Factors Predicting Patient's Allocation to Short- and Long-Term Therapeutic Community Treatments in the Italian VOECT Cohort Study

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Abstract

The Evaluation of Therapeutic Community Treatments and Outcomes (VOECT) study was conducted in 131 Italian Therapeutic Communities (TCs) in 2008/2009. All of the patients entering residential treatment for drug or alcohol dependence were invited to participate. Data regarding patient socio-demographic characteristics, drug and alcohol consumption, health and psychopathological status, prior treatments and outcomes, and their motivation score were collected upon enrolment onto the study. The aim of this work was to identify the factors associated with allocation to short- versus long-term programmes in drug or alcohol dependent patients entering TCs in Italy. Of the 2470 patients included in the analysis, 30.8% were allocated to short-term treatment and 69.2% to long-term treatment. Several factors were significantly associated with the allocation to short- and long-term treatments: unstable living conditions; entering the TC when not detoxified; a high Symptom Checklist-90 somatization score; prior cessation episodes; previous in-patient detoxification treatments; psychosocial treatments; entering the TC by oneself; and a low motivation score.

1. Introduction

Therapeutic community (TC) treatment is one of the most commonly used approaches for treating drug-dependent patients. When entering TC, patients can benefit from many treatment options, depending on the philosophy of treatment, characteristics of the patients, availability of interventions and rehabilitation activities, and financial resources. Over the last several decades, the evolving scenario of drug use and related problems, changes in the characteristics of patients and their needs, research findings and limitations in financial resources have led to changes of treatment strategies, including a shift from the historical long-term model to a shorter one (De Leon, 1995, 1997; Dye, Ducharme, Johnson, Knudsen, & Roman, 2009; Melnick, De Leon, Hiller, & Knight, 2000).

Differences in the effectiveness of short- *vs.* long-term programmes on long-term outcomes have never been clarified. A few randomized trials were conducted in the field with completion rates in favour of short-term programmes, but no differences in effectiveness were found on patients' clinical outcomes (Malivert, Fatséas, Denis, Langlois, & Auriacombe, 2012; Mattick & Jarvis, 1994; McCusker et al., 1995; McCusker et al., 1997; Nemes, Wish, & Messina, 1999; Smith, Gates, & Foxcroft, 2006; Toumbourou, Hamilton, & Fallon, 1998). In addition, observational longitudinal studies have not revealed any differences in clinical outcomes between short- and long-term treatments (Harris, Kivlahan, Barnett, & Finney, 2012).

The duration of treatment has a large impact on both the patient and the health care system; treatments that are long in duration cause the patients' requirements to change and costs to increase. In order to remain in treatment, longer programmes need patients to maintain a continual high level of motivation to change, a requirement that can contribute to the low completion rates observed for these kinds of programmes (De Leon, 1989). This is important because regardless of the length of the planned treatment, completion of treatment and longer retention times have been shown to have a significant protective influence against drug use relapse, criminal activity and post discharge employment rates (Condelli & Hubbard, 1994; Fernández-Hermida, Secades, Fernández, & Marina,

2002; Fernández-Montalvo, López-Goñi, Illescas, Landa, & Lorea, 2008; French, Zarkin, Hubbard, & Rachal, 1993; Gossop, Marsden, Stewart, & Rolfe, 1999; Gossop, Stewart, Browne, & Marsden, 2002; Greenfield et al., 2004; Hubbard et al., 1989; Hubbard, Craddock, & Anderson, 2003; Malivert et al., 2012; McCusker, Stoddard, Frost, & Zorn, 1996; Moos, Pettit, & Gruber, 1995; Moos, Moos, & Andrassy, 1999; Nemes et al., 1999; Simpson, 1979, 1981; Simpson et al., 1997; Van de Velde, Schaap, & Land, 1998). Unfortunately, it is well known that subjects generally remain in a TC for just a third of the planned time (Malivert et al., 2012). Moreover, treatment failures can have negative consequences on the outcomes of subsequent treatments (McLellan et al., 1994). It is therefore of extreme importance that the treatment options proposed to the patient, starting with treatment duration, are those associated with the highest probability of treatment adherence and completion.

