# Federal Research Programme Drugs DR

# ICArUS

## Integrated Care of Alcohol USe disorders

**Contract - DR/00/68**

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## FULL REPORT

## Part 1 - Continuing care for patients with alcohol use disorders - a systematic review

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**Voorwoord**

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**Background**

Alcohol use is a major cause of morbidity and mortality. According to a recent WHO-report the use of alcohol is a component cause of more than 200 disease and injury conditions in individuals, most notably alcohol dependence, liver cirrhosis, cancers and injuries (1). Mortality attributed to alcohol use is estimated at 1 in 7 deaths for men and 1 in 13 deaths for women (2).

In Belgium according to the Belgian health survey 10% of the Belgian population has an alcohol use disorder (AUD) (based on the CAGE-criteria) and Rehm et al.8 state that 5.4% of Belgian men and 1.9% of Belgian women aged 18–64 were affected with alcohol dependence (3-4).

In addiction medicine there is now a broad support for AUDs to be a chronic health problem, presenting many similarities with other chronic diseases in heritability, course, risk of relapse, and response to treatment (5). Yet, in contrast to other chronic diseases, the condition is extremely undertreated. A European study (including Belgium) found that only 8% of persons with an alcohol problem had consulted some form of professional assistance in the past year (6).

This treatment gap is the result of 2 major processes. First, it has been shown that there is a long delay before individuals with AUD seek help. Multiple barriers at the level of the individuals with an AUD, the health professionals and also the socio-economic context have been identified (7-8).

Second, many individuals entering treatment are discharged or drop out prematurely. The reasons for this are multiple. Current care for patients with AUDs is often inadequate and based upon practices with little or no evidence of effectiveness (5, 9-11). In addition, it relies heavily on an acute treatment model, providing detoxification programs, sometimes followed by specialty treatment rehabilitation programs, but without proactive efforts to ensure continuity of care thereafter (5). Finally, there is no integration of care. Medical treatment, mental health care and substance abuse programs are often provided separately, and different healthcare settings (inpatient, outpatient and partial hospitalization) generally function independently.

In continuing care for patients with AUD, multiple isolated continuing care interventions have been described in a wide variety of formats and modalities (10, 12). Nevertheless, fully integrated care programs (ICP) have never been developed (13).

**Objectives**

The final aim of the Belgian ICARUS project is to develop an ICP for the continuing care of patients with alcohol dependency. To develop such an ICP, a systematic approach should be applied based on an internationally validated approach (14).

In this project we addressed the following specific objectives

1. to identify interventions for AUD sustaining the principles of integrated care and to evaluate their effectiveness;
2. to systematically develop evidence-based indicators to measure the quality of continuing care for AUD;
3. to assess continuing care for AUD currently provided in Belgium;
4. to identify barriers and facilitators related to current continuing care for AUD.

We defined 'continuing care' as the treatment phase following an alcohol detoxification treatment.

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## Continuing care for patients with alcohol use disorders - a systematic review

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**Abstract**

Background
A chronic care perspective should be adopted in the treatment of patients with alcohol use disorders (AUDs). Initial treatment in a more intense psychiatric care setting should be followed by continuing care. This systematic review aims to identify effective continuing care interventions for patients with AUDs.

Methods
Electronic databases were searched up to February 2013 (MEDLINE, EMBASE, CENTRAL, CINAHL and PsycINFO) to identify RCTs studying continuing care interventions for patients with AUDs. Study selection and quality appraisal was done independently by two reviewers. Drinking and treatment engagement outcomes were considered. Relative risks and mean differences were calculated with 95% confidence intervals. A statistical pooling of results was planned.

Results
20 trials out of 15235 identified studies met the inclusion criteria. Only six were evaluated as methodologically strong enough and included for further analysis. Interventions ranged from telephone calls and nurse follow-up to various forms of individual or couples counseling. Four trials suggested that supplementing usual continuing care with an active intervention empowering the patient, could be beneficial to drinking outcomes. Effect sizes were limited and not consistent across all outcomes. Because of heterogeneity in the interventions and outcome measures, a meta-analysis could not be performed.

Conclusion
For the treatment of a disease with such devastating consequences, it is remarkable how few high quality studies are available. Adding an active intervention to usual continuing care seems to improve treatment outcomes. We propose an integrated care program with different elements from the selected studies and discuss implications for further research.

Key words

| | | | |
|---|---|---|---|
| Alcohol | use | disorders | treatment |
| Substance | use | disorders | treatment |
| Continuing | | | care |
| Aftercare | | | |
| Integrated | | | care |

## 1. Introduction

Alcohol use disorders (AUDs) are a widespread problem worldwide (1). They are often viewed as social or behavioral problems requiring regulations and law enforcement, rather than chronic medical disorders requiring ongoing care management (2,. However, increasing evidence suggests that AUDs are also a chronic health problem, presenting many similarities with other chronic diseases in heritability, course, risk of relapse, and response to treatment (2). Yet, in contrast to other chronic diseases, the condition is extremely undertreated, with less than 10% of Europeans living with AUDs receiving therapy (1). In addition, even when treated, relapse rates are up to 75% in the year after treatment (4).

Although alcohol belongs to the group of 'socially accepted drugs', the burden of alcohol use at a global level is greater than the effects of illicit drug use (5). Firstly, alcohol is a threat to the *individual patient*. The mortality caused by alcohol consumption in the European Union is one in seven deaths in men and one in 13 deaths in women (1). Alcohol is a contributory cause of more than 200 illnesses (1) and 4% of the global burden of disease is attributable to alcohol (6). Secondly, exposure to heavy drinkers often has negative impacts on *others* (family, workplace, and social network) leading to a reduced personal wellbeing and poorer health (1, 5). Finally, AUDs have important *socio-economic implications* (increase in crime rates, road trauma, absenteeism, unemployment and increased health care costs) (1, 5).

Given this important health and socio-economic impact of AUDs, it is recommended to supplement preventative strategies with adequate treatment (1) Yet, current care for patients with AUDs is inadequate (1, 2,7). It is often based upon practices with little or no evidence of effectiveness (8, 9). In addition, it relies heavily on an acute treatment model, providing detoxification programs, sometimes followed by specialty treatment rehabilitation programs, but without proactive efforts to ensure continuity of care thereafter (2). Finally, there is no integration of care. Medical treatment, mental health care and substance abuse programs are often provided separately, and different healthcare settings (residential, semi-residential and ambulant care) generally function independently (10).

AUD care should instead be organized from a chronic care perspective (2, 8, 11, 12). Initial treatment in a more intense psychiatric care setting (inpatient or intensive outpatient) should be followed by a phase of *continuing care*, in order to sustain the achieved positive effects (12). This continuing care phase, also called '*aftercare*' in literature, is the specific focus of this review.

An integrated care program (ICP), based on Wagner's Chronic Care Model, could be used to reorganize the phase of continuing care for patients with AUDs (13). Wagner's model relies on the concept of continuous, integrated care and encourages the interaction of informed, activated patients with prepared, proactive practice teams. ICPs do not yet exist in addiction care, but evidence indicates that they improve health outcomes in many other chronic diseases like diabetes, COPD and depression (14,15). Although the exact definition and content of these ICPs vary, five common key principles have been described: patient centeredness, multi-professional

teamwork, continuity of care, evidence-based practice and continuous quality improvement (14).

