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From methadone to buprenorphine: Changes during a 10 year period within a national opioid maintenance treatment programme

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ABSTRACT

Opioid maintenance treatment (OMT) is the most widely used treatment for opioid dependence. Maintenance programmes differ in various aspects and may also change over time. This paper investigates the changes in treatment practices within a national OMT programme during a 10 year period (2002–2011), especially with regard to the prescribing of methadone and buprenorphine. Data ($n = 34{,}001$) were collected by annual assessments questionnaires. In 2002, only 16% of the OMT patients received buprenorphine as their maintenance medication. By 2011 this percentage had increased significantly ($p < .001$) to 50.3%. In the same period the number of patients more than tripled (from 1,984 to 6,640, $p < .001$), and programme attrition rates decreased ($p = .020$). This relatively rapid shift is a part of the increasing reliance of addiction medicine upon a range of medications administered by different routes which has not been previously charted within a national treatment programme.

1. Introduction

Opioid maintenance treatment (OMT) is the most widely used treatment for opioid dependent patients, and methadone is the most prescribed maintenance medication worldwide (EMCDDA, 2012a; SAMHSA, 2011). One exception is France where approximately 100,000 patients (about three quarters of the OMT patients) receive buprenorphine (Auriacombe, Fatséas, Dubernet, Daulouède, & Tignol, 2004; EMCDDA, 2012b). In the United States only 0.5% of OMT patients received buprenorphine in 2005 (SAMHSA, 2005). This number has increased steadily and was 9.6% in 2011 (SAMHSA, 2011).

Maintenance treatment using methadone has been the most studied treatment modality, and there is extensive evidence of its effectiveness (Clausen, Anchersen, & Waal, 2008; Cornish, Macleod, Strang, Vickerman, & Hickman, 2010; Degenhardt et al., 2011; Mattick, Breen, Kimber, & Davoli, 2009). Studies have also shown the effectiveness of buprenorphine as a maintenance medication (Bell, Byron, Gibson, & Morris, 2004; Johnson, Jaffe, & Fudala, 1992; Johnson et al., 2000; Ling et al., 2005; Pani, Maremmani, Pirastu, Tagliamonte, & Gessa, 2000; Petitjean et al., 2001).

Several comparisons of buprenorphine and methadone have been made, and a Cochrane review (including 24 RCT studies) concluded that buprenorphine and methadone both are effective treatments for opioid dependence, but buprenorphine in flexible doses was found to be less effective (RR: 0.80, CI: 0.68–0.95) in retaining patients (Mattick, Kimber, Breen, & Davoli, 2008). A prospective patient preference study from the UK and a retrospective cohort study in Australia found that patients receiving methadone were twice as likely to be retained in treatment (Burns et al., 2009; Pinto et al., 2010). On the other hand, studies from Sweden, Germany and Italy have shown no difference between methadone and buprenorphine regarding retention in treatment (Kakko et al., 2007; Soyka, Zingg, Koller, & Kuefner, 2008; Vigezzi et al., 2006).

Several studies have investigated differences between OMT programmes; Ball and Ross (Ball & Ross, 1991) studied six OMT programmes in three US cities. Stewart et al. (Stewart, Gossop, Marsden, & Strang, 2000) investigated 31 OMT programmes in England, Gjersing et al. (Gjersing, Waal, Røislien, Gossop, & Clausen, 2011) studied 14 OMT centres in Norway, and the World Health Organisation conducted a study of methadone treatment in six countries (Gossop & Grant, 1991). These studies concluded that the programmes differed in fundamental ways, including the doses prescribed to patients, provision of counselling services, programmes entry criteria, frequency and manner of dispensing, treatment policies, and not the least, in drug use outcomes.

Although studies have shown how programmes differ in several aspects and also how individual factors can contribute to beneficial outcomes, little is known about how changes occur within national programmes over time. The present study investigates changes during a 10 year period within a national OMT programme. In particular, the study investigates changes with regard to the prescription of buprenorphine and of methadone within the treatment system. The

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study also reports data regarding treatment practices, patient characteristics and patient responses to treatment.

2. Materials and methods

The Norwegian OMT programme is part of the national health and social security system and is fully publicly funded. Patients apply to one of 14 regional centres via their local social service centre or their general practitioner (Skretting & Rosenqvist, 2010). The managers from each OMT centre meet several times every year (OMT meeting) to discuss the OMT programme and centre practice, the aim being consistency in treatment nationwide and to exchange experiences (Gjersing et al., 2011). OMT is only available through a single programme, and if treatment is terminated, the only possibility to receive OMT is to apply for re-admission to the programme (Waal, 2007).

Data were collected from patients who received OMT treatment during a 10 year period (2002–2011) using a questionnaire developed in 2001 at the University of Oslo. During a 6–8 week period each October–November the case managers at each regional OMT centre complete the questionnaire for all patients that were in treatment during the past year, irrespective of current treatment status. The questionnaire collects data regarding the patients' current situation (treatment status, employment, and housing), treatment information (type of medication, medication dose, by whom it is prescribed, and use of urine testing), psychological situation, and substance use behaviours (frequency of drug and alcohol use during the previous 4 weeks and the last year) (Gjersing et al., 2011). The questionnaires were completed at the OMT centres each year by the person who had closest clinical contact with each patient. Staff were encouraged to discuss the questions with the patients before completing the questionnaire. Data were only made available in aggregate form.