Due to the lack of evidence regarding the comparative effectiveness of short- *vs.* long-term programmes, at present treatments are generally chosen based on the patient characteristics best able to predict outcomes. According to current evidence, concurrent legal problems upon admission to TC, recent heroin or cocaine use, severe dependence and psychiatric symptoms, low family and social support, employment and family problems, repeated past treatment attempts, low motivation, and a history of physical abuse in female patients, are all recognised risk factors for treatment drop-out or drug relapse (De Leon, Melnick, Kressel, & Jainchill, 1994; Gossop et al., 2002; Joe, Simpson, & Broome, 1998; Laffaye, McKellar, Ilgen, & Moos, 2008; McKellar, Harris, & Moos, 2006; McLellan et al., 1994; Messina, Wish, & Nemes, 2000; Moos & King, 1997; Mulder, Frampton, Peka, Hampton, & Marsters, 2009; Soyez, DE Leon, Broekaert, & Rosseel, 2006; van de Velde et al., 1998). As such, patients presenting these risk factors should be allocated to short-term treatments, thereby allowing them to avoid the risk of negative outcomes and enter a clinical pathway with stable cessation from use and psycho-social adjustment as the primary goals.

In Italy, patients are usually referred to a TC by the Addiction Treatment Facilities of the National Health Service. The treatment is agreed upon with the patients according to their clinical

characteristics, social and working conditions; it is free of cost for the patient, but admission depends on availability. In a few cases, patients enter the TC by themselves or are referred by the criminal justice system. The Evaluation of Therapeutic Community Treatments and Outcomes (VOECT) study is a cohort study that was conducted in 8 Italian Regions (Sardinia, Lazio, Piedmont, Emilia-Romagna, Lombardy, Umbria, Sicily, and Campania) and enrolled more than 2500 patients from 131 TCs (Mathis et al., 2013).

The aim of this paper was to describe the characteristics of the patients enrolled onto the VOECT study and to identify individual factors that predict allocation to short- or long-term treatments.

2. Methods

2.1 Study population and data collection

All patients aged 18 years or older, who entered residential treatment for drug or alcohol dependence in a VOECT TC between June 2008 and September 2009, were invited to participate in the study. Patients who refused to participate (n=565) were asked to answer some basic questions regarding their education, work and family conditions. Several statistically significant differences were observed: patients who refused to participate in the study were more frequently foreigners, had lower education levels, were unemployed or occasional workers, were human immunodeficiency virus (HIV)-, hepatitis B virus (HBV)-, or hepatitis C virus (HCV)-positive, and were more frequently allocated to short-term treatment; only prior legal problems and suicide attempts were more frequent among enrolled patients.

The patients who agreed to participate in the study (n=2612) were interviewed by the TC staff in order to fill out the following assessment tools:

1) *Study questionnaire*, investigating socio-demographic characteristics, drugs and alcohol consumption, family and working situations, educational level, health status, prior treatments and outcomes, and treatment options proposed to the patient;

2) *Symptom Checklist-90* (SCL90) (Derogatis, Lipman, & Covi, 1973), a self-completion questionnaire including 90 items assessing the previous week's symptoms related to 9 psychopathology dimensions: somatization; obsession-compulsion; inter-personal sensitivity; depression; anxiety; hostility; phobic anxiety; paranoid ideation; and psychoticism;
3) *Treatment motivation inventory*: a self-completion form including 12 items of the original larger scale by Wild (1996), generating three scores: the 'internal positive score' investigating the patient's identification with positive values related to behavioural change; the 'internal negative score' investigating the patient's identification with negative values related to a lack of behavioural change; and the 'external coercion score' measuring the level of external pressure about treatment;

Of the 2,612 patients who agreed to participate in the study, 79 were excluded for incomplete data collection, missing date of entry, missing information about the planned duration of treatment, or lack of eligibility criteria (entrance into TC during the enrolment period, aged 18 years or older at entry, entrance into TC due to substance dependence). The present analysis focused on the 2,470 patients who were primarily dependent to heroin, opiates, cocaine/crack or alcohol, excluding 63 patients who were dependent to other substances.

2.2 Statistical analysis

Baseline differences between enrolled and refusal patients and differences between patients admitted to short- *vs.* long-term treatments were evaluated using χ^2, Student's *t*-test and Fisher's exact test as appropriate (Table 1-4). All the factors that were statistically significant in the univariate analysis were then tested using a stepwise multivariate logistic regression model. Gender, age, education level, and primary substance of abuse were imposed. In cases of co-linearity, just one variable was included in the model. This occurred for SCL90 obsession-compulsion, depression and anxiety scores, of which the obsession-compulsion score was chosen. The final variables

retained in the model are shown in Table 5. Statistical analyses were performed using the SAS statistical software package version 9.2 (SAS Institute Inc., Cary, NC, USA).