In the continuing care phase for patients with AUDs, a *full ICP* has never been developed. However, multiple *isolated continuing care interventions* have been described in a wide variety of formats and modalities (8, 12). They show different degrees of effectiveness and are not widely implemented (8). These could be part of an ICP for this population.

A systematic analysis of research on these continuing care interventions for people with only AUDs is lacking. It could however offer insight into how to effectively organize continuing care for patients with AUDs after they have completed the phase of more intense psychiatric care. This systematic review aims to identify effective continuing care interventions for patients with AUDs, sustaining the principles of integrated care as mentioned above.

## 2. Methods

To conduct our systematic review, we followed the principles of the Cochrane Handbook for Systematic Reviews of Interventions (16). The reporting is based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidance for systematic reviews (17).

### 2.1. Search strategy

A sensitive search was conducted in five electronic databases (MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials, CINAHL and PsycINFO), to identify studies published up to February 2013. Trials registers (Current Controlled Trials, including ClinicalTrials.gov) were searched to identify ongoing trials. We hand-searched the reference lists of the included articles and of topic-related systematic reviews to identify possible additional studies of interest. Both free text words and subject indexing terms were combined as search terms. Search terms were selected through discussion, taking into account the inclusion criteria, an exploratory search of the relevant literature and after browsing the MEDLINE Thesaurus of subject indexing terms. Appendix 1(supplementary material) illustrates the full electronic search strategies for the distinct databases. No language or time restrictions were used.

### 2.2. Selection of studies

The selection of papers was conducted independently by two reviewers. The first author (EL) conducted the first review process, but given the large number of records identified through database searching, the second review process was divided among five reviewers (BA, FM, DZ, LP and NDM). Disagreements with the first reviewer (EL) were resolved by discussion. Reference Manager 12 was used to eliminate duplicate reports. The studies were selected in two phases. First, title and abstract were screened and potentially relevant documents retrieved. Studies with a missing abstract were not retained. Then, full texts were screened for eligibility,

against the inclusion and exclusion criteria described below.
Only randomized controlled trials (RCTs) were eligible for inclusion. We included adult patients with an AUD as their main problem, receiving treatment in an outpatient, continuing care setting. Continuing care was defined as the phase after completing an inpatient or intensive outpatient alcohol rehabilitation program of at least seven days, not just detoxification. Interventions taking place during the initial rehabilitation program, with the specific aim of increasing continuing care attendance, were also included. The interventions had to focus in the first place on the treatment of AUDs. Data on drinking related outcomes or treatment engagement had to be available, with a follow-up duration of at least 12 weeks after the beginning of the continuing care phase.

Studies were excluded if patients were under the age of 18 years, were inmates or parolees or suffered from a comorbid psychotic illness or other co-occurring substance use disorder (except for nicotine). Trials focusing primarily on testing a pharmacological approach were also not eligible.

## 2.3. Quality appraisal

Two reviewers independently assessed the methodological quality of each individual study (EL, BA). Discrepancies were resolved through discussion. Risk of bias was assessed both on a study-level and an outcome level, based upon the Cochrane Collaboration's risk of bias assessment tool (18). Seven bias domains were assessed as having a high, low or unclear risk of bias: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective reporting, and other possible bias. Results of the quality assessment were reported using Review Manager 5.1 Software. We estimated that studies of poor methodological quality with regard to the randomization procedure and reporting of outcome data would add little value to the existing knowledge on the topic. Therefore, only trials with a low risk of bias on these two criteria were selected for further analysis. We would like to point out that in the population targeted, missing data are inevitable. It is however the amount, nature and handling of missing data which determines the associated risk of bias.
Publication bias would be assessed using funnel plots, if sufficient studies were available to do conduct a meaningful analysis.

## 2.4. Data extraction and analysis

Data were extracted by one researcher and independently checked by a second reviewer (CM), using pre-designed data extraction forms (Microsoft Excel). In the case of important missing data, we made attempts to contact the authors of the original trials. We only received additional data from the authors of Project Match (19).
The results of each study were reported individually. We considered two separate outcome categories: drinking outcomes (i.e. percent days abstinent, percent patients abstinent, heavy drinking outcomes, number of drinks, time to first drinking day) and treatment engagement outcomes (i.e. patients in retention in continuing care, number of sessions attended). Wherever

possible we used Review Manager to calculate relative risks (RR) for dichotomous outcomes and mean differences (MD) for continuous variables reported with 95% confidence intervals. Heterogeneity was to be expected, therefore the random effects model was chosen. For the calculations on treatment attendance, the exact number of scheduled sessions was not always reported. These data were derived from protocol information on treatment frequency and duration. For project Match, analysis was based on both published and unpublished data. To calculate the percentage of patients abstinent, patients with missing data were considered to be non-abstinent.

We planned to perform a statistical pooling of results, provided that clinical heterogeneity between studies was limited with regard to study populations, setting, interventions and outcome measures.

## 3. Results

### 3.1. Search results

The search strategy in the five databases identified 15235 studies, of which 159 were eligible for inclusion, based on title and abstract (figure 1). 20 trials actually met the inclusion criteria (19-45). The main reasons for exclusion were a different setting (i.e. no continuing care, n = 49), a different population (i.e. mixed substance use disorders, n = 43) or another design (i.e. no RCT, n = 31). Only four trials were published within the last ten years (35, 36, 42, and 45).

