Supplemental Online Content

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This supplemental material has been provided by the authors to give readers additional information about their work.
eMethods. Supplemental Methods

Ethyl glucuronide in head hair sample

Participants were asked to provide a head hair sample to measure Ethyl glucuronide (EtG), the only biomarker that can discriminate chronic heavy use from social or no use.1 We used the cutoff value of >30 pg/mg of hair proposed by the Society of Hair Testing2 to detect chronic heavy use (sensitivity: 96%, specificity: 99%).1

Participants were asked for consent to take a 2-3 centimeters long strand of hair (diameter of pencil lead) at baseline, 6-, and 12-month follow-up. Hair sampling was performed at the end of inclusion procedures at baseline and during a specific appointment with a research assistant at Lausanne University Hospital at 6- and 12-month follow-up. A CHF 20.- incentive was offered to compensate for each hair sampling. Travel expenses to Lausanne University Hospital were reimbursed at 6- and 12-month follow-up.

At baseline, N=124 (36.1%) provided a sample, N=90 (26.2%) refused, and N=129 (37.6%) had hair too short (<2cm). At 6-month, N=123 (45.9%) provided a sample, N=104 (38.8%) refused, N=29 (10.8%) had hair too short, and N=12 (4.5%) set an appointment but did not show up. At 12-month, N=104 (38.2%) provided a sample, N=91 (33.5%) refused, N=25 (9.2%) had hair too short, N=11 (4.0%) set an appointment but did not show up; in addition hair sampling was cancelled for N=41 (15.1%) due to Covid-19 pandemic measures (ban of all non-essential visits to the hospital from March 15, 2020).

Treatment fidelity

Intervention fidelity was measured using psycholinguistic coding of audio-recorded sessions. There were audio recordings available for N=290 (84.3%). One session was not conducted (early drop out, participant not feeling well). Consent was granted for audio-recording of the session and N=48 (13.9%) refused recording. There were technical problems for the remaining N=5 (1.5%). There were no significant differences between recorded and non-recorded sessions on baseline variables reported in Table 1, except for gender (91.7% recorded for female vs. 81.9% for male, Chi2 (1) = 4.55, P = 0.03).

Recorded sessions were coded using the validated Motivational Interviewing Skill Code (MISC), version 2.5,3,4 Global ratings, which characterize the overall interaction, were assessed on a 5-point Likert scale, with the coder assuming a neutral beginning score of “3”. Global ratings comprised the clinician’s level of
acceptance, empathy, autonomy support, collaboration, and evocation, and patient’s level of self-exploration. In addition, we also evaluated clinician’s skills to cultivate change talk and soften sustain talk, based on similar scales available in the validated Motivational Interviewing Treatment Integrity, version 4.2.  

Then, each clinician’s and patient’s utterance were categorized using one of the 19 counselor and 8 client MISC codes. Several summary scores of counselor behaviors can be derived as indicators of the quality of MI. In the present report, we used:

- the percentage of MI-consistent behaviors (i.e. total MI-consistent/total therapist’s behaviors*100; MI-consistent behaviors being advise with permission, affirm, emphasize control, open question, simple and complex reflections, reframe, and support)
- the percentage of open questions (total open questions/total open and closed questions*100)
- the percentage of complex reflections (total complex reflections /total simple and complex reflections*100)
- the ratio of reflections over questions (total reflections/total questions)
- the patient’s percentage of change talk (total change talk utterances/total patient’s utterances*100).

We created two additional scores related to giving information and giving advice (which were expected to be higher in the brief advice condition):

- the percentage of giving information (frequency of giving information/total therapist’s behaviors*100)
- the percentage of advice without permission (frequency of advice without permission/total advices with or without permission*100).

A random sample of 58 sessions (20%) was double coded to assess inter-rater reliability while coders were blinded whether another was also coding the session. Intra-class correlations (ICC) was computed using two-way mixed-effect models specifying consistency of agreement and individual measurements for each code to account for inter-rater reliability. According to the categorization of Cicchetti, agreement between coders was good to excellent for retained measures (ICC ranging between 0.70 and 0.98 for global ratings and 0.82 and 0.96 for behavior counts), except for the percentage of complex reflections and the percentage of advice without permission for which ICC was fair (0.51 and 0.44, respectively).

