

## 41

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## Reducing Cocaine use in Heroin assisted Treatment Programmes: Effectiveness of Psychosocial Care

### Abstract

In previous studies, heroin-assisted treatment (HAT) has been shown to improve patients' health and social situation, and to reduce criminal behaviour dramatically. However, the question of which elements of an HAT programme play a causal role in the outcome of treatment has not been clarified to date. Using a panel study design, the intensity of concomitant care and treatment during the first year of therapy was measured in 41 patients with the aid of a specially developed survey instrument, and these values were analysed in relation to treatment outcome indicators. The analysis of covariance for the available data yielded a significant correlation between the intensity of psychosocial care (PSC) and the decrease in concomitant use of cocaine. An additional qualitative investigation involving manual-guided in-depth interviews in two divergent cases confirmed the results of the statistical analysis and also indicated further elements of the programme that are conducive to positive outcomes. This is the first study to provide empirical/quantitative evidence of the effectiveness of PSC as an element of an appropriate HAT programme with adequate dosages of opiates.

### Introduction

Psychosocial care (PSC) and medical treatment are – together with the administration of opiates – key elements in the therapeutic setting of heroin-assisted treatment (HAT). The overall value of HAT for patients and the appropriateness and safety of this type of therapy have already been confirmed by several earlier studies (Uchtenha-

gen et al. 1997; Perneger et al. 1998; Rehm et al. 2001). The importance of adequate dosages of opiates for the success of treatment has also already been underlined (Ward et al. 1998). Attention is now focusing on the relative contributions made by the various components of therapy to the outcome of treatment (Rehm & Uchtenhagen 2001). While in the early 1990s substitution treatments were still regarded as black boxes (Ball & Ross 1991, p. 236), several studies have since been published (McLellan et al. 1993; Raschke 1994; Rosenblum et al. 1995) investigating the efficacy of individual non-pharmacological elements of substitution treatments. To date, these studies have been concerned exclusively with methadone maintenance programmes.

The above-mentioned studies of methadone maintenance – a field closely related to that of HAT – suggest that more intensive treatment services lead to improved treatment outcomes. Such services are variously described as «counselling and medical services» (Ball & Ross 1991, pp. 136 ff.), «counselling and on-site medical/psychiatric, employment and family therapy» (McLellan et al. 1993, p. 1953), or «structured, manual-driven, cognitive-behavioural treatment programme» (Rosenblum et al. 1995, p. 151). To date, however, PSC delivered professionally as part of a substitution treatment programme has not – except in the study by Raschke (1994) – been the subject of a systematic efficacy analysis. In the light of previous investigations, our hypothesis in the present study is the following: the more time spent in PSC, the more favourable the outcome of HAT regarding the reduction of side consumption of other substances and the improvement of psychological well-being.

In order to test this hypothesis, an approach was selected which not only addresses practical realities but also promises to provide well-founded results by means of methodological triangulation. To elucidate the question of how far concomitant treatment influences the results of HAT in patients, an analytical study was conducted employing a longitudinal design. As HAT is a long-term treatment, it is appropriate to carry out a panel study<sup>1</sup>, in which patients newly enrolled at HAT centres are investigated at the start of treatment (Day 0) and after a year's treatment (Day 365). Statistical evaluation was based on an analysis of covariance. In order to supplement the quantitative results and to help detect possible confounders, in-depth problem-centred interviews were conducted with two patients whose results diverged from the trend shown by the statistical analysis (case one: high-intensity PSC with outcome below average; case two: low-intensity PSC with outcome above average).

PSC was defined on the basis of the description given in the HAT Manual published by the Swiss Federal Office of Public Health (BAG 2000, Sect. 1, p.16). It emerged from the literature that building motivation for change, reducing and managing concomitant drug use, and dealing with the problems of co morbidity that are often encountered in these patients are important constants in the provision of PSC for severely dependent drug users.

<sup>1</sup> In the present study, this term is used as elsewhere in the literature to designate a longitudinal study in which the same individuals are tested using the same instruments at several different times (cf. Friedrichs 1980, p. 157).