2.3 Ethical Considerations

In accordance with the Ethical Principles of the World Medical Association Declaration of Helsinki, full confidentiality was obtained and anonymity was assured by assigning each patient an anonymous code. Information about the study and the contents of the forms to be completed were reviewed with the participants before the interviews. All of the participants signed a written informed consent form, and were informed that they could withdraw from the study at any time without any ensuing consequences. The study was not reported to an Ethics Committee, as it is not required in Italy for observational studies.

3. Results

3.1 Socio-demographic characteristics

Of the 2470 patients retained for the analysis, 761 (30.8%) were allocated to short-term treatment (<=90 days) and 1709 (69.2%) to long-term treatment (>90 days).

Compared with patients allocated to long-term treatment, those allocated to short-term treatment were: older; more frequently female; more frequently lived alone, with friends, or had no fixed abode; had a stable job or were retired; and had had fewer legal problems upon entry to treatment (Table 1).

3.2 Substance use, psychiatric co-morbidity and motivation

The large majority of enrolled patients accessed TC treatment for heroin or opiate use (51.1%), followed by cocaine or crack (29.7%) and alcohol (19.2%). A larger proportion of patients allocated to short-term treatments were alcoholics compared with those allocated to long-term treatments (23.1% *vs.* 17.4%), whereas a lower proportion of them were cocaine or crack abusers (26.3% *vs.*

31.2%). Short-term patients had a longer history of substance use, and a higher proportion had at least 30 consecutive days of cessation in the past and consistently reported a larger number of cessation attempts. All of the SCL90 subscores were higher in the short-term patients, with statistically significant differences between short- and long-term patients for somatization, obsession-compulsion, depression, anxiety, paranoid ideation scores, and global score. Consistently, a higher proportion of short-term patients had a psychiatric diagnosis and had attempted suicide in the past. With regard to motivation for treatment, only the internal negative score was statistically different between the two groups of patients, with long-term treatment patients having a higher score. These results are shown in Table 2.

3.3 Use-related characteristics by substance of abuse

When looking at the characteristics of use stratified by primary substance of abuse, only a few differences between short- and long-term patients were observed and only in heroin- and cocaine-dependent patients: no differences were identified in alcoholics. Among heroin addicts, short-term patients had a higher frequency of use in the previous month, and a lower proportion of cases were abstinent upon entry into the TC (27.9% vs 53.3%). A larger proportion of short-term patients had had acute intoxications during their lifetimes, and had HIV or acquired immune deficiency syndrome (AIDS). Among cocaine addicts, once again short-term patients reported a higher frequency of use in the previous month and a lower proportion of cases were abstinent upon entry (45.0% *vs.* 63.5%). A larger proportion of short-term patients had HIV or AIDS, and were HBV- or HCV- positive. Among alcoholic patients, a higher proportion of short-term patients had HIV or AIDS, and a lower proportion entered the TC already detoxified. These results are summarised in Table 3.

3.4 Current and past treatments

Short-term patients were classified as re-entry patients in 15.2% of cases compared with 11.7% of long-term patients, and addiction treatment facilities planned their entry into TC more often than for long-term patients. A large proportion of long-term patients were referred by the criminal justice system, and a higher proportion of short-term patients entered the TC by themselves. Individual psychotherapy, group psychotherapy, family interventions, school and professional training, sports and physical activities, as well as workshops were planned upon entry to TC for a larger proportion of long-term than short-term patients. In contrast, psychiatric treatment, substitution pharmacological treatment, psychosocial treatment or counselling, and physical rehabilitation were planned for a larger proportion of short-term patients. With regard to the history of treatments, a higher proportion of short-term patients had already experienced a variety of treatments: residential TC (slightly significant); day-residential TC; inpatient detoxification episodes; psychosocial treatments; and pharmacological treatments (slightly significant). It is worth noting that a larger proportion of long-term patients had received no prior treatment at all. Completion of a previous residential TC had been achieved by 41.3% of patients allocated to long-term treatment compared with 30.8% of short-term patients. In contrast, psychosocial and pharmacological treatments had been completed by a higher proportion of patients allocated to short-term treatment. These results are shown in Table 4.

