

Supplemental Digital Content

Appendix S1 A: Hepatology Survey.

Please note:

- Question numbers/variable names and response codes (in parentheses) are included to facilitate use of this appendix as a codebook. However, items in **blue** did not appear to respondents.
- Material in ALL CAPS did not appear as part of the survey but is included here for informational purposes.

Start of Block: Default Question Block

Thank you for being part of this University of Chicago Medicine survey about hepatology providers in the United States. We greatly appreciate your time.

Please note:

- **Your participation is important but voluntary.** You can skip any question you choose not to answer and to end your participation at any time.
- **What you tell us is confidential.** We separate answers from contact information and only analyze and report results in anonymous and summary form.
- **This survey should take less than 5 minutes** – we greatly appreciate your help!
- **Those who complete a survey will be entered to win one of four \$250 Amazon gift cards.** A question at the end of the survey asks if you wish to be part of the drawing. 3-5 weeks from the initial invitation, the Survey Lab will randomly select 4 participants from those who said "yes" and send them links to \$250 Amazon gift cards. Taxes are the responsibility of the recipients.

For questions or comments about the research, please contact

Principal Investigator: Thomas Cotter

Email: Thomas.Cotter@uchospitals.edu

For questions about the mechanics of the online survey, please contact

University of Chicago Survey Lab Director Kevin Ulrich

Email: Ulrichkv@uchicago.edu

For concerns about your rights as a survey research participant, please contact

University of Chicago Social and Behavioral Sciences IRB

Email: sbs-irb@uchicago.edu

Phone: 773.702.2915

Click forward if you agree to be part of the study

Section 1 of 4: Demographics

Q1 Are you gastroenterology board-certified / board-eligible?

- ☐ Yes (1)
 - ☐ No (2)
-

Q2 Are you transplant hepatology board-certified / board-eligible?

- ☐ Yes (1)
 - ☐ No (2)
-

Q3 How many years after fellowship have you been in practice?

- ☐ More than 20 years (5)
 - ☐ 16-20 years (4)
 - ☐ 11-15 years (3)
 - ☐ 6-10 years (2)
 - ☐ 0-5 years (1)
-

Q4 What is the location of your hospital?

▼ **DROPDOWN LIST**

Alabama (1) through Wyoming (52) [INCLUDES Washington, DC and Puerto Rico]

I prefer not to answer (-1)

THE NEXT QUESTION WAS DISPLAYED ONLY IF THE RESPONDENT EITHER CHOSE "PREFER NOT TO ANSWER" FOR THE PRIOR STATE QUESTION, OR LEFT THAT QUESTION BLANK.

Q5 In what region of the US is your hospital?

- ☐ Northeast (1)
 - ☐ South (2)
 - ☐ Midwest (3)
 - ☐ Northwest (4)
 - ☐ Southwest (5)
 - ☐ I prefer not to answer (-1)
-

Q6 What is your gender?

- ☐ Female (1)
- ☐ Male (2)
- ☐ Nonbinary (3)
- ☐ I prefer not to answer (-1)

Q7 What is your age?

- ☐ Over age 65 (5)
- ☐ 56-65 years old (4)
- ☐ 46-55 years old (3)
- ☐ 36-45 years old (2)
- ☐ 25-35 years old (1)
- ☐ I prefer not to answer (-1)

A NEW VARIABLE – RACE – WAS CREATED AS A SINGLE-VARIABLE WITH RESPONSE CODES AS SHOWN AND THE ADDITION OF TWO MULTI-RACE GROUPS FOR CASES WHO CHECKED MORE THAN ONE

RACE

- WHITE (1)
- BLACK OR AFRICAN AMERICAN (2)
- HISPANIC (3)
- NATIVE AMERICAN (4)
- ASIAN (5)
- NATIVE HAWAIIAN OR PACIFIC ISLANDER (6)
- WHITE & ASIAN (7)
- WHITE & HISPANIC (8)
- OTHER (9)

Q8 Choose one or more races / ethnicities that you consider yourself to be:

ALL BELOW CODED 1 IF SELECTED OR 0 IF NOT SELECTED

- ☐ **Q8_1** White
- ☐ **Q8_2** Black or African American
- ☐ **Q8_3** Hispanic or Latino
- ☐ **Q8_4** American Indian or Alaska Native
- ☐ **Q8_5** Asian
- ☐ **Q8_6** Native Hawaiian or Pacific Islander
- ☐ **Q8_7** Other _____
- ☐ I prefer not to answer (-1) **EXCLUSIVE CHOICE – IF RESPONDENT SELECTED THIS**

CHOICE, ALL OF THE VARIABLES ABOVE WERE CODED -1 FOR "REFUSED"

PAGE BREAK

Q9 How would you best describe your hospital?

- ☐ University-based (1)
- ☐ University-affiliated (2)
- ☐ Community (i.e. not affiliated with a university) (3)
- ☐ Government (e.g. VA) (4)
- ☐ Other (5) _____

Q10 How many liver transplants did your center perform in 2019?

- ☐ More than 100 (6)
- ☐ 81-100 (5)
- ☐ 61-80 (4)
- ☐ 41-60 (3)
- ☐ 21-40 (2)
- ☐ 1-20 (1)

Q11 On average, how many patients with liver disease do you evaluate in outpatient clinics every week?

▼ DROPDOWN LIST

0 (0) through 80 or more (80)

PAGE BREAK

Q12 Of the average [NUMBER INPUT FROM RESPONSE TO Q11] patients with liver disease you evaluate in outpatient clinics each week, how many have alcohol-associated liver disease?

▼ DROPDOWN LIST

0 (0) through 60 or more (60)

PAGE BREAK

Q13 The DSM-5 diagnostic criteria for Alcohol Use Disorder (AUD) is defined as at least 2 of the following 11 alcohol-related symptoms in the past 12 months:

1. Drinking more or for longer than was intended
2. More than once wanting to cut down or stop drinking, and failing
3. Spending a lot of time drinking or recovering from aftereffects of drinking
4. Cravings for alcohol
5. Failure to fulfill major daily role obligations due to recurrent alcohol use
6. Continued alcohol use despite it causing social problems
7. Prioritizing alcohol over important or pleasurable activities
8. Recurrent alcohol use in situations that are physically hazardous
9. Persistent alcohol use despite knowledge of negative health consequences
10. Tolerance
11. Withdrawal symptoms or drinking to relieve withdrawal symptoms

Of the average [NUMBER INPUT FROM RESPONSE TO Q12] patients with alcohol-associated liver disease you evaluate in outpatient clinics each week, how many have active Alcohol Use Disorder (AUD)?

▼ DROPDOWN LIST

0 (0) through 40 or more (40)

PAGE BREAK

Section 2 of 4: Practice Habits

Q14 Have you ever treated a patient with AUD with disease-specific medications in order to prevent relapse or decrease cravings (e.g. acamprosate, naltrexone, gabapentin, etc.)?

- ☐ Yes (1)
- ☐ No (2) → IF NO SKIP TO Q20

Q15 Have you received formal training in AUD treatment?

- ☐ Yes (1)
- ☐ No (2)

NEXT QUESTION DISPLAYED ONLY IF RESPONSE TO Q15 IS NOT NO

Q16 What type of training in AUD treatment did you receive?

- ☐ Addiction Medicine Fellowship (1)
 - ☐ Addiction Medicine Certification Course (2)
 - ☐ Alcohol Use Disorder Course (3)
 - ☐ Other type of training (please specify) (4) _____
-

Q17 In the past 12 months, about what percentage of your patients with active AUD have you prescribed disease-specific medications for?

- ☐ More than 40% (5)
 - ☐ 31-40% (4)
 - ☐ 21-30% (3)
 - ☐ 11-20% (2)
 - ☐ 1-10% (1)
 - ☐ None (0)
-

NEXT QUESTION DISPLAYED ONLY IF Q17 IS NOT ANSWERED "NONE"

Q18 What is your most commonly prescribed medication?