## Methods

### Study design

As the aim of this study was to determine the effectiveness of practices actually employed in the field, a naturalistic design was used. Although in principle all HAT patients receive PSC and medical treatment, these services are used to a varying extent. The intensity of concomitant treatment and care (expressed in terms of quarter-hours per month of treatment) was measured with the aid of a specially designed questionnaire and analysed in relation to the results of treatment.

The approach adopted was also based on the treatment objectives defined in the relevant ordinance (Ordinance concerning the Medical Prescription of Heroin; SR 812.121.6 1999) and on the indicators specified for treatment monitoring (Gschwend et al. 2002b). However, it was necessary for the latter to be validated prior to use. In view of developments observed over the first year of treatment and the distribution of scores – indeed, given the nature of the variables overall – the following three indicators were shown to be suitable for the analysis of efficacy: the Global Severity Index (GSI) of psychological distress, based on responses to the Symptom Checklist-90-R (SCL-90-R) questionnaire; the number of days on which cocaine had been used during the previous 30 days; and the total expenditure (in Swiss francs) on drugs during the previous 30 days. Considering the problems faced by the study population, it may be assumed that these indicators reflect key concerns for HAT patients. In addition to that, other studies have shown that side consumption of cocaine is particularly associated with poor treatment outcomes (Gschwend et al. 2002a, p. 9; Blättler et al. 2002, p. 24).

### Procedure

We studied whether any correlation could be detected between outcome indicators and the intensity of treatment and care services provided as part of the HAT programme. For this purpose, the values for PSC and for somatic and psychiatric consultations were divided into tertiles. To ensure that the results obtained were as reliable as possible, it was necessary to exclude the possibility of opiate dosage acting as a confounder (mean daily dose: 496 mg diacetylmorphine i.v. equivalent). To this end, the mean individual opiate dosages were also divided into tertiles and subjected to the same analysis as the other outcome variables.

In the analysis of covariance, the outcome indicators are the dependent variables, while the intensities of treatment and care service provision (given in tertiles) are fixed factors. The baseline value of control variables at Day 0 was taken as a covariate. This design yields a matrix in which the three treatment and care services most frequently provided as part of HAT and opiate dosage were examined for a possible correlation with the development of the GSI, and with changes in levels of cocaine use and expenditure on drugs. The significance threshold was set at  $P = 0.05$ .

### Study population

The population consisted of subjects (exclusively HAT-naive patients) newly enrolled at the outpatient HAT centres during the first half of 2001 (cf. Fig. 1). Since the documenting of treatment services imposed additional responsibilities on treatment centres, it could not be expected that all the centres would take part in the study. Of a total of 19 outpatient centres, 12 participated. The French-speaking centre was excluded in view of the translation work that would have been required, and six other centres declined to participate. Of the 60 patients newly enrolled at the participating centres during the specified time frame, 41 remained in treatment for a year (retention rate 68.3%). This represent 55.4% of all outpatients newly enrolled in the first half of 2001 who remained in treatment for at least a year. The analysis of covariance was performed for this group. Enrolment and follow-up data for patients at non-participating centres (retention rate 71,7%) were also evaluated and compared with data for the population at participating centres. Overall, the subset studied is representative of the total population. Differences between the two subsets were found in the areas of psychological distress, patient satisfaction, employment status and alcohol abuse, but the general trends were consistent (cf. Hošek 2003, pp. 148 ff).

The patients newly enrolled in HAT programmes during the first half of 2001 had undergone more previous treatment and had been dependent for longer periods than was the case for the first subjects involved in the PROVE (prescription project) trials conducted in 1994 and 1995 (cf. Hošek 2003, p. 172). Although their housing conditions appeared to be less precarious and their heroin injection techniques were associated with less skin damage, they remained subject to major stresses in the form of a propensity for polydrug use, a high prevalence of mental disorders and a tendency towards social isolation.