3.5 Factors predicting the allocation to short- vs long-term treatment

According to the stepwise multivariate logistic regression analysis, unstable living conditions are an independent predictor of allocation to short-term TC, with patients living alone or with friends being at higher risk compared with those living in a family. Entering the TC without being detoxified favoured the allocation to short-term treatment, as well as having a higher SCL90 somatization score, cessation episodes in the past of at least 30 days, previous inpatient detoxification episodes, previous psychosocial treatment and entering the TC by oneself.

Having a higher motivation internal negative score predicted entry into long-term treatment as well as entry into the treatment in agreement with criminal justice system. These results are shown in Table 5.

4. Discussion

In the late 2000's in Italy, about 10% of drug dependent patients received treatment from a TC (Presidenza del Consiglio dei Ministri, 2008). The VOECT study enrolled more than 2,500 patients of 131 Italian TCs, representing 12.5% of overall TC patients and 34% of Italian TCs.

In the study, about one-third of the patients were allocated to a short-term programme (<= 90 days) and 70% to longer programmes. From these data, it appears that long traditional programmes were still very common in Italy in the late 2000's. These programmes follow the historical traditional model of TC: highly structured long-term residential programmes based on peers facilitating social and psychological change; promoting a drug-free, crime-free lifestyle; lasting from 6-9 months to 1-3 years (De Leon, 1999). Short-term programmes rely primarily on the Minnesota model, applying 12-step interventions and including group therapies, ex-addict counsellors and multi-professional staff. However, new duration options lasting from a few months to 1 year are also currently offered, especially to individuals with low motivation for a long-term treatment or to those with a job, family and social commitments, psychosocial impairment or psychiatric comorbidity (Adinoff, Scannell, Carter, & Dohoney, 1999; Galanter & Kleber, 1994), an evolution that has been supported by a specific national health policy since 1999 (Presidenza del Consiglio dei Ministri, 1999).

According to the multivariate logistic regression analysis, the following factors indicating a higher severity of dependence predicted the allocation of patients to short-term programmes: unstable living condition, entering the TC without being detoxified, higher SCL90 somatization scores, several cessation episodes in the past, previous inpatient detoxification and previous psychosocial treatments. The allocation of patients with these factors to short-term programmes is an expected finding, as they still needed a first phase of treatment of withdrawal symptoms to stabilise their

condition and move to long-term goals. The addiction severity was confirmed by a higher proportion of substitution pharmacological treatments, psychiatric treatments, psychosocial support and physical rehabilitation (i.e., treatments indicating bad health conditions), being received compared to long-term patients. Conversely, a higher proportion of long-term patients were planned to attend individual, group and family psychotherapy, interventions usually requiring long-term involvement and a low degree of psychological and physical disruption. Consistently, other interventions addressing social adjustment issues such as school/professional training and job placement were proposed to a very low proportion of short-term patients. The correlation between short-term programmes and the psychosocial and health severity of addiction-related problems was also indirectly confirmed by the higher prevalence of refusals among short-term patients (21.6% *vs*. 15.0%).

Even during long-term programmes, a high proportion of patients received a substitution treatment. This demonstrates that major changes to the theoretical orientation occurred in Italian TCs in the 2000's, moving away from previous drug-free to evidence-based approaches. Higher motivation and a referral by the criminal justice system predicted entry into long-term treatment. Both of these findings were expected as admission to a residential TC in Italy can sometimes be proposed as an alternative to prison for drug addicts with legal problems, and motivation is considered a predictor of treatment outcomes (De Leon et al., 1994; Joe et al., 1998; Moos & King, 1997; Soyez et al., 2006).

Our study identified several factors associated with the allocation to short- or long-term programmes. The profile of criteria applied to allocate patients to one or the other treatment appears to be plausible. This is reassuring, since targeting programmes to the specific needs of patients is expected to increase the rate of success and reduce the cost of treatment (Leshner, 1997; Mattson et al., 1994; Miller & Cooney, 1994; Wellisch, Prendergast, & Anglin, 1995), while in the absence of shared criteria idiosyncratic matching schemas may be applied, suggesting inter-professional disagreement (Westenberg, Koele, & Kools, 1998). Valid approaches of treatment matching have

been reported in the literature; for example, those aimed at matching patients to outpatient or residential treatment settings (De Leon, Melnick, & Cleland, 2008, 2010; Melnick, De Leon, Thomas, & Kressel, 2001). However, other relevant components of treatment, including treatment duration, have not been deeply explored, so the definition of an objective patient-treatment matching strategy is still needed. Our results may help researchers and practitioners to reach a consensus on this issue. In addition, in order to identify elements that should be included in an objective, evidence-based, patient-treatment matching approach, factors predicting the outcomes of short- and long-term programmes need to be studied and compared.