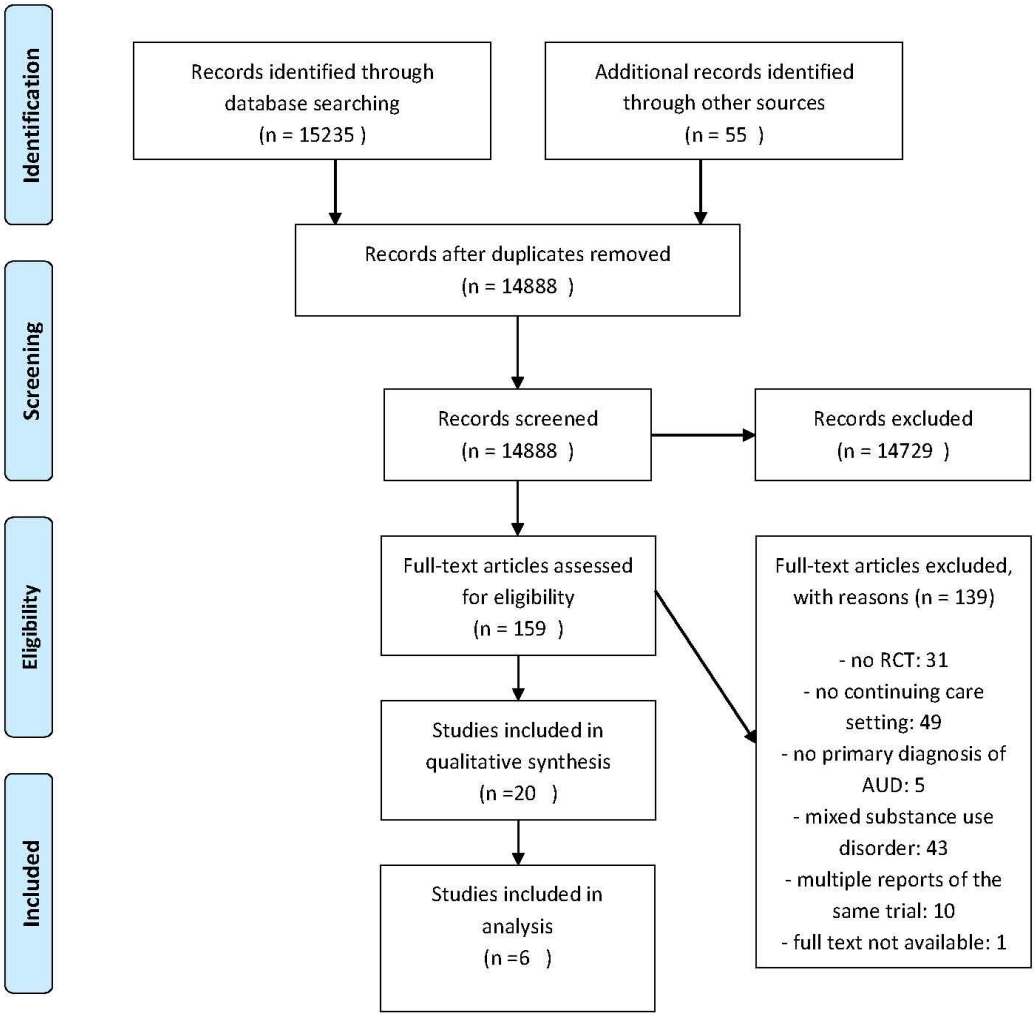



Figure 1. Flow diagram of the study-selection process

RCT: randomized controlled trial, AUD: alcohol use disorders

## 3.2. Quality assessment

The methodology of the 20 included studies was in general poorly described and to a large extent also poorly conducted (figure 2, 3).

Only six trials had a lower risk of bias on their randomization procedure and the reporting of findings (19, 25, 35, 38, 39, 42, 44). With the exception of three trials (25, 42, 45), allocation concealment was not mentioned. Due to the type of interventions, blinding of participants, personnel and outcome assessors was in general not possible, which could have engendered a certain degree of performance and detection bias. Although outcome data were often incomplete, significant attrition bias was mostly avoided by clarifying the reasons for missing data, reporting an equal distribution of missing data between intervention groups or processing the available data in an intention-to-treat analysis.
There was no clear distinction between the older studies and the more recent ones as regards the methodological quality.

Insufficient studies were available to assess publication bias by funnel plotting.

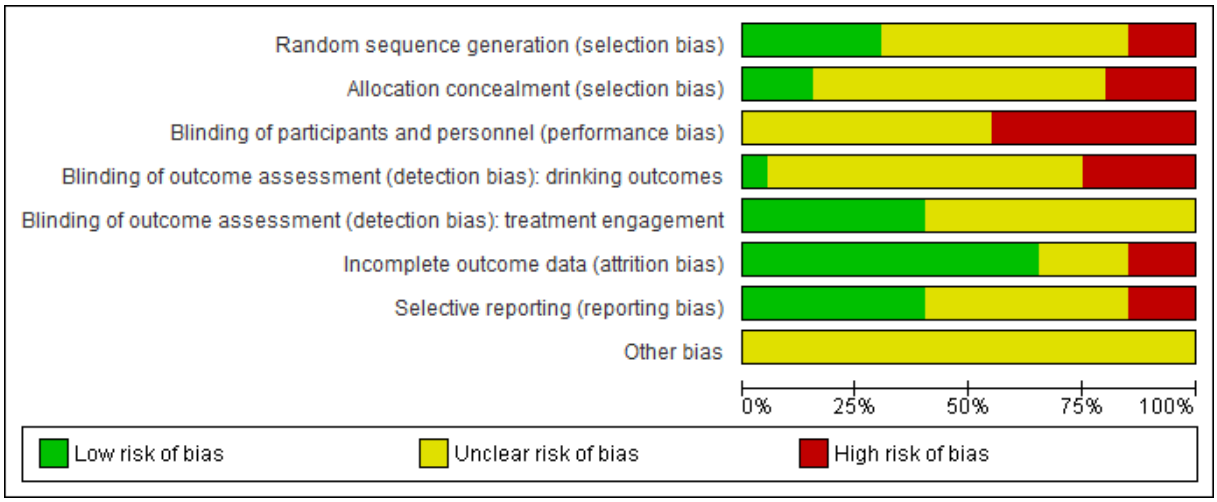



Figure 2. Risk of bias graph: review authors' judgments about each risk of bias item presented as percentages across all included studies.

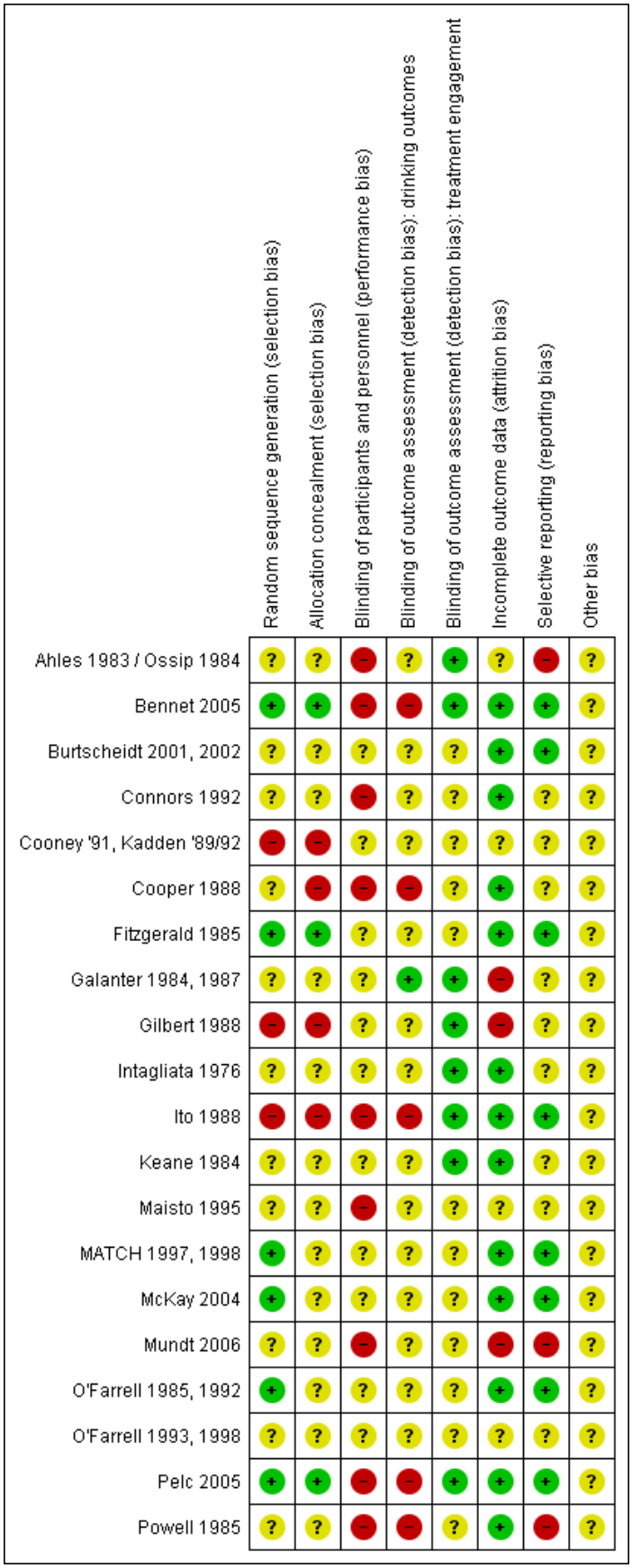



Figure 3. Risk of bias summary: review authors' judgments about each risk of bias item for each included study.