Intervention length, global ratings and behavior counts were compared across treatment groups using two-sample Wilcoxon rank-sum test since data were not normally distributed.
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### eTable 1. Intervention fidelity

|                        | BA                  | bMI                  | Test |
|------------------------|---------------------|----------------------|------|
|                        | 25th pct | Median | 75th pct | 25th pct | Median | 75th pct | z    | P    |
| Session length (minutes) a |         |         |          |          |         |          |      |      |
| Baseline intervention   | 2        | 3       | 4        | 30       | 37     | 45       | -16.09| <.0001|
| 1-week booster          | n/a      | n/a     | n/a      | 8        | 11     | 16       | n/a  | n/a  |
| 1-month booster         | n/a      | n/a     | n/a      | 8        | 11     | 19       | n/a  | n/a  |
| 3-month booster         | n/a      | n/a     | n/a      | 8        | 11     | 17       | n/a  | n/a  |
| Global ratings (1-5 scale) b |         |         |          |          |         |          |      |      |
| Acceptance              | 3        | 3       | 3        | 4        | 5      | 5        | -14.75| <.0001|
| Empathy                 | 1        | 1       | 1        | 4        | 5      | 5        | -15.77| <.0001|
| Autonomy support        | 3        | 3       | 3        | 4        | 5      | 5        | -14.56| <.0001|
| Collaboration           | 1        | 1       | 1        | 4        | 5      | 5        | -15.80| <.0001|
| Evocation               | 1        | 1       | 1        | 4        | 4      | 5        | -15.41| <.0001|
| Cultivate change talk   | 1        | 1       | 1        | 3        | 4      | 5        | -15.24| <.0001|
| Soften sustain talk     | 3        | 3       | 3        | 4        | 4      | 4        | -12.95| <.0001|
| Self-exploration        | 1        | 1       | 1        | 3        | 4      | 4        | -14.94| <.0001|
| Behavior counts b       |         |         |          |          |         |          |      |      |
| % MI-consistent         | 0        | 0       | 14.3     | 55.2     | 62.3   | 72.2     | -14.78| <.0001|
| % Open question         | 0        | 0       | 0        | 41.2     | 50     | 60.2     | -15.20| <.0001|
| % Complex reflection    | 0        | 0       | 0        | 24.1     | 34.1   | 44.2     | -14.78| <.0001|
| Ratio reflections/questions | 0    | 1       | 1        | 0.8      | 1.3    | 1.9      | -5.32 | <.0001|
| % Change talk           | 0        | 0       | 0        | 13.7     | 19.4   | 27.9     | -14.28| <.0001|
| % Giving information    | 50       | 57.1    | 71.4     | 1.4      | 4.4    | 9.0      | 14.68 | <.0001|
| % Advice without permission | 0     | 100     | 100      | 0        | 0      | 0        | 7.82  | <.0001|

Abbreviations: BA, Brief Advice; bMI, Brief Motivational Intervention; pct, percentile; n/a, not applicable (i.e., no booster session of BA).

a  Session length was entered for all interventions (N=343).

b  Global ratings and behaviors counts measured among N=290 coded sessions (140 bMI and 150 BA).
**eTable 2. Sensitivity analyses**