The VOECT study had several strengths. First, it was a large multicentric study, involving 35% of TCs in eight Italian regions. Second, a study protocol was followed to collect data in a standardised way, minimising possible biases related to data collection. Finally, detailed demographic and clinical information were collected using questionnaires and validated scales, allowing the investigation of many aspects and a wide range of analyses.

The study also had some limitations. First, the observational design of the study decreased the power to make conclusions about causal pathways, due to residual uncontrolled confounding variables. However, the present research question was investigated applying a multivariate logistic regression model, taking into account a large number of possible confounders. Second, the rate of refusal was quite high. Nevertheless, data on refusals were collected and the differences in socio-demographic characteristics, drug use, and past treatments compared with enrolled patients were included in the multivariate model. However, we cannot completely exclude a residual confounding effect due to the selection of enrolled patients.

Despite these possible limitations, VOECT is the first cohort study to be conducted in Italy on TCs. The large sample of enrolled patients, the study design, and the large amount of information collected provides a basis for future investigations into TCs, as well as suggestions for improving practices to achieve better health outcomes in patients. Despite limitations in evaluating the effectiveness of treatments, cohort studies such as VOECT are important as they allow the analysis

of the characteristics of patients admitted to treatments. They also provide the unique opportunity to study outcomes in the real world, where patients are not randomized, treatments are not optimal, and resources are limited, thereby allowing the evaluation of useful practices that will improve the quality of the treatment offered and the health of the patients.

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7. Conflict of interest

All authors declare to have no conflict of interest.

All authors certify their responsibility for the present manuscript.

8. Compliance with Ethical Standards

In accordance with the Ethical Principle of the World Medical Association Declaration of Helsinki, full confidentiality was obtained and anonymity was assured by assigning each patient an anonymous code. Information on the study and the contents of the forms to be completed were reviewed with the participants before the interviews. All participants signed a written, informed consent form and were informed that they could withdraw from the study at any time without any ensuing consequences.

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Table 1. Socio-demographic characteristics of short (<=90 days) and long (>90 days) term patients at intake

Characteristic	Short-term treatment (n=761)		Long-term treatment (n=1709)		All patients (n=2470)		p value [a]
	n	%	n	%	n	%	
Gender							
Males	619	81.5	1455	85.3	2074	84.1	0.016
Females	141	18.5	251	14.7	392	15.9	
Age (years)							
<31	200	26.3	530	31.0	730	29.5	0.027
31-38	261	34.3	586	34.3	847	34.3	
>38	300	39.4	593	34.7	893	36.2	
Mean age (SD)	36.2	(9.0)	34.8	(8.3)	35.2	(8.5)	<0.001
Children							
Yes	250	33.2	607	35.8	857	35.0	0.200
No	504	66.8	1087	64.2	1591	65.0	
Education							
<9 years	546	71.7	1247	73.3	1793	72.8	0.497
9-13 years	200	26.3	431	25.3	631	25.6	
>13 years	15	2.0	24	1.4	39	1.6	
Living condition							
With partner and/or children	118	15.5	281	16.5	399	16.2	
With parents	322	42.3	878	51.4	1200	48.6	<0.001
With friends	25	3.3	26	1.5	51	2.1	
Alone	157	20.6	240	14.0	397	16.1	
No fixed abode/prison/other	139	18.3	283	16.6	422	17.1	
Employment							
Stable job	146	19.2	282	16.5	428	17.3	
Unstable job	63	8.3	183	10.7	246	10.0	0.001
Unemployed	513	67.4	1163	68.1	1676	67.9	
Retired or allowance	34	4.5	43	2.5	77	3.1	
Housewife/student	5	0.7	36	2.1	41	1.7	
Legal problems							
Never	286	38.2	585	34.6	871	35.7	<0.001
In the past	251	33.6	483	28.6	734	30.1	
At entry	211	28.2	621	36.8	832	34.1	