- ☐ Acamprosate (1)
 - ☐ Baclofen (2)
 - ☐ Disulfiram (3)
 - ☐ Gabapentin (4)
 - ☐ Naltrexone (5)
 - ☐ Other (please specify) (6) _____
-

NEXT QUESTION DISPLAYED ONLY IF Q17 IS NOT ANSWERED "NONE"

Q19 What is your second most commonly prescribed medication?

- ☐ Acamprosate (1)
 - ☐ Baclofen (2)
 - ☐ Disulfiram (3)
 - ☐ Gabapentin (4)
 - ☐ Naltrexone (5)
 - ☐ Other (please specify) (6) _____
-

PAGE BREAK

Q20 At your institution, how often are you able to have agreeable patients seen within 4 weeks by an Addiction Psychiatry doctor?

- ☐ All or almost all the time (1)
 - ☐ More than half the time (2)
 - ☐ About half the time (3)
 - ☐ Less than half the time (4)
 - ☐ Rarely or never (5)
 - ☐ Does Not Apply - I have never referred a patient (6)
-

NEXT QUESTION DISPLAYED ONLY IF Q20 IS NOT ANSWERED "ALL OR MOST OF THE TIME" OR "DOES NOT APPLY"

Q21 What do you think are the reasons for the suboptimal Addiction Psychiatry availability at your institution? ALL BELOW CODED 1 IF SELECTED OR 0 IF NOT SELECTED

- ☐ Q21_1 Absence of addiction psychiatry services at (or affiliated with) your institution
 - ☐ Q21_2 Poorly-resourced addiction psychiatry services at (or affiliated with) your institution
 - ☐ Q21_3 Patient-related financial barriers (e.g. inadequate insurance or inability to pay out of pocket)
 - ☐ Q21_4 Something else _____
-

Q22 At your institution, how often are your patients able to obtain AUD-specific psychotherapy (e.g. motivational interviewing, cognitive behavioral therapy)?

- ☐ All or almost all of the time (1)
- ☐ More than half the time (2)
- ☐ About half the time (3)
- ☐ Less than half the time (4)
- ☐ Rarely or never (5)
- ☐ Does Not Apply - I have never referred a patient (-4)
- ☐ Don't know (-2)

Q23 How easy is it for your patients to gain access to alcohol rehabilitation programs (inpatient or outpatient)?

- ☐ Very easy (1)
- ☐ Somewhat easy (2)
- ☐ Somewhat difficult (3)
- ☐ Very difficult (4)
- ☐ Don't know (-2)

PAGE BREAK

Section 3 of 4: Knowledge

Q24 New information takes time to diffuse among working doctors. To help us correctly estimate dissemination, please answer the next three questions with your working knowledge, without the use of additional sources.

Which of the following medications is NOT FDA-approved for use in AUD?

- ☐ Acamprosate (1)
- ☐ Disulfiram (2)
- ☐ Gabapentin (3)
- ☐ Naltrexone (4)
- ☐ Don't know (-2)

Q25 Which of the following medications used to treat patients with AUD has been studied in patients with advanced liver disease?

- ☐ Acamprosate (1)
 - ☐ Baclofen (2)
 - ☐ Gabapentin (3)
 - ☐ Naltrexone (4)
 - ☐ Don't know (-2)
-

Q26 Which of the following medications has an FDA black box warning for hepatotoxicity?

- ☐ Acamprosate (1)
 - ☐ Baclofen (2)
 - ☐ Gabapentin (3)
 - ☐ Naltrexone (4)
 - ☐ Don't know (-2)
-

PAGE BREAK

Section 4 of 4: Attitudes

Q27 If a patient with AUD is a suitable candidate for medication to prevent relapse or cravings (e.g. acamprosate, naltrexone, gabapentin, or others), should hepatology providers be willing to prescribe these medications?

- ☐ Yes **(1)**
 - ☐ No **(2)**
 - ☐ Unsure **(-2)**
-

DISPLAY THE FOLLOWING QUESTION ONLY IF ANSWER TO Q27 IS "NO".