## 3.3. Description of included studies

Tables 1 to 3 give an overview of the characteristics of the six included studies. Note that the results of two of these trials were outlined in multiple articles (19, 38, 39, 44). Overall, 1479 patients were studied, with similar characteristics among the study population in the individual trials. The interventions and outcome measures, however, showed pronounced heterogeneity.

### 3.3.1. Participants

*Table 1: Characteristics of included studies: participants*

| Study (Country) | Description of drinking problem | N | Men (%) | Age: mean years (SD) | Education | Employment (%) | Family status: % married/ in a relation | Prior intensive treatment (duration) |
|---|---|---|---|---|---|---|---|---|
| Fitzgerald 1985 (Fitzgerald & Mulford 1985) (US) | Iowa Alcoholic Stages Index Score (0-4): 85% score ≥ 3 | 354 | 72 | 88% <49y | 1-11y: 30% 12-15y: 65% 16+ y: 5% | 58 | 30 | inpatient (3-4 weeks) |
| O'Farrell 1985, 1992 (O'Farrell et al. 1985; O'Farrell et al. 1992) (US) | MAST: mean 38.38, SD 7.74 | 36 | 100 | 42.38 (9.33) | mean: 12.47y (SD: 2.32) | / | 100 | for most participants: first inpatient (7-28 days) then outpatient (<2 months) |
| Project MATCH 1997, 1998 (1998; Allen et al. 1997) (US) | 2% Aab and 98% AD (DSM-III-R) | 774 | 80 | 41.9 (11.1) | mean: 13.1y (SD: 2.1) | 48 | 34 | in- or outpatient (≥ 7 days) |
| McKay 2004 (McKay et al. 2004) (US) | AD (DSM-IV) | 91 | 83* | 41.9 (/)* | mean: 12.4y* | / | 17.4* | outpatient (3-4 weeks) |
| Bennet 2005 (Bennett et al. 2005) (UK) | AD (DSM-IV) | 124 | 63 | 44.3 (10.6) 41.8 (10.6) | / | 15 | 29 | outpatient (6 weeks) |
| Pelc 2005 (Pelc et al. 2005) (B) | AD (DSM-IV) | 100 | 78 | 43.5 (8.8) 43.1 (7.2) | 32% primary 44% secondary 24% university | / | 18 | inpatient (3 weeks) |

US: United States of America, UK: United Kingdom, B: Belgium, N: sample size randomized, SD: standard deviation, MAST: Michigan Alcoholism Screening Test, AD: alcohol dependence, Aab: alcohol abuse, DSM: Diagnostic and Statistical Manual of Mental Disorders, /: no data available, *: data on the whole sample (alcohol and cocaine dependence), y: year

Most trials included a limited number of participants (table 1). Only Project MATCH based its results on a large population of 774 patients in the aftercare arm.

In our protocol, we decided to include participants with AUDs, without specification of the type or severity of the disorder. The four most recent included trials studied patients with alcohol

dependence, based on DSM-IIIR of DSM IV criteria (19, 35, 42, 45). The two older studies used different scales (25, 38).

The other characteristics of the populations were fairly homogenous. Participants were mostly male (63-100%), with an average age of 40, and had a reasonable degree of education. With the exception of the study by O'Farrell which included only married couples, only a small proportion of the participants were in a relationship (17.5-34%). Patients had previously followed an inpatient (19, 25, 38, 40) or outpatient (19,35,45) rehabilitation program, ranging from seven days to six weeks. The content of the rehabilitation program was only mentioned in two trials and included evaluation, medical stabilization, counseling and education (35, 45).

### 3.3.2. Interventions

*Table 2: Characteristics of included studies: interventions*

| Study | Continuing care interventions (number of patients) | Treatment duration, frequency | Format | Approach based on |
|---|---|---|---|---|
| Fitzgerald 1985 (Fitzgerald & Mulford 1985) | TEL (+UC) (123)<br>UC (165) | 1y, 1 call/2w<br>1y, ≥ 2 sessions* | individual (calls)<br>group* | showing concern, source of help encouraging patients to follow at least two group sessions* |
| O'Farrell 1985, 1992 (O'Farrell et al. 1985; O'Farrell et al. 1992) | BMT (+UC) (10)<br><br>IT (+UC) (12)<br><br>UC (12) | 10w, 1 session/w<br><br>10w, 1 session/w<br><br>1M 1 session/w, then 1/M | group<br><br>group<br><br>individual | behavioral techniques to promote sobriety and improve relationships<br>other techniques to promote sobriety and improve relationships<br>supportive counseling, encouraging AA, Antabuse and abstinence |
| Project MATCH 1997, 1998 (1998; Allen et al. 1997) | CBT (266)<br>MET (261)<br>TSF (247) | 12w, 1 session/w<br>12w, 4 sessions<br>12w, 1 session/w | individual<br>individual<br>individual | social learning theory, teaching coping skills<br>motivational psychology<br>promoting AA, working through the 12 steps |
| McKay 2004 (McKay et al. 2004) | TEL (27)<br><br>RP (34)<br>STND (30) | 12w, 1call/w + 4 sessions<br><br>12w, 2 sessions/w<br>12w, 2 sessions/w | individual (calls) + group<br><br>individual + group | calls to discuss behavior and progress + 4 support group sessions<br>cognitive-behavioral therapy to improve coping |

| | | | | |
|---|---|---|---|---|
| | | | group | addictions counseling + 12-step recovery |
| Bennet 2005 (Bennett et al. 2005) | EWSRPT (+UC) (62)<br><br>UC (62) | 15w, 1 session/w<br><br>3 sessions/w | individual<br><br>group | Gorski's approach on relapse prevention (Gorski & Woll 1995)<br><br>social and recreational activities<br><br>+ 3 support groups/w |
| Pelc 2005 (Pelc et al. 2005) | NURSE (+UC) (50)<br><br>UC (50) | 26w, ≥ 1 call/w, variable home visits<br><br>hospital visits: at 4, 6w, then every 4w. GP whenever necessary | individual<br><br>individual | close monitoring, coordination of f.u. at the hospital or the GP<br><br>fixed f.u. at the hospital, free f.u. with the GP,<br><br>Acamprosate |

*y: year, w: week, M: month, UC: usual continuing care, TEL: telephone calls, BMT: behavioral marital therapy, IT: interactional couples therapy, CBT: Cognitive behavioral coping skills therapy, MET: motivational enhancement therapy, TSF: twelve step facilitation, RP: relapse prevention, STND: standard continuing care, EWSRPT: early warning signs relapse prevention training, NURSE: community nurse follow-up, * only for patients from center B, no formal continuing care in center A, AA: alcoholics anonymous, f.u.: follow-up, GP: general practitioner*

Interventions varied in duration (10 weeks to one year), frequency of scheduled contacts (three sessions a week to four sessions in 12 weeks) and type of continuing care (table 2). The therapists were however all experienced and trained in the treatment of AUDs.