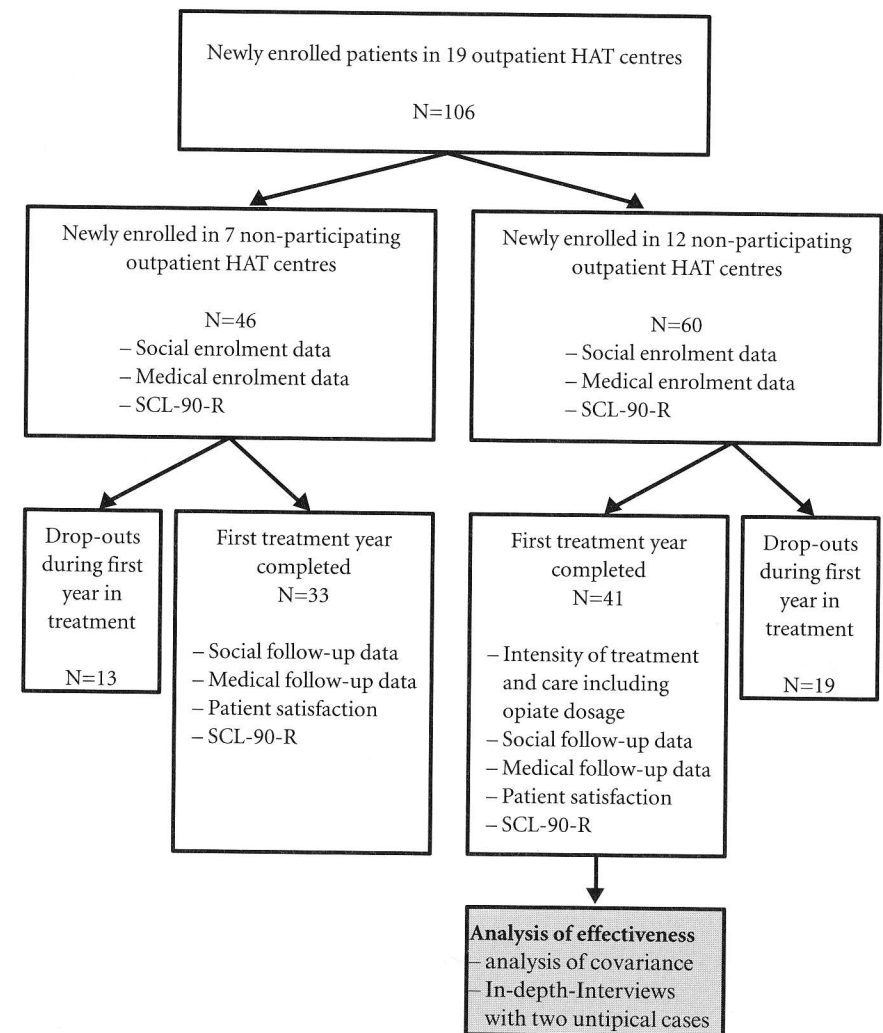
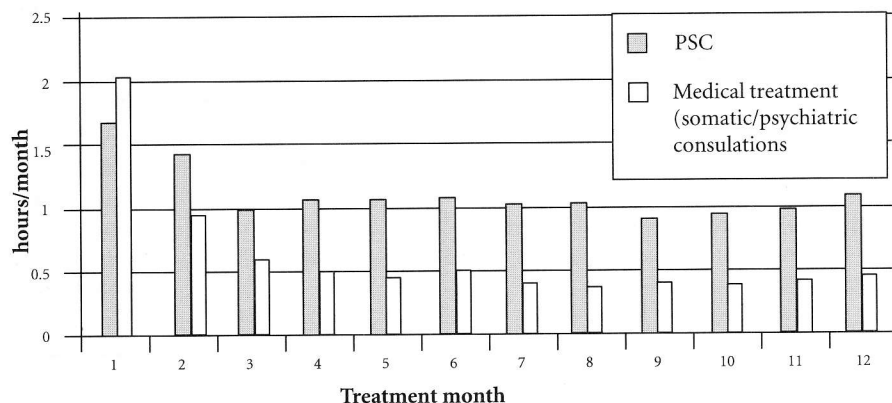


