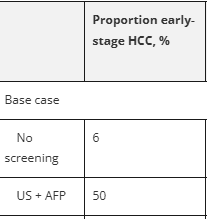
Remaining action items from last time:

* Double check if reasoning to keep false positive HCC utility same as MASLD utility is reasonable with Dr. Nguyen?
* One-way sensitivity

Questions

1. Is my method to derive a new death rate from MASLD node in the diabetic cohort reasonable? Multiplying SMR by the base case death rate.
2. Model verification results: Why is the cost of HCC treatment increasing for older starting age?
   1. Possibly bc of discounting (older pts costs aren’t discounted as much)
3. Can we derive combined subgroup inputs using OR/RR/HR?
   1. [What’s the Risk: Differentiating Risk Ratios, Odds Ratios, and Hazard Ratios? - PMC](https://pmc.ncbi.nlm.nih.gov/articles/PMC7515812/)
   2. [Survival Parameter Conversion Tool](https://www.ncss.com/wp-content/themes/ncss/pdf/Procedures/PASS/Survival_Parameter_Conversion_Tool.pdf)
   3. [Hazard Rate: Definition, How to Calculate, and Example](https://www.investopedia.com/terms/h/hazard-rate.asp)
   4. [Probability/rate conversion functions](https://www.treeage.com/help/Content/71-Advanced-Markov-Models/2-Probability-Rate-conversions.htm)

* **Adjust hcc stage distribution**
  + **Singal paper early stage is 6%**
  + **Sixth, tried applying Huang et al’s data for intervention arm hcc stage distribution. ICER decreased to around 189K** [Journal of Clinical Gastroenterology](https://journals.lww.com/jcge/fulltext/2018/07000/rate_of_nonsurveillance_and_advanced.17.aspx)
* **Adjust hcc survival**
  + **Check survival data from literature and compare with our weighed survival data by hcc stage**
  + **Early stage 5-year survival should be >70%**
    - **Our 1-year survival is 22.05% --> 5 year survival is 71.2% for TREATED group**
* Adjust hcc utility
  + Fifth – changed hcc late stage utility to 0.4 (originally 0.53). icer changed from 237K to 210K. Not sure if we want to keep this change bc don’t want to selectively pick and choose datapoints to get our desired results.
* Adjsut hcc cost
* Add more hcc stages
* **Intervention arm – we should assume a much greater % of patients receive treatment!!** 
  + Actually, we can’t say this for sure because barriers to treatment include financial constraints, social support, care management [Qualitative evaluation of barriers and facilitators to hepatocellular carcinoma care in North Carolina - PMC](https://pmc.ncbi.nlm.nih.gov/articles/PMC10287003/)
  + Even if patients are well connected to care, that does not mean that downstream care coordination will go well.
  + Try doing this
  + First -- tried increasing treatment rate in both arms by using cirrhotic masld treatment distribution data from seer and weighing it with data for non cirrhotic cohort --- ICER dec to 230K (will keep this change)
  + Seventh – fixed the survival weighing by non cirrhotic and cirrhotic hcc tx distribution in seer – ICER dec to 228K
  + Second – tried increasing treatment rate for each hcc stage by 25% in the intervention only! --- ICER dec to 190K
* **Our incr utility is off by one order of magnitude – but our hcc incidence is also lower by 10x**
  + **Third- kept new tx/untx rate, but same between control and intervention. After making undx cirrhosis rate 100%: icer decreased to 80517. Makes sense that cirrhosis screening is cost effective. Now, despite our early diagnosis % being much higher than Singal, our ICER is lower (Singal ICER is 100K)**
  + **Try replicating results by changing early stage % to replicate Singal’s :**
    - **Fourth – changed the control hcc distribution to 6% early, 30% interm, 64% late. ICER is 141K**
    - **Eith – if we do 100% undx cirrhosis with 6/30/64 hcc stage distribution, icer is 55K**
      * 
* Changes made:
  + Applied 60% screening adherence rate to the false positive transition node
  + Changed the treatment distribution and untreated rate such that it is the weighed average of that of cirrhotic and non cirrhotic MASLD patients (from SEER. Previously, we only used data for non cirrhotic patients)

**After making these changes, base case icer is 228,858**

**older subgroup icer is 106,771**

**To ask Dr. Nguyen if this makes sense (get these results):**

* **% diagnosed early, intermediate, late for control vs. Intervention**
* **Survival time for overall HCC and by each HCC stage for control vs. Intervention**
* **% receiving treatment for overall and by HCC stage for control vs. Intervention**