Telephone calls

Three trials used telephone calls in their experimental group (25, 35, 42). However, the concrete implementation of these calls differed substantially.
Fitzgerald et al. used short, counselor-initiated, biweekly calls as a general supportive and monitoring tool, without imposing any treatment. The calls were not supplemented by other forms of therapy, apart from the usual continuing care, which was minimal (center A: no formal discharge program, center B: two group sessions) (25).
McKay et al. used patient-initiated calls, at predetermined times, in order to empower the patient. The weekly calls offered counseling, by discussing behavior, progress and plans for achieving primary goals. The calls were embedded in a broader approach consisting of support group sessions and the use of a workbook by the patient (35).
Pelc et al. compared a community nurse follow-up with standard continuing care. The nurse made weekly calls to the patient to monitor and support the patient, but also to coordinate the follow-up at the hospital or with the general practitioner. The calls were supplemented by home-visits and the usual continuing care (Acamprosate and physician follow-up) (42).

Psychotherapy

Different types of psychotherapy were used in the continuing care intervention: *behavioral* therapy (cognitive behavioral therapy) (19), relapse prevention (35, 38, 45), behavioral marital therapy (38), *motivational* therapy (19), *twelve step facilitation* (19, 35), and *interactional couples therapy* (45). Therapists were experienced and trained and treatment was given in group or individual sessions. The frequency of scheduled sessions was mostly one or two per week. Only motivational therapy was delivered in four sessions over a period of 12 weeks (19).

Usual continuing care

Except for Project MATCH, all trials compared one or two experimental therapies with usual continuing care. However, the format of this usual care intervention differed significantly. Usual care included: no formal program (25), an encouragement to follow at least two group sessions in one year (25), individual supportive counseling sessions organized weekly the first month and monthly thereafter (O'Farrell et al., 1985), twelve step facilitation therapy (35) , weekly support groups and social activities (45) and a combination of Acamprosate and physician follow-up (42).

### 3.3.3. Outcomes

*Table 3: Characteristics of included studies: drinking outcomes and findings*

| Study | Continuing care interventions (number of patients) | Follow-up | Outcome measures | Findings | Authors conclusions |
|---|---|---|---|---|---|
| Fitzgerald 1985 (Fitzgerald & Mulford 1985) | TEL (+UC) (123)<br>UC (165) | t0-M12 | % patients abstinent since t0 | TEL: (A) 17.6, (B) 28.9<br><br>UC: (A) 17.5, (B) 38.5<br><br>RR° (TEL/UC): 0.88 [0.57, 1.36] | TEL = UC |
| | | | number of days abstinent since t0: mean (SD) | TEL: (A) 275 (101), (B) 295 (94) UC: (A) 287 (93), (B) 296 (103)<br><br>MD° (TEL/UC): -8.98 [-32.36, 14.41] | |
| | | | days prior to first drink since t0: mean (SD) | TEL: (A) 142 (131), (B) 186 (141) UC: (A) 157 (129), (B) 211 (145)<br><br>MD° (TEL/UC): -17.41 [-48.94, 14.13] | |

| | | | | | |
|---|---|---|---|---|---|
| | | | % patients no drinking 5+ drinks in 2hours since t0 | TEL: (A) 32.5, (B) 47.2<br>UC: (A) 32.5, (B) 52.6<br>RR° (TEL/UC): 0.95 [0.70, 1.29] | |
| | | | treatment attendance: mean number of personal contacts | TEL: (A) 9, (B) 15<br>UC: no data | |
| O'Farrell 1985, 1992 (O'Farrell et al. 1985; O'Farrell et al. 1992) | BMT (+UC) (10)<br>IT (+UC) (12)<br>UC (12) | t0-12/14w | % days abstinent: mean (SD) | BMT: 99.40 (1.37)<br>IT: 82.66 (32.33)<br>UC: 90.57 (15.01)<br>**MD (BMT/UC): 8.83 [0.30, 17.36]** | IT = BMT = UC |
| | | | treatment attendance: mean number of sessions attended | BMT: 8.50<br>IT: 8.25<br>UC: no data | |
| | | M1-M24 post continuing care[#] | % days abstinent: mean (SD) | BMT: 79.07 (30.44)<br>IT: 83.23 (27.83)<br>UC: 66.41 (39.98)<br>MD (BMT/UC): 12.66 [-16.80, 42.12] | |
| | | | % days heavy drinking[1]: mean (SD) | BMT: 10.42 (23.77)<br>IT: 6.15 (13.31)<br>UC: 15.80 (28.06)<br>MD (BMT/UC): -5.38 [-27.04, 16.28] | |
| Project MATCH 1997, 1998 (1998; Allen et al. 1997) | CBT (266)<br>MET (261)<br>TSF (247) | t0-M3, M4-6, M7-9, M10-12, M13-15 | % patients abstinent since t0 | CBT: 23,68<br>MET: 20,69<br>TSF: 23,89 | CBT = MET = TSF |
| | | | % days abstinent | graph (M15: 90%, no significant difference between intervention groups) | |
| | | | drinks per drinking day | graph (M15: ±2.5, no significant difference between intervention groups) | |

| | | | | | |
|---|---|---|---|---|---|
| | | | time to first drink<br><br>treatment attendance: % sessions attended | survival curve (whole sample)<br><br>66 (whole sample) | |
| McKay 2004 (McKay et al. 2004) | TEL (27) RP (34) STND (30) | M1-3, M4-6, M7-9, M10-12 | % days of heavy drinking[2]<br><br>% patients abstinent from heavy drinking[2]<br><br>treatment attendance: number of sessions received | graph (M1-3: ±5%) (M10-12: **TEL:8, STND: 18%**)<br><br>**TEL > STND: z=2,02, p=.04 TEL>RP: z=2.07, p=.04**<br><br>no data for the 'alcohol-only' sample | TEL > STND, TEL> RP |
| Bennet 2005 (Bennett et al. 2005) | EWSRPT (+UC) (62) UC (62) | t0-M12 | % patients abstinent<br><br>% patients in category of % days drinking<br><br>drinks per drinking day: mean (SD)<br><br>% patients abstinent from heavy drinking[3]<br><br>% patients in category of % days of heavy drinking[3]<br><br>treatment attendance: median number of continuing care sessions attended (1y) | EWSRPT: 31 UC: 17<br><br>RR: 1.80 [0.91, 3.56]<br><br>**EWSRPT: 18%: 1-4% days, 27%: 5-19%: days, 22%: >19% days UC: 16%: 1-4% days, 24%: 5-19% days, 40%: >19% days**<br><br>EWSRPT: 21.4 (16.4) UC: 23.1 (13.3)<br><br>MD: -1.70 [-8.40, 5.00]<br><br>**EWSRPT: 45 UC: 26**<br><br>**RR: 1.73 [1.01, 2.95]**<br><br>**EWSRPT: 15%: 1-4% days, 27%: 5-19% days, 18%: >19% days UC: 14%: 1-4% days, 36%: 5-19% days, 28% > 19% days**<br><br>**EWSRPT: 16 UC: 6** | EWSRPT > UC |
| Pelc 2005 (Pelc et al. | NURSE (+UC) (50) | t0-M6 | % days abstinent since t0: | **NURSE: 55 (37)** | NURSE > |

