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► Increased somatic morbidity in the first year after leaving opioid maintenance treatment: results from a Norwegian cohort study.

Skeie I., Brekke M., Clausen T. et al.

European Addiction Research: 2013, 19, p. 194–201.

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From Norway, strong evidence that being in a methadone or buprenorphine maintenance programme protects heroin-dependent patients from drug-related ill-health including life-threatening overdoses and infections, even if the treatment has not completely subdued illegal drug use.

SUMMARY An [earlier report](#) on a cohort of opiate-dependent patients being prescribed substitute opiate-type drugs (two thirds methadone, a third buprenorphine) in Norway found that even when some drug use continues, being in maintenance treatment dramatically cut drug-related physical complaints requiring hospital treatment.

The featured study of the same cohort concentrated on the minority whose treatment was interrupted or ended, generally while they were continuing to use drugs. It found physical complaints for this group too fell on entering treatment, but rebounded once patients were forced to or chose to leave treatment – seeming to confirm that the original findings were not just due to the type of patients who left, but reflected the protective influence of being in an opiate substitute prescribing programme. The following account draws on both reports.

Patients and methodologies

The cohort consisted of patients who started maintenance treatment between 1998 and June 2007 in two counties in Norway. During that period the (flexible) entry criteria for Norwegian programmes were that patients should be at least 25, heroin-dependent for several years, and have previously received [Editor's note: clearly with no lasting success] treatment not based on substitute prescribing. Gathering data on their [200 participants](#) in 2008/9, researchers looked back at their treatment careers and incidents of ill health based on interviews with three quarters, treatment clinic records for 9 in 10 (including urine test and assessment indications of continuing [substance use](#)), and for all 200, records of hospital care for physical complaints.

Records were obtained for the five years *before* each patient had first started opioid maintenance treatment. Against this baseline could be compared their health during up to the first five years while *in* treatment (either one episode or cumulating broken periods of treatment) and/or up to the first five years after having *left* treatment, either for good or as break between episodes of treatment.

What the researchers were looking for was how the number and type of physical complaints changed after entering and leaving treatment, an indication of whether it protected the patients from these forms of ill health. Specifically, they analysed records of any acute or sub-acute health problem ('somatic' condition) which led to an [episode](#) of inpatient or outpatient hospital treatment. Though they might have been a cause of such incidents, psychiatric problems and chronic disorders were not in themselves counted. Episodes were categorised as related to the patient's drug use ([overdoses](#), [injecting-related](#), and [other](#)), non-drug-related, or injuries.

At the start of treatment patients averaged 37 years of age. For those on methadone, doses averaged 122mg a day; for buprenorphine patients, nearly 18mg. Of the 200, 149 had been in maintenance treatment continuously since they first entered treatment, at least up to the end of the study period. Among the 51 who had left or interrupted their treatment, 85% were assessed as unstable and still taking drugs when they first left.

Main findings, all patients

Standardised to per 100 patients per year, the number of episodes of hospital care for physical complaints fell from about 61 before first entering treatment to 38 during treatment, but then rose to 113 after/in between treatments. There was a similar pattern for the numbers of days admitted to hospital and the numbers of outpatient contacts.

These patterns were largely due to complaints related to drug use. The number of care episodes for these fell steeply from 32 to just under 8 from before starting to during treatment, but then after/in between treatments rose even more steeply to about 76. The pattern was the same for each of the different types of complaints related to drug use such as bacterial infections, overdoses, acute hepatitis B and C infections, and the management of withdrawal effects.

Even patients in the top quarter for continuing to use drugs while in treatment benefited significantly and substantially (a near four-fold reduction in drug-related hospital episodes) from being in treatment, though less so than patients who more completely curbed their non-prescribed drug use.

For physical complaints judged *not* to be related to drug use, the pattern was quite different. Compared to before first starting treatment, while in treatment hospital care episodes *rose* slightly from about 12 per 100 patient years to 17, and then rose again slightly to 22 after/between treatments. Care records for injuries were relatively stable from before to during and after/in between treatments.

Main findings, the 51 treatment leavers

The featured report on the same cohort focused on the 51 patients whose treatment was interrupted or ended, generally while they were continuing to use drugs. Compared to the majority who stayed continuously in treatment, before starting treatment they had differed little in their characteristics or in their hospital care records. But during treatment they [overdosed](#) more frequently and clinic records indicated more ongoing non-prescribed drug use.