The number of patients in treatment was reported from each centre on 31st December every year. This number does not reflect patients having entered and/or left the programme during the year. The number of patients waiting for treatment was calculated as; persons waiting for their application to be processed and persons with approved applications waiting to start treatment at the end of the year in question. The programme attrition rate for each year was calculated as the number of patients who dropped out during the year divided by the sum of patients at the beginning of the year plus the number of patients entering treatment during that year. This measure provides a programme level indicator of how many patients have left treatment during the year in question.

Illegal substances were defined as amphetamines, cannabis, cocaine and non-prescribed use of opioids and benzodiazepines. Regular urine testing was defined as having at least one sample taken per week and substances routinely tested included amphetamines, benzodiazepines, cannabis, opioids, cocaine and ethanol. Use of illegal substances was assessed by self-report and/or through urine testing. The use of illegal substances was recorded as one or more incidents of use during the past 30 days. Drinking alcohol to intoxication during the past 30 days was also assessed by self-report.

To calculate mortality rates within the study population, we first calculated observed person years by taking the average number of patients at the beginning and end of the year. This average provides a measure equivalent to the number of observed person years, assuming that patient entry and drop out is uniformly distributed through the year, and the rate was standardized by calculating the number of observed deaths per 100 person years. The mortality rate includes all registered deaths from all causes that were known to the treatment centres.

Aggregate data from 2002 until 2011 was available for analysis. The data were organized in the form of time series and analysed using R; an open source statistical software and programming language, allowing flexible computations and graphics (R., 2012). A time series is a collection of data obtained through repeated measurements with shorter or longer time intervals (ABS, 2005). The times series were analysed with the Mann Kendall trend test (M-K test), a non-parametric two-sided test suggested by Mann in 1945, based on Kendall's Tau test statistic, which determines if a time series is increasing or decreasing (Mann, 1945). A non-parametric trend test was chosen because of the limited number of time observations. The test does not estimate the magnitude of change.

3. Results

The study data were derived from 34,001 questionnaires which were collected during the observation period. The overall response rate was 79.8% with annual response rates varying between 75% and 87.6% in the years 2002–2011.

Patient numbers increased significantly ($p < .001$) during the 10 year period and had more than tripled by 2011 (see Table 1). The number of patients waiting for treatment significantly ($p = .004$) decreased from 23.7% in 2002 to 1.7% in 2011, a 22% (percentage point (p.p)) decrease. In the first 4 years of the observation period, the percentage of women in OMT decreased slightly, but after that time remained stable at approximately 30%. The mean age of the patients in OMT increased by 3 years from 39 years to 42 years between 2002 and 2011 (see Table 1).

There was a significant increase in the percentage of patients who were prescribed buprenorphine between 2002 and 2011; this increased from 16% to just over 50%, a 34% (p.p) increase. At the same time there was a corresponding reduction in the percentage of patients being prescribed methadone; this fell from 82% in 2002 to 47% in 2011 a 35% (p.p) decrease. Both trends are statistically significant ($p < .001$). For the last 2 study years (2010 and 2011), a breakdown of the data on buprenorphine shows that most patients who were prescribed this medication received it in the form of Subutex, but the prescription of Suboxone increased from 15.7% in 2010 to 19.2% in 2011.

The mean prescribed dose of methadone decreased slightly during the 10 year period, though it remained relatively high (i.e. more than 100 mg/day) during all years. The mean buprenorphine dose was unchanged at approximately 18 mg/day (see Table 1).

The programme attrition rate decreased significantly during the study period ($p = .020$). The use of regular urine testing was also significantly ($p = .001$) reduced, and in 2011 about 59% of the OMT patients were given a urine test at least once every week compared to 68% in 2002 (see Table 1).

The percentage of patients using other substances during the previous 4 weeks is shown in Table 2. Benzodiazepines were used by more than one third of the patient group, and this number remained relatively unchanged throughout the study period. Drinking alcohol to intoxication during the previous 30 days was reported by less than 10%. About one third of patients used cannabis. The use of non-prescribed opioids remained relatively unchanged during the study period but was at its lowest point in the final year, 2011 (10.4%).

The mortality rates for the first 2 study years (2002 and 2003) were at their highest level at 1.5% and 1.4%. During all of the subsequent years the mortality rates were relatively stable and lower (see Table 2), and in 7 of the 8 years between 2004 and 2011 the mortality rate was less than 1% among OMT patients.

4. Discussion

One of the main study findings is that the provision of buprenorphine as the primary maintenance medication increased substantially, and by the end of the 10 year study period buprenorphine had replaced methadone as the most commonly prescribed maintenance medication. In 2002, only 16% of the OMT patients received buprenorphine. By 2011 this percentage had increased