| | | | | | |
|---|---|---|---|---|---|
| 2005) | UC (50) | | mean (SD) | **UC: 39 (34)**<br>**MD: 16.00 [2.07, 29.93]** | UC |
| | | | % patients abstinent since t0 | NURSE: 32<br>UC: 16<br>RR: 2.00 [0.94, 4.25] | |
| | | | time to first drink | **NURSE: 81 days**<br>**UC: 67 days** | |
| | | | treatment attendance: % retention in the study | **NURSE: 46**<br>**UC: 24**<br>**RR: 1.92 [1.08, 3.41]** | |

*RR: relative risk with 95% confidence interval, MD: mean difference with 95% confidence interval, SD: standard deviation, (A): center A, (B): center B, ° RR and MD for center A and B together, bold characters: significant difference, t0: trial entry, before starting continuing care, w: week, M: month, #: outcomes also available for intermediate intervals: M1-2, M3-6, M7-12, M13-18, M19-24, UC: usual continuing care, TEL: telephone calls, BMT: behavioral marital therapy, IT: interactional couples therapy, CBT: Cognitive behavioral coping skills therapy, MET: motivational enhancement therapy, TSF: twelve step facilitation, RP: relapse prevention, STND: standard continuing care, EWSRPT: early warning signs relapse prevention training, NURSE: community nurse follow-up, heavy drinking[1]: more than 3 ounces/day, heavy drinking[2]: ≥ 5 drinks/day, heavy drinking[3]: ≥ 9 drinks/day*

Follow-up duration ranged from six months after trial entry to two years after the continuing care treatment (around 27 months after trial entry) (table 3).
Drinking outcomes were assessed through self-reports, supplemented by corroborating data from significant others in half of the studies (19, 35, 38). Except for one study (35), all trials reported data on alcohol use frequency. However, this outcome was measured at different time points, over different follow-up periods, and different outcome measures were used: mostly the proportion of *days* abstinent or the proportion of *patients* continuously abstinent after discharge, but also the time to the first drink after discharge or the length of the longest dry period after discharge.
Drinking severity data were available as the 'number of drinks per drinking day' in two trials or as 'heavy drinking' outcomes.

Treatment engagement was reported as an effect measure by two trials (42, 45). The other trials provided data on treatment attendance only as a process outcome, measured by the number of attended continuing care sessions.

### *3.3.4. Effects of interventions*

A meta-analysis could not be performed because of the mix of comparisons of different treatments with different comparators, and the lack of a common outcome measure. The main findings of the included studies are summarized in table 3.
Five trials compared an active intervention to usual continuing care. Of these, three trials reported statistically significant better results for the experimental group, on some but not all outcomes (35, 42, 45). Only one trial showed a trend in favor of the experimental group (39). The last trial described results slightly in favor of the usual care group (25).
The sixth trial, Project Match, did not include a usual care comparison group. Similar results for the three interventions were reported.
Below, we highlight some findings on different outcome measures in more detail.
For information purposes only, an overview of the conclusions from the excluded, low-quality trials is given in table 4. As decided at protocol stage, these results will not be further analyzed or discussed.

*Table 4: Main findings from (excluded) studies with poor methodological quality*

| Study | Author's conclusions on continuing care effectiveness | |
|---|---|---|
| | Therapeutic benefit | No therapeutic benefit |
| Ahles 1983 | Behavioral contract + calendar > UC | |
| Ossip 1984 | | |
| Burtscheidt 2001 | Behavioral therapy > UC | |
| Burtscheidt 2002 | | |
| Connors 1992 | | Telephone continuing care = group continuing care = no continuing care |
| Cooney 1991 | | Coping skills training = interactional therapy |
| Kadden 1989 | | |
| Kadden 1992 | | |
| Cooper 1988 | Letter and telephone > self-management, UC: only in the first month after discharge | |
| Galanter 1984 | | Peer-led self-help group = professional-led group |
| Galanter1987 | | |
| Gilbert 1988 | Home visits > case management > traditional follow-up: only on attendance rates, not on drinking outcome | |
| Intagliata 1976 | Telephone calls > No telephone calls | |
| Ito 1988 | | Relapse prevention = Interpersonal process continuing care |
| Keane 1984 | Contract + recording > no intervention | |
| Maisto 1995 | BMT + RP > BMT only | |
| Mundt 2006 | | Daily IVR reporting (with or without personal follow-up) = no IVR reporting |
| O'Farrell 1993 | In general: BMT + RP > BMT only: during six months | |
| O'Farrell 1998 | For alcoholics with more severe marital and drinking problems: BMT+RP>BMT only: during 30 months | |
| Powell 1985 | | Medication only = active support = |

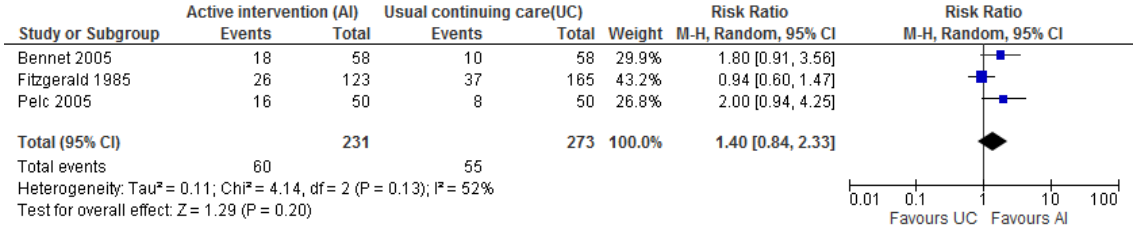
untreated medical monitoring

*UC: usual continuing care, IVR: interactive voice response system, BMT: behavioral marital therapy, RP: relapse prevention*

## Drinking outcomes

Overall, the *percentage of patients continuously abstinent* was low, ranging from 17% to 38.5% at 12 months follow-up. Pelc et al. and Bennett et al. showed better outcomes for the experimental condition (community nurse, relapse prevention) compared to usual care, but without reaching statistical significance (figure 4). Note that the statistical significance reported by Pelc et al. could not be confirmed in our analysis. Fitzgerald et al. found slightly better values for the usual care group compared to the telephone group. In Project Match, no significant outcome differences between the cognitive behavioral therapy (CBT), twelve step facilitation (TSF) and motivational enhancement therapy (MET) condition were seen (19).