Q28 Why not? (Select all that apply)

ALL BELOW CODED 1 IF SELECTED OR 0 IF NOT SELECTED

- ☐ **Q28_1** It is not part of a hepatology provider's job
 - ☐ **Q28_2** Lack of the clinic resources required (e.g. unable to provide regular short-interval followup)
 - ☐ **Q28_3** Suboptimal knowledge of AUD medications
 - ☐ **Q28_4** Other (please specify) _____
-

Q29 How comfortable or uncomfortable are you with prescribing medications for AUD?

- ☐ Very comfortable **(1)**
 - ☐ Mostly comfortable **(2)**
 - ☐ Neutral **(3)**
 - ☐ Mostly uncomfortable **(4)**
 - ☐ Very uncomfortable **(5)**
-

Q30 Do you think additional training should be required beyond Medicine / Gastroenterology / Hepatology board certification in order to prescribe medications for AUD?

- ☐ Yes **(1)**
 - ☐ No **(2)**
-

Q31 What are the best ways of increasing liver providers' awareness and training around medications for AUD? (Select all that apply.)

ALL BELOW CODED 1 IF SELECTED OR 0 IF NOT SELECTED

- ☐ **Q31_1** In-person didactic
 - ☐ **Q31_2** Webinars
 - ☐ **Q31_3** Online modules
 - ☐ **Q31_4** Formal certification for prescribing AUD medications
 - ☐ **Q31_5** Integration into fellowship training as an option for trainees
 - ☐ **Q31_6** Other (specify) _____
-

Q32_TEXT Please add any additional comments you have about the potential role of hepatology providers in AUD treatment here.

Thank you for your assistance with this study!

Please advance to the next page to indicate whether you wish to be part of a drawing for 1 of 4 \$250 Amazon gift cards.

Q33 Indicate below whether you want to be part of a drawing for one of four \$250 Amazon gift cards. Between 3 and 5 weeks from the initial study invitation, winners will be randomly selected from among those who say "Yes" below and sent a link to the Amazon card via email. Taxes are the responsibility of the winners.

- ☐ Yes, enter me in the drawing for one of four \$250 Amazon gift cards (1)
- ☐ No, thank you. I prefer not to be part of the drawing (2)

End of Block: Default Question Block

Appendix S1 B – Email Recruitment Text.

Initial recruitment email

SUBJECT LINE: Survey on hepatology providers' practice and attitudes to treating Alcohol Use Disorder with medications

Dear hepatology provider,

If you are receiving this email, you know that over 15 million U.S. adults have alcohol use disorder (AUD), with alcohol-associated liver disease now being the leading cause of mortality from cirrhosis. Despite this, patients with AUD remain undertreated (<10% receive pharmacotherapy). Many are assessed regularly in liver clinics, providing a potential opportunity for intervention. The current practice, knowledge and attitudes of hepatology providers in the US with regard to using AUD medications is unknown. This information is vital in order to understand the optimal approach to improving care of this patient population. We have devised a survey aimed at ascertaining this baseline data and invite you to partake. This hypothesis-generating research survey will provide a platform for future research.

The survey takes less than 5 minutes to complete and is intended for hepatologists caring for patients with chronic liver disease at liver transplant centers (where the key patterns of AUD management by hepatology providers will be captured). No identifying data is collected in the survey, all results will remain confidential and only aggregated data will be released in published reports. Completing the survey will indicate that you have given your consent to participate.

Follow this link to the Survey:

[\\${!://SurveyLink?d=Take the Survey}](#)

All participants who complete the study will be entered in a draw for 1 of 4 \$250 Amazon gift cards at the end of the study duration.

We highly appreciate your participation in this study.