Nevertheless these 51 patients did benefit from entering and being in treatment in the form of a 41% reduction in the number of physical complaints related to drug use which needed hospital care, including overdoses, which more than halved. This reduction was much less steep than among other patients, but remained statistically significant after the figures had been adjusted for each patient's drug use during treatment, their employment records, and years dependent on opiate-type drugs. Once they left and were out of treatment, the number of such hospital care episodes steeply increased (nearly six-fold) to a level much higher even than before treatment, especially in the first month after leaving, when overdoses in particular became very frequent.

In contrast, across the entire time periods hospital care for physical complaints judged *not* to be related to drug use did not significantly differ from before to during and out of treatment, though there was an increase in the first year after leaving.

Just six of the 51 patients were known to have left treatment voluntarily and when they were not taking drugs. However, they too experienced an increase in drug-related hospital care episodes during the first year after leaving treatment, and this increase did not significantly differ from that experienced by patients forced out of treatment and/or using drugs at the time.

The authors' conclusions

In these Norwegian counties, entering and then being in opioid maintenance treatment led to a substantial reduction in acute and sub-acute drug-related medical incidents, as judged by the number of times these were treated in hospital. This was the case even for patients who continued to use drugs while in treatment. Such health problems increased substantially after patients left treatment, to a higher level than before treatment.

Overdoses are the most frequent cause of death among dependent opioid users, so the 64% reduction during versus before treatment is an important finding and in line with the results of prior research. Injecting-related treatment episodes (bacterial infections were most common) were also substantially reduced (by 83%), probably due to patients ceasing to inject or doing so less often.

In contrast, hospital care episodes *not* related to drug use *increased* by a third during opioid maintenance treatment. Possibly this was due to closer contact with health services leading to the diagnosis and treatment of previously unidentified health problems. If so, this increase reflects improved access to health services to treat ill health, not more ill health itself. Scrutiny of hospital records uncovered no evidence that the increase was due to any adverse effects of opioid maintenance treatment.

Patients who seemed to be responding poorly to treatment because they were still taking drugs nevertheless experienced a substantial reduction in drug-related hospital care episodes while in treatment. So too did patients who voluntarily or involuntarily left treatment, generally because of ongoing drugtaking, opposition to programme rules and controls, or instability in taking their medication. Even this apparently high-risk population experienced a substantial reduction in drug-related hospital care episodes while in treatment compared to before starting. However, after leaving or in between treatment episodes, such incidents increased to five times the level before patients started treatment, most likely due to relapse to heroin use; interruption of maintenance treatment is a high-risk situation.

Given that these patients can with the help of treatment improve their health, this post-treatment increase in ill-health cannot be due just to their vulnerabilities or to excessive risk-taking. Leaving often coincides with a crisis in treatment; without the ameliorating influence of treatment, problems at that time may continue or deteriorate after leaving. In turn this directs our attention to how to improve the way we respond to actual or impending treatment exit, including the need to actively engage with patients when treatment crises emerge. Alternative medications may be considered. Patients should not be subject to involuntary discharge unless continued treatment is considered actually to threaten their health. As far as possible, services should seek to retain 'problem patients' in treatment. Re-admittance should be prompt when patients are ready for it.

FINDINGS COMMENTARY Ironically, Scandinavian nations resistant to prescribing heroin-type drugs to heroin addicts have most convincingly demonstrated the value of this kind of treatment. Additional to this Norwegian study, restrictions on methadone maintenance in Sweden made it possible effectively at random to allow or deny this treatment, creating the level playing field elusive elsewhere where patients could choose methadone or not, meaning their progress might be due to pre-existing differences between them rather than the treatment.

The [most important study](#) tracked patients admitted to Sweden's national methadone programme before a five-year ban on enrolling new patients. Their fate was compared to that of addicts eligible for the programme, but who did not get in before the ban or had been randomly denied entry. All this comparison group availed themselves of Sweden's well developed detoxification and drug-free treatment services, yet over on average the next six years, 4 in 10 had died. Over about the same period, [around 1 in 8](#) of the methadone patients had died, far fewer. Overwhelmingly opiate overdose was the main reason for the difference.

[Another Swedish study](#) (also described in [The Swedish experience](#) on p. 6 of linked PDF file) found that the annual death rate was 1% while patients were on methadone but 2% among untreated opiate users. During an enforced break in treatment, hospital admissions rose only to fall again when the same addicts were allowed to return, strong evidence that treatment was an active ingredient in avoiding illness and death.

Thanks for their comments on this entry in draft to research author Ivar Skeie of the University of Oslo in Norway. Commentators bear no responsibility for the text including the interpretations and any remaining errors.

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