**A. Percent patients abstinent**




**B. Percent days abstinent**

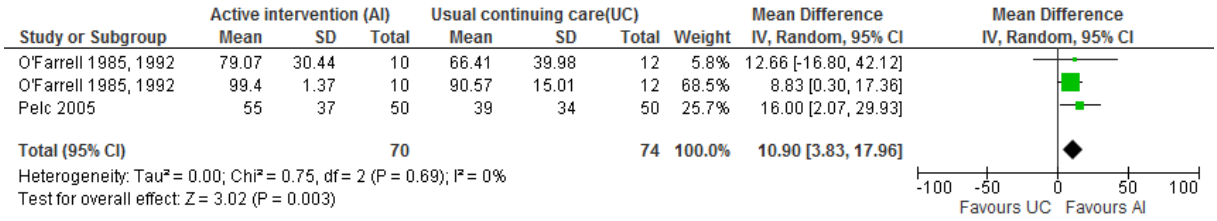



*Figure 4: Forest plot of comparison: Active intervention (AI) compared to usual continuing care (UC). A. Percent patients abstinent: Bennett (AI: early warning signs relapse prevention therapy): 1 year post trial entry. Fitzgerald (AI: telephone continuing care): results pooled from two centers, 1 year post trial entry. Pelc (AI: nurse follow-up): 6 months post trial entry. B. Percent days abstinent: O'Farrell (AI: behavioral marital therapy) at 12 weeks post discharge (lower) and at 24 months post continuing care (upper). Pelc (AI: nurse follow-up): 6 months post trial entry.*

The *percentage of days abstinent* ranged from 39% to 99.4%. As for the previous outcome measure, in Pelc et al. and Bennett et al. the nurse group and relapse prevention group obtained better results than the usual care groups. Effects reached statistical significance. In O'Farrell et al. the behavioral marital therapy group also performed better than the usual care group, but with results reaching statistical significance only after three months, not after two years of

follow-up. In Fitzgerald et al., the usual care group again performed slightly better than the telephone group. Once more, Project Match reported similar results for the CBT, TSF and MET condition.

Pelc et al. described a relatively short *time to first drink* (81 days), in favor of the intervention (nurse) group. A much longer period of abstinence before the first drink was obtained by Fitzgerald et al. (211 days), however in favor of the usual care group.

As regards to *drinking severity*, the number of drinks per drinking day was around 2.5 in the three conditions in Project Match (19). Bennett et al. found a minor difference in favor of the relapse prevention group compared to usual care (usual care: 23, 1, relapse prevention group: 21,4). His calculations were based only on drinking participants, which resulted in a much higher number of drinks than in Project Match. Although different definitions of heavy drinking were used, both McKay et al., Bennett et al. and O'Farrell et al. found results in favor of the experimental intervention (telephone, relapse prevention, behavioral marital therapy).

Treatment engagement

As for drinking outcomes, the nurse group in Pelc et al. and relapse prevention group in Bennett et al. obtained better outcomes for treatment attendance than the usual care conditions (table 3). The other four trials reported treatment attendance only as a process outcome (figure 5). The percentage of scheduled sessions which were attended ranged from 35% to 90%. The lowest proportion of attended sessions was seen in the trials with the highest number of scheduled sessions (25, 35).

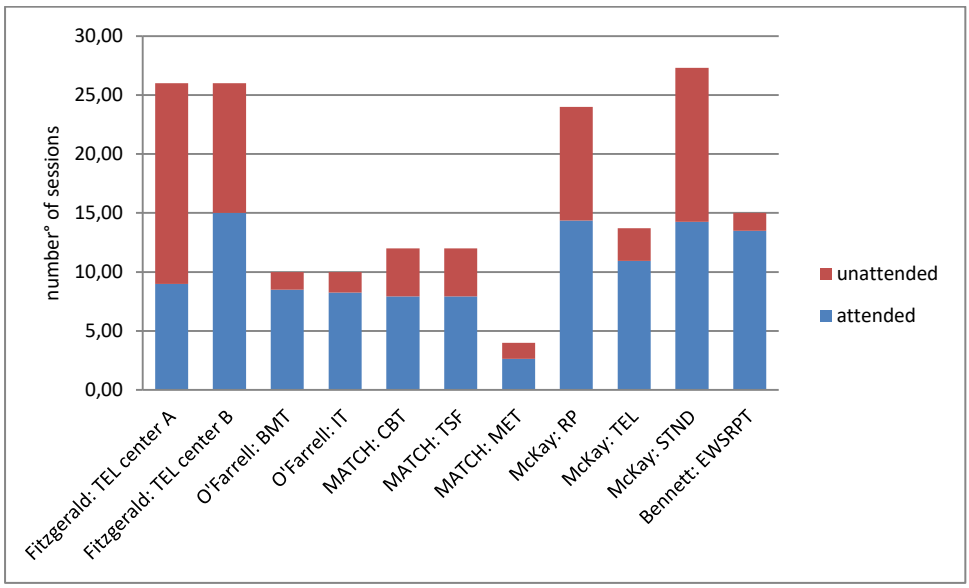



*Figure 5: Attendance at scheduled sessions during the trial*

*°: numbers are means, except for Bennett (median)*
*TEL: telephone calls, BMT: behavioral marital therapy, IT: interactional couples therapy, CBT: Cognitive behavioral*

*coping skills therapy, TSF: twelve step facilitation, MET: motivational enhancement therapy, RP: relapse prevention, STND: standard continuing care, EWSRPT: early warning signs relapse prevention training*

## 4. Discussion

### 4.1. Limited evidence available

Our review shows how few high-quality studies on continuing care for patients with AUDs are available. For a disease with such devastating consequences, both on a personal and a socio-economic level, one would expect otherwise.
We observed that there is a much larger number of trials available studying a mixed population of patients with AUDs or other substance use disorders. Broadening our subject selection criteria to this population would have allowed for a much larger sample of studies. Nevertheless, for several reasons we have decided at protocol stage to include only trials studying a population with AUDs, without co-occurring substance use disorders. Firstly, although dependence on alcohol is frequently associated with dependence on illicit drugs (46), several studies suggest that this population differs from the population with alcohol dependence only. Both in demographic terms as in the severity of their alcohol dependence both groups seem to differ (47, 48). Also the treatment seeking behavior appears to differ, with a much higher treatment seeking in the comorbid group (21.76%) compared to the alcohol-only group (6.06%) (48). Finally, there is specific genetic evidence suggesting that alcohol dependence with comorbid drug dependence represents a more severe form of the disorder, with higher genetic contribution to vulnerability (49). In view of these differences, we cannot exclude the possibility that an adapted approach is necessary for both types of populations. Secondly, a substantial part of the population with AUDs has no co-occurring substance use disorder (48, 50). So it certainly seems relevant to practice to focus on this particular group. Thirdly, to allow for the most reliable comparison of continuing care interventions, we tried to maximize the homogeneity between the populations of included studies. Therefore we chose to define the studied population quite strictly, excluding other substance use disorders.

As a result of our choice, we unfortunately had to exclude many trials describing a mixed population with alcohol or other substance use disorders. Often, they had a significant proportion of patients suffering from AUDs only. However, separate data for this 'alcohol-only group' were rarely reported. We strongly recommend future researchers to specify results for this sub-group. Only then it will be evident if findings are indeed similar between groups with different substance use diagnoses.