[a] p value estimated through X^2 (or t-test) excluding missing values

Table 2. Substance use, psychiatric co-morbidity and motivation of short (<=90 days) and long (>90 days) term patients at intake

Characteristic	Short-term treatment (n=761)		Long-term treatment (n=1709)		All patients (n=2470)		p value [a]
	n	%	n	%	n	%	
Primary substance of abuse							
Heroin/opiates	385	50.6	878	51.4	1263	51.1	0.001
Cocaine/Crack	200	26.3	533	31.2	733	29.7	
Alcohol	176	23.1	298	17.4	474	19.2	
Years since first use of a substance [b] (SD)	18.3	(9.2)	16.1	(8.7)	16.9	(8.9)	<0.001
Number of substances of abuse							
1	179	23.5	362	21.2	541	21.9	
2	396	52.0	834	48.8	1230	49.8	
3	105	13.8	314	18.4	419	17.0	0.091
4	44	5.8	111	6.5	155	6.3	
5	16	2.1	40	2.3	56	2.3	
>5	21	2.8	48	2.8	69	2.8	
30 days cessation episodes in the past	708	93.5	1517	89.1	2225	90.5	<0.001
If any, number of cessation attempts (n=2,225)							
1-2	173	24.9	457	30.7	630	28.8	0.018
3-4	155	22.3	312	21.0	467	21.4	
>4	368	52.9	719	48.3	1087	49.8	
If any, longest period of cessation (n=2,225)							
1-6 months	203	29.5	481	33.0	684	31.9	0.199
7–24 months	262	38.1	551	37.8	813	37.9	
>24 months	222	32.3	426	29.2	648	30.2	
SCL90 scores, mean (SD)							
somatization	0.91	(0.74)	0.79	(0.74)	0.83	(0.74)	<0.001
obsession-compulsion	1.10	(0.78)	0.99	(0.75)	1.02	(0.76)	0.001
inter-personal sensitivity	0.88	(0.74)	0.84	(0.73)	0.85	(0.73)	0.178
depression	1.23	(0.82)	1.06	(0.78)	1.11	(0.80)	<0.001
anxiety	1.01	(0.77)	0.90	(0.75)	0.94	(0.76)	0.003
hostility	0.73	(0.76)	0.70	(0.77)	0.71	(0.76)	0.358
phobic anxiety	0.39	(0.53)	0.36	(0.53)	0.37	(0.53)	0.229
paranoid ideation	0.99	(0.75)	0.90	(0.76)	0.93	(0.76)	0.005
psychoticism	0.78	(0.67)	0.73	(0.67)	0.75	(0.67)	0.106
Global Score Index	0.95	(0.62)	0.85	(0.62)	0.88	(0.62)	<0.001
Psychiatric diagnosis	140	18.4	264	15.5	404	16.4	0.067
Suicide attempts	93	12.2	143	8.4	236	9.6	0.003
Motivation to treatment scores [c], mean (SD)							
Internal positive score	25.22	(3.78)	25.25	(3.79)	25.24	(3.79)	0.838
Internal negative score	13.38	(5.50)	13.98	(5.18)	13.79	(5.29)	0.014
External coercion score	11.60	(6.18)	11.63	(6.23)	11.62	(6.22)	0.918

[a] p value estimated through X^2 (or t-test) excluding missing values
[b] excluding tobacco for alcoholics patients, tobacco and alcohol for others patients
[c] Motivation to treatment: maximum score for internal positive scale 28, external 21

Table 3. Use-related characteristics of short (<=90 days) and long (>90 days) term patients according to primary substance of abuse