Thomas Cotter MBBCh

K. Gautham Reddy MD FAASLD, AGAF, FACG

Michael Charlton MD FRCP

Or copy and paste the URL below into your internet browser:

[\\${!://SurveyURL}](#)

Follow the link to opt out of future emails:

[\\${!://OptOutLink?d=Click here to unsubscribe}](#)

Follow-up Prompt 1

SUBJECT LINE: Following up: Survey on hepatology providers' practice and opinions

Dear hepatology provider,

You should have received an invitation from **University of Chicago researchers** to take part in an **under 5-minute survey** of hepatologists caring for patients with chronic liver disease at liver transplant centers. This brief survey will provide vital information about **current practice, knowledge and opinions of hepatology providers** with respect to AUD medication use. Those completing the survey will be entered in **a drawing for 1 of 4 \$250 Amazon gift cards**.

Please assist by adding information about your experience and opinions.

Follow this link to the Survey:

[\\${!://SurveyLink?d=Take the Survey}](#)

- Research is being collected by University of Chicago researchers funded by the GI Research Foundation (GIRF). The University of Chicago Survey Lab is collecting the data on behalf of the researchers.
- The Survey Lab separates contact information from survey response and deletes those emails. Only dis-identified data are saved and passed along to the researchers. Results are confidential and only aggregate data released in published reports.

We greatly appreciate your help with this study.

Sincerely,
Kevin Ulrich, Director, The University of Chicago Survey Lab
On behalf of

Thomas Cotter MBBCh
K. Gautham Reddy MD FAASLD, AGAF, FACG
Michael Charlton MD FRCP

Or copy and paste the URL below into your internet browser:
[\\${!://SurveyURL}](#)

Follow the link to opt out of future emails:
[\\${!://OptOutLink?d=Click here to unsubscribe}](#)

Follow-up Prompt 2

SUBJECT LINE: It takes less than 5 minutes to weigh in

Dear hepatology provider,

Only you can let us know what hepatologists at liver transplant centers caring for patients with chronic liver disease think about AUD medication use. Understanding your practice, knowledge and opinion is critical for care in this field. Help us learn by completing a research survey.

Follow this link to the Survey:

[\\${!://SurveyLink?d=Take the Survey}](#)

- The survey should take under 5 minutes
- Those completing the survey are entered into a drawing for 1 of 4 \$250 Amazon gift cards
- Research is being collected by University of Chicago researchers funded by the GI Research Foundation (GIRF). The University of Chicago Survey Lab is collecting the data on behalf of the researchers.
- Your answers are confidential. Only dis-identified data are saved and shared with researchers. Contact information is deleted. Only aggregate data are reported.

Thank you for your help with this study.

Sincerely,
Martha Van Haitsma, Survey Lab Co-Director

On behalf of

Thomas Cotter MBBCh
K. Gautham Reddy MD FAASLD, AGAF, FACG
Michael Charlton MD FRCP

Or copy and paste the URL below into your internet browser:
[\\${!://SurveyURL}](#)

Follow the link to opt out of future emails:
[\\${!://OptOutLink?d=Click here to unsubscribe}](#)

Follow-up Prompt 3

SUBJECT LINE: Study ending – add your voice now

Dear hepatology provider,

A University of Chicago study of hepatologist knowledge, opinion and practice in use of AUD medication with patients who have chronic liver disease is coming to a close. Your voice is important, and we hope to hear from you. Please take **5 minutes or less** to report what your experience has been. Those who complete the brief survey are entered into a drawing for 1 of 4 **\$250 Amazon gift cards**.

- Research is being collected by University of Chicago researchers funded by the GI Research Foundation (GIRF). The University of Chicago Survey Lab is collecting the data on behalf of the researchers.
- Your **answers are confidential**. Only dis-identified data are saved and shared with researchers. Contact information is deleted. Only aggregate data are reported.

Follow this link to the Survey:

[\\${!://SurveyLink?d=Take the Survey}](#)

We are extremely grateful for your help with this study.

Sincerely,

Kevin Ulrich, Survey Lab Director

On behalf of

Thomas Cotter MBBCh
K. Gautham Reddy MD FAASLD, AGAF, FACG
Michael Charlton MD FRCP

Problems with your link? Copy and paste the URL below into your internet browser:

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