Figure 1: Study population and instruments

**RESULTS**

It became apparent that PSC is the highest-intensity treatment given as an adjunct to opiate prescription (cf. Fig. 2). On average, the total number of hours of PSC is three times greater than for psychiatric and more than four times greater than for somatic consultations (cf. Table 1). Greater use is made of all three types of treatment/care during the first few months of therapy than thereafter, although usage patterns are markedly smoother for PSC than for medical consultations. PSC is provided by social workers in just under half of all cases (49%) and almost as frequently (46%) by dispensing and nursing staff; in a few cases (5%), this type of care is provided by medical personnel.



**Figure 2:** Psychosocial care (PSC) and medical treatment: mean number of hours per month (N=41)

**Table 1:** Overview of psychosocial care (PSC) and medical treatment provided during the first year of HAT

	N	Minimum	Maximum	Mean	SD	Median	25 <sup>th</sup> percentile	75 <sup>th</sup> percentile
Psychosocial Care (hours per year)	41	5.75	30.00	13.29	5.87	12.5	8.44	16.19
Somatic Consultations (hours per year)	41	0	12.5	3.04	3.07	1.75	0.69	4.56
Psychiatric Consultations (hours per year)	41	0	16.25	4.23	4.4	2.75	1	5.38

**Table 2:** Influence of intensity of psychosocial care (PSC) on change in cocaine use

Psychosocial care tertile	Mean change in number of days on which cocaine was used	SD	N
5.75–10 hours	- 0.3	0.6	3
10.75–15.25 hours	- 2.3	5.4	8
15.5–30 hours	-11.1	13.7	10
Total	- 6.2	10.9	21

P = 0.024

The analysis of covariance shows a statistically significant correlation between the intensity of PSC and the decrease in cocaine use (Table 2). The other results either fall below the significance threshold or are of a paradoxical nature, not readily admitting of interpretation in isolation. The outcome of treatment is not influenced by the range of opiate dosages administered in this setting (cf. Hošek 2003, p. 160).

The findings were checked by means of methodological triangulation. The results of the statistical analysis were qualitatively supplemented by conducting in-depth problem-centred interviews in two divergent cases. In one of these cases, the statistical findings were confirmed: the patient concerned felt that PSC had been important in helping him to overcome the problem of cocaine use. However, because the baseline score (5 days at Day 0) lay below the mean decrease in cocaine use (6.2 days), this patient was considered a «divergent case». In the other case, it was evident that even structural aspects of the programme (e.g. regular opening hours and opiate administration), the psychopharmacological agents prescribed and external factors such as support provided by the patient's original family promoted positive results and improved the quality of life.

In this study, the PSC currently offered to severely dependent HAT patients was shown to be effective and to promote favourable treatment outcomes; the effect was more pronounced in cases where the total amount of care lay between 15.5 and 30 hours during the first year of treatment (equivalent to an average of 1 hour and 18 minutes to 2.5 hours per month) than when care usage amounted to 5.75 to 15.25 hours (an average of 26 minutes to 1 hour and 16 minutes per month). As well as the intensity, the regularity of PSC is also of major importance to the success of treatment (cf. Raschke 1994, p. 268).

## Discussion

With the present study design, a compelling, statistically significant relationship was detected between the intensity of PSC and the decrease in cocaine use. In the case of psychiatric and somatic consultations, a number of paradoxical statistical relationships were found which cannot be explained in isolation. On the one hand, it is understandable that the type of care most used overall should yield clearly measurable results. On the other hand – given the distribution of treatment and care services found in practice – if PSC had not been effective, this lack of efficacy would have been most readily apparent. However, these considerations do not represent an argument against the efficacy of medical consultations as part of an HAT programme. What was demonstrated was the fact that the element of treatment provided at the highest intensity – PSC – makes an unequivocal contribution to the outcome of therapy.