Characteristic	Short-term treatment		Long-term treatment		All patients		p value [a]
	n	%	n	%	n	%	
HEROIN-OPIATES (n=1263)							
Age at first heroin use (SD)	18.4	(4.0)	19.0	(4.5)	18.8	(4.3)	0.090
Frequency of heroin use in the 30 days prior entry into TC							
Daily	181	48.1	287	36.8	468	40.5	<0.001
More than once a week but less than daily	62	16.5	84	10.8	146	12.6	
Less than once a week	21	5.6	43	5.5	64	5.5	
Never	112	29.8	366	46.9	478	41.4	
Already detoxified at entry	107	27.9	465	53.3	572	45.6	<0.001
Needle exchange in the last 6 months	38	22.0	99	26.5	137	25.1	0.258
Needle exchange lifetime	148	39.1	320	38.5	468	38.7	0.857
Acute intoxication in the last 6 months	54	24.8	89	19.9	143	21.5	0.148
Acute intoxication lifetime	210	55.1	406	49.5	616	51.3	0.067
HIV+ or AIDS	36	9.4	58	6.6	94	7.4	0.087
HBV+ or HCV+	238	61.8	519	59.1	757	59.9	0.366
COCAINE (n=733)							
Age at first cocaine use (SD)	20.3	(7.0)	19.4	(6.4)	19.7	(6.6)	0.212
Frequency of cocaine use in the 30 days prior entry into TC							
Daily	87	45.8	137	29.9	224	34.6	<0.001
More than once a week but less than daily	24	12.6	71	15.5	95	14.7	
Less than once a week	22	11.6	29	6.3	51	7.9	
Never	57	30.0	221	48.3	278	42.9	
Already detoxified at entry	89	45.0	334	63.5	423	58.4	<0.001
Needle exchange in the last 6 months	24	33.8	43	25.3	67	27.8	0.179
Needle exchange lifetime	52	27.4	122	24.3	174	25.1	0.407
Acute intoxication in the last 6 months	20	20.8	51	22.3	71	21.9	0.775
Acute intoxication lifetime	82	42.5	200	39.6	282	40.4	0.488
HIV+ or AIDS	23	11.5	38	7.1	61	8.3	0.056
HBV+ or HCV+	101	50.5	215	40.3	316	43.1	0.013
ALCOHOL (n=474)							
Age at first alcohol use (SD)	20.8	(9.7)	20.7	(8.5)	20.8	(9.1)	0.917
Frequency of alcohol use in the 30 days prior entry into TC							
>60 times	44	26.0	49	20.5	93	22.8	0.320
1-60 times	69	40.8	113	47.3	182	44.6	
Never	56	33.1	77	32.2	133	32.6	
Already detoxified at entry	98	56.3	190	64.4	288	61.4	0.082
Needle exchange lifetime	28	16.8	34	14.0	62	15.1	0.441
Acute intoxication in the last 6 months	9	17.7	16	16.5	25	16.9	0.859
Acute intoxication lifetime	45	27.0	67	27.4	112	27.2	0.929
HIV+ or AIDS	9	5.1	6	2.0	15	3.2	0.063
HBV+ or HCV+	57	32.4	92	30.9	149	31.4	0.732

[a] p value estimated through X^2 (or t-test) excluding missing values

Table 4. Current and prior treatments of short (<=90 days) and long (>90 days) term patients

Characteristic	Short-term treatment (n=761)		Long-term treatment (n=1709)		All patients (n=2470)		p value [a]
	n	%	n	%	n	%	
Kind of patient							
New patient	641	84.8	1492	88.3	2133	87.2	0.015
Re-entry	115	15.2	197	11.7	312	12.8	
Kind of facility planning current TC entry							
Addiction treatment facilities	636	83.8	1352	79.7	1988	81.0	
Justice system	15	2.0	146	8.6	161	6.6	<0.001
Other services of the same facility	33	4.3	151	8.9	184	7.5	
Other	26	3.4	16	0.9	42	1.7	
None (access by oneself)	49	6.5	31	1.8	80	3.3	
Interventions planned at intake to TC [b]	23	3.0	8	0.5	31	1.3	
Psychotherapy (individual)	109	14.3	611	35.8	720	29.2	<0.001
Psychotherapy (groups)	149	19.6	564	33.0	713	28.9	<0.001
Psychological support	563	74.0	1278	74.8	1841	74.5	0.674
Family intervention	152	20.0	601	35.2	753	30.5	<0.001
Self-help groups	704	92.5	1604	93.9	2308	93.4	0.212
Psychiatric treatment	364	47.8	539	31.5	903	36.6	<0.001
Substitution pharmacological treatment	483	63.5	675	39.5	1158	46.9	<0.001
Psychosocial treatment/Counselling	725	95.3	1548	90.6	2273	92.0	<0.001
Physical rehabilitation	136	17.9	96	5.6	232	9.4	<0.001
School/professional training	44	5.8	259	15.2	303	12.3	<0.001
Sports/physical activities	15	2.0	139	8.1	154	6.2	<0.001
Workshops	338	44.4	846	49.5	1184	47.9	0.020
Prior treatments [b]							
Residential Therapeutic Community	499	65.6	1058	61.9	1557	63.0	0.082
Day-Residential Community	121	15.9	200	11.7	321	13.0	0.004
Inpatient detoxification	294	38.6	422	24.7	716	29.0	<0.001
Psychosocial treatment	470	61.8	895	52.4	1365	55.3	<0.001
Pharmacological treatment	575	75.6	1235	72.3	1810	73.3	0.088
None	19	2.5	101	5.9	120	4.9	<0.001
Others	85	11.2	88	5.2	173	7.0	<0.001
Completion of last treatment [b,c]							
Residential Therapeutic Community	94	30.8	326	41.3	420	38.4	0.001
Day-Residential community	20	33.9	44	47.7	64	39.5	0.269
Inpatient detoxification	127	80.9	155	74.5	282	77.3	0.150
Psychosocial treatment	110	40.2	177	33.2	287	35.5	0.049
Pharmacological treatment	134	37.1	262	31.1	396	32.9	0.042
Others	15	45.5	36	57.1	51	53.1	0.276

