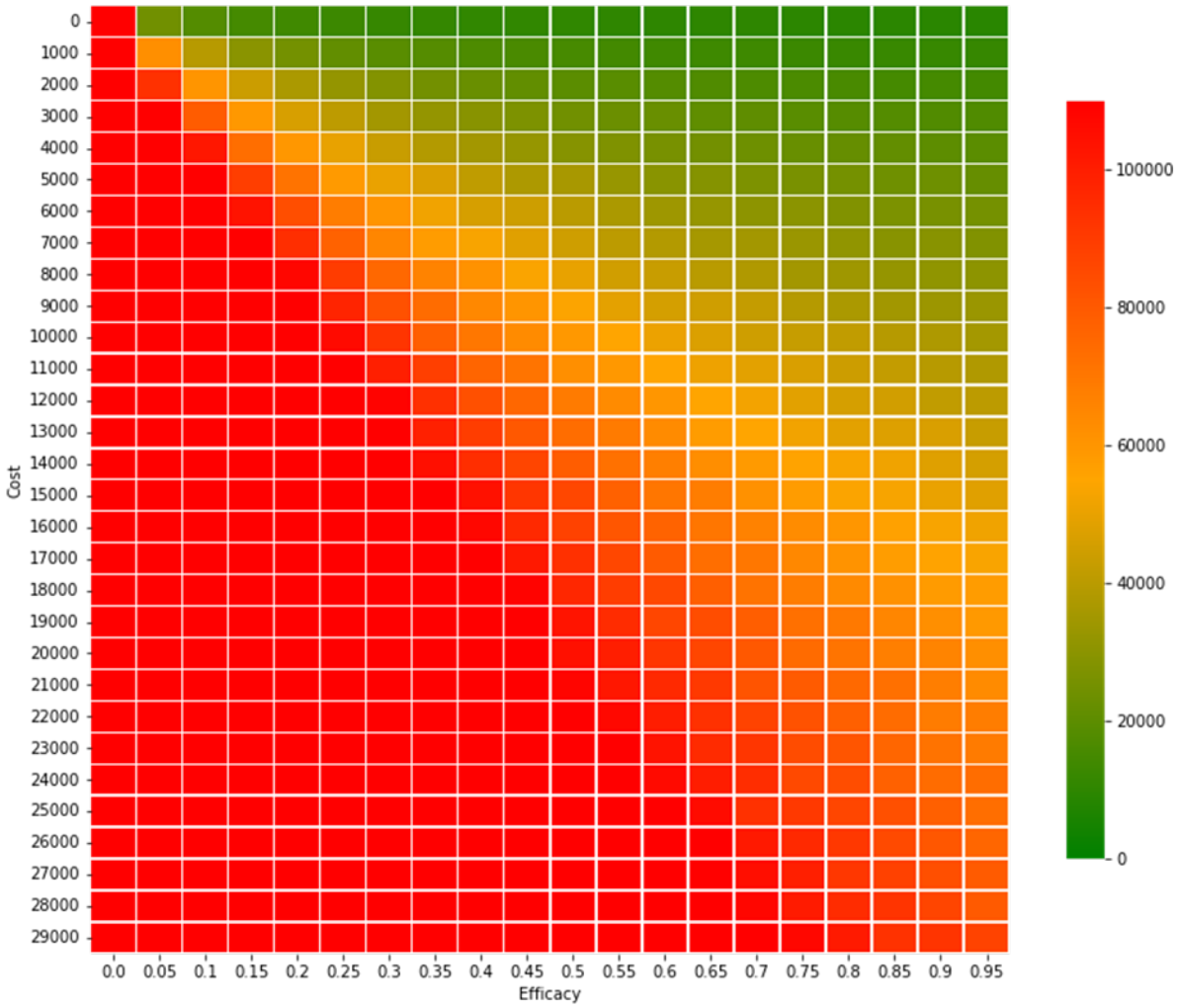
2. RESULTS

2.1. Cost-benefit model of treatments
The following is a summary of the outlined analysis above in 1.1.

Briefly, the current clinical situation described as the outline in this analysis is that once progressed beyond fibrosis, ALD is irreversible without effective treatment. Currently, there are no antifibrotic treatments. As recently demonstrated, accurate diagnostic tools have allowed for early detection of ALD, further enabling the development of targeted interventions. Without an idea of future value, and by extension the likelihood of eventual reimbursement, producers and research funders may have less incentive to focus on this opportunity. The goal of this analysis therefore became to identify the relationship between required efficacy and the cost of a potential new treatment for early ALD needed to achieve uptake into clinical practice.