### 4.2. A tendency of efficacy

Based on the available data, we come to the tentative conclusion that adding an active intervention to usual continuing care seems to improve treatment outcomes.
The active interventions differ from usual continuing care in many aspects. They bring treatment more proactively to the patient and are usually organized on a more regular basis. Providing coping skills and increasing motivation, they focus strongly on patient empowerment, whereas usual care consists mainly of supportive counseling and promoting alcoholics anonymous attendance. Finally, the active interventions also target the functioning of the patient within his family network and improve coordination between the patient and different healthcare services.

We would like to compare our findings with the existing literature. We notice that our main conclusion agrees with the findings of research on continuing care in a population with mixed alcohol and drug use disorders (12, 51). Indeed, in two narrative reviews, McKay et al. conclude that 'extended interventions' improve long-term outcomes compared to usual treatment (51) and that continuing care can be effective in sustaining the positive achievements from the rehabilitation care phase (12). Based on a limited number of economic studies, evidence even exists that continuing care interventions could maximize the economic value of the initial more intense treatment phase (52). A number of other systematic reviews have separately examined several of the active interventions described in our analysis. However, these reviews did not focus in particular on patients with only AUDs and did not take place in the continuing care phase. Therefore their conclusions should be interpreted with caution in our specific setting. Still, we note that relapse prevention and behavioral couple therapy, two relatively successful interventions in our analysis, were also found to be effective in meta-analyses (53). On the contrary, no convincing evidence exists for the effectiveness of twelve step facilitation in reducing alcohol dependence or problems (54). Also in our review, twelve step facilitation did not appear to be the most successful treatment. An approach which was not encountered in our analysis is an online alcohol intervention. This approach could be beneficial for users less likely to access traditional alcohol-related services (55). Finally two Cochrane reviews on telephone consultations and on internet interventions are currently ongoing (56, 57).

It is clear from our results that effect sizes are limited. This does not necessarily mean that the intervention in itself is inadequate. The control group could have been exposed to treatments not included in the study protocol. Moreover, in this population drop-out rates are often high, limiting exposure to the continuing care intervention. Adding strategies to increase treatment engagement could improve treatment outcomes (58). Furthermore, the type and intensity of the previously received rehabilitation treatment could influence the specific needs of the patient in the continuing care phase. Finally, the effectiveness of a specific continuing care intervention could depend on certain patient characteristics. However, Project MATCH (19) found little evidence to support this hypothesis, contrary to prior research (59).

### 4.3. Integrated continuing care

Different principles of integrated care can be recognized in the active interventions analyzed: patient-centeredness, multi-professional teamwork and continuity of care. Unfortunately, no single active intervention fully meets all the requirements of continuous integrated care. In contrast, an integrated care program (ICP) based on different elements of the continuing care interventions discussed above, may be more appropriate. Finally, we note that all continuing care interventions in this analysis can be categorized as "specialty continuing care". However, in an integrated care approach, the primary care physician could also play a part in the delivery of continuing care (4). Typically using a patient-centered and longitudinal approach, he is ideally placed to assist the patient in this care phase.

### 4.4. Implications for research

We intend to propose an integrated care program (ICP) which could be used in the continuing care setting for patients with AUDs. This program should be further investigated in a (cluster) randomized controlled trial before being implemented in daily practice. We believe that an ICP will better respond to the complex demands of this population, compared to a single continuing care intervention. Moreover, such a program should offer the flexibility to adapt the treatment to the individual patient.
The program could consist of the following elements: telephone follow-up by a specialized and trained nurse, with calls being initiated at predefined moments by the patients themselves. The nurse takes the initiative only if the patients fail to call. The calls could encompass monitoring of the patients, but also limited counseling and a coordination of care with the psychiatrist, general practitioner (GP), social worker or other care providers. Patients could use a workbook, to register among other things their behavior, difficulties encountered and intermediate goals. This workbook could be discussed during the calls, but also in the counseling sessions with the specialist or the GP. If deemed necessary by the patient or the nurse, calls could be supplemented by home visits.
Too many follow-up moments should be avoided, in view of the burden for the patient, the feasibility for the care-giver and the cost-effectiveness of the intervention. Therefore, we would propose weekly calls in the beginning. The duration, intensity and frequency of the calls should however be continuously adapted to the needs of the individual patient. We fully support the concept of the adaptive continuing care proposed by McKay et al (12). Given the chronic nature of the disease, we would suggest no restricted follow-up period, but literally 'continuing' care. Specific elements could be added to increase retention in the ICP, as described by several investigators (8, 42).

More efficacy studies are necessary to provide stronger support for the different elements composing the ICP. The interventions mentioned above should be further investigated, but new technologies could also be integrated in the program. Research in this domain is currently ongoing (60). In order to provide flexible continuing care, tailored to the needs of the individual patient, more research is also needed on matching patient characteristics to treatment. Cost-effectiveness research is needed before implementation of an ICP in daily practice. Finally, interventional trials should be in accordance with the recommendations of the SPIRIT statement (61). In order to facilitate meta-analysis, interventions should be compared to a control group receiving usual care. Also, we would strongly recommend the use of more homogeneous outcome measures. Both the type of outcome measure as the length of follow-up should be more standardized. Outcome measures should focus both on drinking frequency (e.g. percent days abstinent) and severity (e.g. drinks per drinking day) as recommended by previous research (62). Self-reported data and data from other sources should be combined. More research guidelines and recommendations for future economic evaluation research are outlined comprehensively by Popovici et al (52).

### 4.5. Weaknesses and strengths of the review

This review is based on a limited number of studies, with heterogeneous interventions and outcome measures. This impeded the conduct of a meta-analysis and influences the strength of the conclusions.
Furthermore, the exclusion of trials focusing on a population with co-occurring other substance

use disorders limits the applicability of the results to only a part of the population presenting for substance abuse treatment.

Finally, relying on previous research (4, 12, 51) we defined 'continuing care' as the treatment phase following an inpatient or intensive outpatient alcohol rehabilitation program. However, we should be careful not to divide care of these patients in too rigidly separate phases. The intensity and format of treatment can vary over time, according to the needs of the individual patient and always in dialogue with the patient and caregivers involved. Despite these limitations, this review adds value to the existing knowledge on the treatment of patients with AUDs. It is the first systematic analysis of continuing care research for patients with AUDs only. The search was extensive and the most recent guidelines for conduct and reporting of systematic reviews were followed (16, 17) (Higgins 2011a; Moher et al., 2009). We want to emphasize that given the scarcity of evidence, our conclusions must be interpreted cautiously. They cannot simply be adopted in implementation programs. Nevertheless, this analysis provides a solid basis to direct further research.

## 5. Conclusion

In this systematic review, we observe a trend of better outcomes in favor of continuing care interventions actively involving the patient, compared to 'usual care'. The lack of convincing evidence in continuing care research should not discourage clinicians or researchers. Considering the severe consequences of this disorder, even small improvements in outcomes can be important for the individual patient and for society. We have an ethical obligation towards this population suffering from a disease with devastating consequences. This was emphasized by investigators 30 years ago, is still supported today (1, 12, 25), and will hopefully inspire future researchers and policy makers.

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