It is not surprising that opiate dosage does not exert an influence on the outcome of treatment. In earlier studies, opiate dosage was only identified as a factor (adversely) affecting the outcome in cases where inadequately low dosages were prescribed due to administrative or other constraints. The consequences of this included the continuation of contacts with the drug scene and concomitant use of other substances (cf. Hartnoll et al. 1980). Accordingly – as with medical consultations – the lack of a statistical relationship between opiate dosage and treatment outcome should not be considered to indicate that opiate substitution is ineffective; rather, it suggests that HAT serves to provide complete substitution with consistently adequate dosages.

Is the reduction in cocaine use genuinely a specific effect of PSC? According to a study by Verthein (1995, p. 463), concomitant drug use is an issue addressed in treatment and care for 75% of clients participating in substitution programmes. Through reflection and the exploration of alternatives, and by the application of methods and techniques such as motivational interviewing, specific efforts are also made in HAT programmes to influence patients' (concomitant) drug use habits. In the HAT Manual (BAG 2000, Sect. 1, p. 16), concomitant drug use is also listed as one of the problems to be dealt with through PSC.

Given the potentially large number of confounding factors that may affect behaviour, causal attribution is sometimes problematic. However, it may be assumed that here as elsewhere the following statistical principle applies: the validity of a hypothesis tends to be confirmed by the existence of several studies with identical findings. As part of their study of the effectiveness of methadone maintenance programmes, Ball and Ross (1991, p. 240) also investigated concomitant use of cocaine. Although no direct correlation was shown in this study between the intensity of treatment services and cocaine use trends, reduction in cocaine use was one of the overall set of indicators which led the authors to conclude that increased treatment services produce more marked improvements for patients. Measurements of concomitant cocaine use (in the form of weekly urine samples) were also employed as an outcome indicator by McLellan et al. (1993, p. 1956), who found a significant difference between methadone-treated patients not receiving and those who received adjunctive treatment. A significant difference in cocaine use reduction over the entire study period (24 weeks)

was also found between the second group (receiving care) and a third group (receiving more comprehensive care, with psychiatric treatment, an employment programme and family therapy). Rosenblum et al. (1995) discovered that an increased intensity of cognitive-behavioural therapy was associated with a reduction in self-reported cocaine use (verified with the aid of urine samples). The present study thus confirms for PSC in HAT what had already been shown in previous studies for related non-pharmacological treatment elements of methadone maintenance programmes.

One question that has been raised by various authors is whether opiate dosage or PSC in combination with adjunctive medical treatment is the effective element in maintenance treatment (cf. Farrell et al. 1994). In previous studies of substitution treatment, it was not possible to determine the relative contributions made by opiate prescription and by concomitant treatment and care. The significant correlation demonstrated in this study between the intensity of PSC and the reduction in cocaine use provides clear evidence of the effectiveness of this intervention as part of an appropriate programme of substitution treatment with adequate opiate dosages.

It will probably never be possible to answer the question of whether opiate substitution or concomitant treatment is the «active ingredient» of HAT using a binary experimental design. It is true that two British studies of heroin prescription (Hartnoll et al. 1980; McCusker & Davies 1996), in which the therapeutic setting and study design did not include concomitant treatment as a controlled element, produced less favourable results than studies of PROVE and HAT. However, it would be wrong to conclude that psychosocial and possibly medical care are the sole genuinely active elements in substitution treatment, as the dosage used in both of the above-mentioned studies was substantially lower than in Swiss HAT programmes. This is very likely to have had effects on concomitant drug use, the preservation of contacts with the drug scene, and continued criminal activities associated with drug procurement.

The mere fact that patients had dropped out of or unsuccessfully completed numerous previous treatments but remained in and made progress with HAT clearly shows that heroin prescription is an active ingredient in this type of programme. However, most patients would not benefit from heroin prescription in the absence of concomitant treatment, as indicated by the high proportions of patients with mental disorders, problematic concomitant substance use, and social problems including isolation (cf. Rehm et al. 2001; Frei & Rehm 2002; Hošek 2003).