|                      | 1) Adjusted for age and sex | 2) Robust standard errors | 3) Multiple imputation |
|----------------------|-----------------------------|---------------------------|------------------------|
|                      | Coef.  SE  P   [95% CI]     | Coef.  SE  P   [95% CI]     | Coef.  SE  P   [95% CI]     |
| **Heavy drinking days**<sup>a</sup> |                           |                           |                        |
| bMI (vs. BA)         | 0.12  0.11  0.25  -0.09  0.34 | 0.09  0.12  0.46  -0.15  0.32 | 0.09  0.10  0.40  -0.11  0.28 |
| Time (months)<sup>b</sup> | 0.04  0.01  <0.001  0.02  0.06 | 0.04  0.01  0.001  0.02  0.06 | 0.04  0.01  <0.001  0.02  0.06 |
| bMI X Time           | -0.03  0.01  0.03  -0.05  0.00 | -0.03  0.01  0.047  -0.06  0.00 | -0.03  0.01  0.02  -0.05  0.00 |
| **Short Inventory of Problems**<sup>a</sup> |                           |                           |                        |
| bMI (vs. BA)         | 0.05  0.12  0.64  -0.18  0.29 | 0.06  0.10  0.56  -0.14  0.25 | 0.05  0.11  0.68  -0.17  0.26 |
| Time (months)<sup>b</sup> | -0.01  0.01  0.20  -0.03  0.01 | -0.01  0.01  0.23  -0.03  0.01 | -0.01  0.01  0.29  -0.03  0.01 |
| bMI X Time           | -0.01  0.01  0.73  -0.03  0.02 | -0.01  0.01  0.70  -0.03  0.02 | -0.01  0.01  0.83  -0.04  0.03 |
| **Weekly drinking amount**<sup>a</sup> |                           |                           |                        |
| bMI (vs. BA)         | 0.09  0.09  0.33  -0.09  0.27 | 0.09  0.10  0.37  -0.10  0.28 | 0.09  0.08  0.31  -0.08  0.25 |
| Time (months)<sup>b</sup> | 0.03  0.01  0.003  0.01  0.04 | 0.03  0.01  0.01  0.01  0.05 | 0.02  0.01  0.004  0.01  0.04 |
| bMI X Time           | -0.01  0.01  0.35  -0.04  0.01 | -0.01  0.01  0.42  -0.04  0.02 | -0.01  0.01  0.66  -0.03  0.02 |
| **Consequences**<sup>a</sup> |                           |                           |                        |
| bMI (vs. BA)         | 0.02  0.17  0.92  -0.31  0.35 | 0.01  0.15  0.94  -0.29  0.31 | 0.01  0.16  0.95  -0.31  0.33 |
| Time (months)<sup>b</sup> | -0.02  0.02  0.30  -0.06  0.02 | -0.02  0.02  0.28  -0.06  0.02 | -0.02  0.02  0.38  -0.05  0.02 |
| bMI X Time           | 0.03  0.03  0.25  -0.02  0.09 | 0.03  0.03  0.25  -0.02  0.09 | 0.03  0.03  0.29  -0.03  0.09 |

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|                                | 1) Adjusted for age and sex |                        | 2) Robust standard errors |                        | 3) Multiple imputation |                        |
|--------------------------------|-----------------------------|------------------------|---------------------------|------------------------|------------------------|------------------------|
|                                | Coef. | SE | P   | [95% CI] | Coef. | SE | P   | [95% CI] | Coef. | SE | P   | [95% CI] | Coef. | SE | P   | [95% CI] |
| **Hazardous alcohol use** c    |       |    |     |          |       |    |     |          |       |    |     |          |       |    |     |          |
| bMI (vs. BA)                   | 0.12  | 0.27 | 0.65 | -0.41 | 0.66 |       | N/A |           |       |    |     |          |       |    |     |          |
| **Readmission in the ED** (self-reported) d |       |    |     |          |       |    |     |          |       |    |     |          |       |    |     |          |
| bMI (vs. BA)                   | 0.19  | 0.29 | 0.51 | -0.38 | 0.76 |       | 0.20 | 0.29 | 0.49 | -0.36 | 0.76 |       | 0.23 | 0.29 | 0.43 | -0.35 | 0.81 |
| Time (months) b                | 0.05  | 0.04 | 0.24 | -0.03 | 0.12 |       | 0.05 | 0.04 | 0.23 | -0.03 | 0.12 |       | 0.04 | 0.04 | 0.25 | -0.03 | 0.12 |
| bMI X Time                     | -0.08 | 0.06 | 0.15 | -0.19 | 0.03 |       | -0.08 | 0.05 | 0.14 | -0.19 | 0.03 |       | -0.08 | 0.06 | 0.18 | -0.19 | 0.04 |
| **Started alcohol treatment** (self-reported) d |       |    |     |          |       |    |     |          |       |    |     |          |       |    |     |          |
| bMI (vs. BA)                   | 1.04  | 0.46 | 0.03 | 0.13 | 1.94 |       | 0.85 | 0.52 | 0.10 | -0.17 | 1.86 |       | 0.90 | 0.44 | 0.04 | 0.04 | 1.76 |
| Time (months) b                | 0.04  | 0.07 | 0.60 | -0.11 | 0.19 |       | 0.03 | 0.08 | 0.66 | -0.12 | 0.19 |       | 0.03 | 0.07 | 0.68 | -0.12 | 0.18 |
| bMI X Time                     | -0.11 | 0.10 | 0.27 | -0.29 | 0.08 |       | -0.11 | 0.10 | 0.31 | -0.31 | 0.10 |       | -0.10 | 0.09 | 0.28 | -0.28 | 0.08 |
| **Readmission in the ED** (medical record) i |       |    |     |          |       |    |     |          |       |    |     |          |       |    |     |          |
| bMI (vs. BA)                   | 0.27  | 0.33 | 0.41 | -0.37 | 0.91 |       | N/A |           |       |    |     |          |       |    |     |          |