We simulated excessive drinkers with advanced fibrosis over their lifetime using a Markov model. Two scenarios were applied: 1) no treatment (current standard) and 2) a progression-halting treatment modelled on a possible novel treatment in an ongoing trial. Model input data was in the no-treatment scenario sourced from the literature and the currently unknown treatment efficacy (reduced risk of progression) – and cost (USD) was simulated over a vast range of possible values using probabilistic sensitivity analysis. The simulation allowed the identification of pairs of treatment efficacies and costs resulting different ratios of incremental costs to incremental effectiveness (ICERs) compared to current management (Figure 1).

Figure 1 Effect-cost pairs with resulting estimates of cost-effectiveness



Legend to the right shows the incremental cost-effectiveness ratio-range as a colormap.

In countries with a willingness-to-pay threshold of $ 50,000, treatments halting progression in ALD at the fibrosis stage is cost-effective upon reaching 30% efficacy contingent on annual treatment costs not exceeding $ 5,000, or 60% efficacy if costs are less than $ 10,000 per annum. On the contrary, in the US where the willingness-to-pay threshold per QALY is often cited to be $ 100,000, the treatment is cost-effective at the cost of $28,000 per year if the effect exceeds 95%. These results may be useful for research funders and producers of new treatments for ALD by showing the likely acceptance of healthcare providers by showing the different levels of efficacy and cost likely resulting in uptake of the treatment. The calculated ICERs can be interpreted across different healthcare systems with varying levels of cost-effectiveness thresholds.

2.2. Submission of article to international journal

An article analyzing the costs and benefits of an intervention for liver disease has been completed and was approved as a master thesis at the European Master in Health Economics and Management. We submitted an abstract summarizing the results to the International Liver Congress 2022 (April, London). The full length manuscript is currently being revised for submission to the peer-reviewed journal Hepatology.

2.3. Final results made available on the web

Given acceptance of the manuscript, the results will be available (open access) through the journal's homepage.

2.4. Co-organize conference to disseminate results

A conference will take place digitally on the 24th of February 2022 (see attached invitation form). The University of Oslo will give two presentations at this conference to disseminate the results previously produced in GALAXY. Professor Hans Olav Melberg will give a presentation about the financial burden of alcohol-related liver disease and how costs are estimated. Researcher Lars Asphaug will present the paper "Cost-effectiveness of non-invasive screening for alcohol-related liver disease", published in *Hepatology* in 2019 (doi: https://doi.org/10.1002/hep.30979).

ONLINE SEMINAR

COSTS AND BENEFITS OF TARGETING ALCOHOL-RELATED LIVER DISEASE

24 FEBRUARY 2022, 3-4.30 PM (CET)

PROGRAMME

- **INTRODUCTION**
  ALEKSANDER KRAG, PROFESSOR AND MAJA THIELE, ASSOCIATE PROFESSOR, FLASH - CENTER FOR LIVER RESEARCH, ODENSE UNIVERSITY HOSPITAL, DENMARK
- **FINANCIAL BURDEN OF ALCOHOL-RELATED LIVER DISEASE AND HOW TO ESTIMATE ITS COSTS**
  HANS OLAV MELBERG, PROFESSOR IN HEALTH ECONOMICS, UNIVERSITY OF TROMSØ, NORWAY
- **COST-EFFECTIVENESS OF NONINVASIVE SCREENING FOR ALCOHOL-RELATED LIVER DISEASE**
  LARS ASPHAUG, RESEARCHER, DEPART. OF HEALTH MANAGEMENT AND HEALTH ECONOMICS, OSLO UNIVERSITY HOSPITAL, NORWAY
- **COST-EFFECTIVENESS OF TREATMENTS FOR ALCOHOL USE DISORDER**
  BY JESSICA MELLINGER, ASSISTANT PROFESSOR, INSTITUTE FOR HEALTHCARE POLICY AND INNOVATION, UNIVERSITY OF MICHIGAN, US
- **Q & A**

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QUESTIONS? CONTACT LOUISE.SKOVBORG.JUST@RSYD.DK

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