The objection may be raised that two of the three indicators chosen are based on patients' self-reporting and that this information might not be reliable. While the data on psychological distress obtained with the aid of the SCL-90-R questionnaire were adequately validated (cf. Hessel et al. 2001, pp. 27–39), it might be supposed that the truth about concomitant cocaine use and expenditure on drugs would tend to be suppressed or glossed over if it would have adverse consequences for the patient concerned. In fact, however, concomitant drug use or continued expenditures on drugs are not regarded as grounds for sanctions or for exclusion from the programme (with the possible exception of the small number of patients who have been ordered to undergo HAT); instead, they give rise to a modification of care, which is planned and implemented together with the patient. In addition, Rey-Riek et al. (2003) found that

self-reported data on concomitant drug use are indeed reliable indicators in an HAT population. Finally, it should be recalled that the studies discussed above – some of which involved urine testing – produced similar results.

It could also be asked whether recording the duration of sessions is an appropriate way of measuring the intensity of treatment and care. Although measurements of time are objective, research has also yielded evidence of a «therapist effect» (cf. Ward et al. 1998, p. 296). It would therefore appear all the more important to intensify research efforts in this area, so as to elucidate the characteristics of care personnel and the methods of care that promote positive treatment outcomes.

It was not possible to establish the contribution of medical treatment to the overall results, partly because the low intensity of treatment (compared with PSC) made it difficult to carry out a statistical analysis with the number of cases available. Repeating the study with larger numbers of patients would make it possible to gain a better appreciation of the influence of medical treatment and at the same time to check the existing results.

A final objection that could be raised concerns a possible selection bias with regard to the treatment centres. It might be argued that the results are not representative of HAT in Switzerland as a whole since not all of the outpatient centres participated in the study. An effort was made to counter this objection by documenting all of the patients newly enrolled during the specified time frame. The differences between the two groups of patients are minimal. It can also be assumed that, given the uniform design of HAT programmes across Switzerland, similar levels of treatment and care services were provided at non-participating and participating centres. Nonetheless, this objection could only be fully refuted with the aid of a comprehensive survey.

The definition of valid and reliable outcome indicators is a prerequisite for any analysis of efficacy, and in this respect the present study has established a sound basis for HAT patients. Future studies, with population sizes increased as far as possible, should seek to further validate existing and possibly identify additional indicators. Efficacy analyses could become substantially more meaningful if treatment objectives were prioritized. It has yet to be specified for HAT how the attainment of each of the four treatment objectives is to be weighted in an assessment of the overall results. In particular, the value placed on the fourth objective – «permanent abstinence from opiate use» – needs to be precisely specified. However, further studies can only provide a factual basis. Strictly speaking, prioritization involves normative decisions and has to be undertaken by experts on the ground, in cooperation with the standard-setting authorities.

## Recommendations

PSC is a wide-ranging type of intervention, involving a variety of aspects and degrees of intensity. For future planning of care programmes, it would be extremely valuable if experts and service providers could draw on empirically based conclusions concerning the effectiveness of manual-guided intervention strategies. Particular consideration

should be given to strategies for the management of concomitant drug use and psychiatric co morbidity.

The value of methodological triangulation – with in-depth problem-centred interviews being used to supplement the findings of statistical analysis – was confirmed in the course of this study. Although statistical analysis should continue to play a key role in the investigation of social-scientific topics, a parallel approach should increasingly be adopted, with studies employing both quantitative and qualitative methods. Triangulation does not merely facilitate the corroboration of statistical results. Rather, it makes it possible to gain additional insights, enhancing and expanding the results. In addition, as qualitative methods are closer to practical experience, it yields results that can be more readily grasped by the readership.