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|                          | Coef. | SE  | P     | [95% CI] | Coef. | SE  | P     | [95% CI] | Coef. | SE  | P     | [95% CI] |
|--------------------------|-------|-----|-------|----------|-------|-----|-------|----------|-------|-----|-------|----------|
| **1) Adjusted for age and sex** |       |     |       |          |       |     |       |          |       |     |       |          |
| Started alcohol treatment (medical record) \(^c\) |       |     |       |          |       |     |       |          |       |     |       |          |
| BMI (vs. BA)             | 1.27  | 0.59| 0.03  | 0.12     | 2.42  | N/A |       |          |       | 1.26| 0.62  | 0.04     | 0.05     | 2.47  |
| **2) Robust standard errors** |       |     |       |          |       |     |       |          |       |     |       |          |
| **3) Multiple imputation** |       |     |       |          |       |     |       |          |       |     |       |          |
| BMI (vs. BA)             | -0.29 | 0.29| 0.33  | -0.86    | 0.29  | -0.33| 0.29  | 0.26     | -0.90| 0.24|       | -0.43    | 0.30    | 0.15 | -1.01    | 0.16    |
| Time (months) \(^b\)     | -0.09 | 0.04| 0.01  | -0.16    | -0.02 | -0.06| 0.03  | 0.06     | -0.13| 0.00|       | -0.04    | 0.03    | 0.13 | -0.09    | 0.01    |
| BMI X Time               | 0.02  | 0.05| 0.63  | -0.07    | 0.12  | 0.02 | 0.05  | 0.70     | -0.07| 0.11|       | -0.01    | 0.04    | 0.89 | -0.09    | 0.07    |

Abbreviations: Coef., regression coefficients; SE, Standard Error; CI, Confidence Interval; BMI, Brief Motivational Intervention; BA, Brief Advice; ED, Emergency Department; EtG, Ethyl Glucuronide.

\(^a\) Generalized estimating equation model with negative binomial distribution, log link, and exchangeable correlation structure; adjusted for a corresponding baseline measure (see Methods).

\(^b\) Follow-up months were mean-centered.

\(^c\) Logistic regression model; adjusted for a corresponding baseline measure (see Methods).

\(^d\) Generalized estimating equation model with binomial distribution, logit link, and exchangeable correlation structure; adjusted for a corresponding baseline measure (see Methods).

\(^e\) Generalized estimating equation model with binomial distribution, logit link, and exchangeable correlation structure.
**Table 3.** Other Countries of Citizenship

| Other country of citizenship       | All | BA | Brief MI |
|-----------------------------------|-----|----|----------|
| France                            | 47  | 20 | 27       |
| Portugal                          | 18  | 10 | 8        |
| Spain                             | 7   | 6  | 1        |
| Ecuador                           | 5   | 3  | 2        |
| Italia                            | 5   | 2  | 3        |
| Morocco                           | 5   | 2  | 3        |
| Democratic Republic of Congo      | 3   | 0  | 3        |
| United Kingdom                    | 3   | 2  | 1        |
| Belgium                           | 2   | 2  | 0        |
| Chile                             | 2   | 1  | 1        |
| Germany                           | 2   | 2  | 0        |
| Kosovo                            | 2   | 1  | 1        |
| Macedonia                         | 2   | 1  | 1        |
| Russia                            | 2   | 1  | 1        |
| Algeria                           | 1   | 1  | 0        |

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| Country  | 1 | 0 | 1 | 0 |
|----------|---|---|---|---|
| Brazil   | 1 | 1 | 0 |
| Cameroun | 1 | 0 | 1 |
| Canada   | 1 | 1 | 0 |
| Colombia | 1 | 1 | 0 |
| Eritrea  | 1 | 1 | 0 |
| India    | 1 | 1 | 0 |
| Ireland  | 1 | 1 | 0 |
| Mongolia | 1 | 0 | 1 |
| Nepal    | 1 | 1 | 0 |
| Norway   | 1 | 1 | 0 |
| Poland   | 1 | 0 | 1 |
| Somalia  | 1 | 0 | 1 |