[a] p value estimated through X^2 (or t-test) excluding missing values
[b] Several treatments were possible for each patient
[c] Information available for 1500 patients (61%)

Table 5. Factors related to allocation to short (<=90 days) vs long (>90 days) term treatment, multivariate stepwise logistic regression model (N=2.134)

Characteristic	Short-term treatment (n=690)		Long-term treatment (n=1444)		Adjusted OR (95% CI)	p value [a]
	n	%	n	%		
Gender						
Males	561	81.3	1250	86.6	1	0.064
Females	129	18.7	194	13.4	1.30 (0.99-1.70)	
Age (years)						
18-30	181	26.2	450	31.2	1	0.790
31-38	232	33.6	484	33.5	1.09 (0.84-1.40)	
>38	277	40.1	510	35.3	1.02 (0.78-1.33)	
Education						
<9 years	492	71.3	1055	73.1	1	0.372
>8 years	198	28.7	389	26.9	0.90 (0.72-1.13)	
Living condition						
With partner and/or children/family	394	57.1	966	66.9	1	0.001
Alone/with friends	169	24.5	231	16.0	1.58 (1.23-2.03)	
No fixed abode/prison/other	127	18.4	247	17.1	1.27 (0.97-1.66)	
Primary substance of abuse						
Heroin/opiates	342	49.6	743	51.4	1	0.193
Cocaine/Crack	185	26.8	457	31.7	1.02 (0.81-1.28)	
Alcohol	163	23.6	244	16.9	1.28 (0.97-1.69)	
Detoxification status at entry						
Detoxified	272	39.4	853	59.1	1	<0.001
Not detoxified	418	60.6	591	40.9	2.14 (1.74-2.62)	
SCL90 Somatization score						
<0.33	142	20.6	441	30.5	1	0.037
0.33-0.99	281	40.7	541	37.5	1.39 (1.08-1.79)	
>0.99	267	38.7	462	32.0	1.29 (0.99-1.68)	
Motivation to treatment, Internal negative score						
<12	254	36.8	444	30.7	1	0.013
12-17	229	33.2	556	38.5	0.71 (0.56-0.89)	
>17	207	30.0	444	30.8	0.81 (0.63-1.03)	
30 days cessation episodes in the past						
No	43	6.2	143	9.9	1	0.008
Yes	647	93.8	1301	90.1	1.67 (1.14-2.44)	
Inpatient detoxification episodes in the past						
No	422	61.2	1081	74.9	1	<0.001
Yes	268	38.8	363	25.1	1.69 (1.35-2.11)	
Psychosocial treatment in the past						
No	255	37.0	682	47.2	1	0.001
Yes	435	63.0	762	52.8	1.40 (1.14-1.71)	
Kind of facility planning current TC entry						
Addiction treatment facilities	576	83.5	1142	79.1	1	<0.001
Justice system	14	2.0	136	9.4	0.29 (0.16-0.52)	
Other services of the same facility	30	4.4	123	8.5	0.69 (0.45-1.06)	
Other/none	70	10.1	43	3.0	3.34 (2.20-5.08)	

Hosmer-Lemeshow test of goodness of fit p=0.8924

[a] p value according to X^2 Wald