The present study has helped to confirm the conjecture that, compared with less structured heroin prescription programmes in other countries, the effectiveness of HAT in Switzerland is due in particular to the major emphasis placed on concomitant treatment and care. This commitment is reflected in the minimum staffing requirements per patient specified for institutions authorized to provide HAT (1.7% position for PSC and the same percentage for medical treatment). Precise structural requirements of this nature are only found in a few other areas of the healthcare and social service sector. However, in this case, they provide the basis for professional patient care. The present study also indicates that it would be worth maintaining this specification for HAT programmes, adapting it if necessary to the requirements and empirical realities in the field. As similar findings are also available from earlier studies of methadone maintenance, binding staffing quotas should likewise be specified for methadone substitution programmes at outpatient treatment centres.

However, it must be borne in mind that the provision of expert staff does not in itself offer any guarantee of improved treatment outcomes. As already shown by Ball and Ross (1991), centres that provide more treatment services are more successful, irrespective of the personnel resources available. In this connection, the managers of treatment centres, in particular, need to take measures to ensure that the proportion of working hours that care personnel spend in contact with patients is raised to and maintained at an optimum level; i.e. staff should be able to provide as much care as possible for as many patients as possible. At the same time, training, networking, supervision, peer-group consultations, administration and other matters should not be neglected. In addition, the delivery of care should be designed in such a way that staff members do not suffer a loss of motivation, burnout or other symptoms of stress or fatigue. Striking and maintaining the optimum balance is not merely a managerial responsibility, but also a matter of mental hygiene and self-motivation for each individual treatment/care worker. However, the optimization of organisational and structural conditions provides the essential basis for this kind of self-management.

Overall, it remains unclear which of the wide variety of methods available can be profitably applied in PSC. This reflects what appears to be a long-standing dilemma for social workers as one of the two main professional groups providing PSC. By striving to adopt an «holistic» approach, an aspiration still given much emphasis (most recently by Friedrichs 2002, p 14), the discipline moves into a poorly defined area,

where it can neither be convincingly distinguished from neighbouring disciplines nor convincingly provide evidence of expertise. If it is to be treated with due respect by other disciplines, the science of social work needs to abandon the idea of its activities being essentially based on integration since, as noted by Prange (1996, p. 73):

Die Wissenschaften gehen den Weg der Differenzierung und der Kooperation des deutlich Geschiedenen, nicht den Weg der Entdifferenzierung, um dadurch «lebensnah» zu sein. [Sciences follow the path of specialization and cooperation between clearly distinguished entities, not the path of de-specialization, so as to be «close to life».]

As well as abandoning this aspiration, the discipline needs to adopt recognized methods in research and practice. The technology deficit that has long afflicted and in some cases continues to afflict social work could be associated with its traditional aspiration: anyone who develops and applies a technology is compelled to focus on one section of reality, blocking out all other areas. Merten also claims that the problems experienced by social work in forming an autonomous discipline and profession are associated with its «ill-defined omni-responsibility» (*diffusen Allzuständigkeit*, 1997, p. 152).

In order to counter this diffuseness, it would be desirable for social work to pursue and intensify its efforts in the direction of definitions, conceptualization of intervention strategies, evaluation and further development, utilizing interdisciplinary, scientifically recognized methods. Further conceptualization of PSC, in particular, would present opportunities of this nature. In many cases, this type of care requires working with and coordination of various disciplines at an inter-institutional level. Case management, for example, offers a promising basis for addressing this issue. As members of a profession with interdisciplinary origins, social workers' occupational traditions and training would make them ideal candidates for assuming key responsibilities in the implementation and development of case management. Working with severely dependent drug users represents a particularly promising opportunity, since interdisciplinary cooperation in this field enables and necessitates a process of specialization through direct collaboration and interaction with other caring professions.

At present, social workers providing PSC, together with experts from the nursing sector, make a decisive contribution to the wellbeing of their clients and patients. Continuing along this path also means encouraging social workers and nursing staff to continue to invest a great deal of time in working directly with patients, to learn and apply intervention strategies that have proved to be effective, and to take on a vigorous and clearly defined role in coordinating patients' dealings with the institutional network. Whichever professions ultimately play a central role in the provision of PSC for severely dependent drug users, the patients concerned will certainly benefit from their skills as motivators and case managers.

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