

Retrospective Study of Outcomes, For Patients Admitted to a Drug Treatment Centre Board

Abstract:

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Abstract

Retrospective study of urinary heroin outcomes of a cohort (123) of patients commenced on a methadone treatment program. Significantly poorer outcomes were associated with urines positive for cocaine (OR 0.69 CI 0.59-0.81) benzodiazepines (OR 0.7 CI 0.53-0.93) with prescribing of low dose methadone (OR 0.65 CI 0.48-0.87), with urines positive for heroin at time of admission (OR 0.74 CI 0.56-0.97) and with behavioural sanctions (OR 0.8, CI 0.65-0.98). Improved outcomes were associated with granting of take away methadone (OR 1.34 CI 1.1-1.62). with an indication of improved outcomes associated with alcohol positive urines (OR 1.34 CI 0.95-1.9) and increased duration of clinic attendance (OR 1.21 CI 0.99-1.47). On multiple regression analysis low dose methadone (0.07 CI 0.01-0.33) prescribing remained negatively associated with urine heroin outcomes.

Introduction

A meta analysis by Matick et al¹¹ showed that oral methadone was an effective opiate maintenance therapy retaining patients in treatment and decreasing heroin use. Contemporaneous studies described methadone doses of 60 mg and greater giving better outcomes compared to lower doses. The effectiveness of established methadone treatment programs for substance abusers was supported by outcome studies including DATOS (USA), NTORS (England and Wales), the ROSIE study providing the first longitudinal data for methadone treatment in Ireland, This showed a sustained reduction in the use of a number of substances over a 3 year period. Methadone has been described as protective against combined heroin and cocaine use but adverse effects of benzodiazepine use by clients prescribed methadone were reported⁸. In a DTCB based study Kamal et al¹⁰ concluded that use of cocaine and benzodiazepines caused poorer outcomes for methadone subjects. Methadone subjects abstaining from alcohol were reported as less likely to use other substances and Petry⁹ described alcohol dependent patients taking methadone having a longer duration of cocaine abstinence than non alcohol dependent. Increased prevalence of cannabis use by those prescribed methadone (6.2% - 39%), as compared to the normal US population (5.8%) was reported by Reisfield et al

The Present study is retrospective and designed to look at treatment outcomes for a cohort of clients attending a methadone clinic. The primary outcome was defined as subjects with all urine samples negative for heroin or with less than 20 % of samples positive for heroin. The objective was to analyse the effect of factors including co morbid substance use, methadone dose and behavioural and socio demographic on this outcome and comparing it with an earlier DTCB (Drug Treatment Centre Board) based study. The derived information should lead to an improvement in the management of substance abusing subjects both in Ireland and internationally

Methods

The design is a retrospective cohort study of outcomes of all clients admitted to a DTCB sector for treatment with methadone during 2008. Where clients were admitted more than once during this period, only the first admission was included. Excluded were clients who discontinued attending the clinic during the initial 3 month period, clients who were retro virus positive and those who became pregnant. The effect of different parameters including socio demographic, psychiatric diagnosis, use of other illicit substances, client behaviours and prescription of antibiotics specific for soft tissue infections were examined using univariate and multivariate analyses.

Prescribed methadone dose and urine analyses for heroin, cocaine, benzodiazepines, alcohol, cannabis and amphetamines, were recorded at 3, 9 and 15 months post admission and also at the time of admission to provide a base line for the subjects. Occurrence of the following variables was determined between the end of the 3rd and 15th months: periods of low dose (20 mg) methadone prescribing; clients sanctioned for mis behaviour; take aways awarded for consistent provision of substance negative urines; courses of flucloxacillin prescribed (indicator of soft tissue infection treatment). Socio demographic data recorded included age, sex, accommodation status, number of admissions to the clinic and dual diagnosis. Dual diagnosis was recorded from the clinical notes and did not involve use of a structured diagnostic instrument. Where a co morbid psychiatric diagnosis was not recorded in the clinical notes it was assumed for the purposes of the study that none was present. Urine samples were screened for the different substances at the DTCB laboratory to ISO/IEC 17025 standard by routine immunoassay.

Associations between categorical variables and outcomes were examined using Pearsons Chi squared test. Odds ratios and their 95% confidence intervals were reported to indicate the magnitude of associations. Separate univariate analyses were carried out for 3, 9 and 15 month time intervals and for the combined data. Socio demographic parameters, methadone dose and urine analyses for clients entering the study and those excluded were compared using either mean values or frequencies. A logistic regression analysis, including all variables which gave a significance value less than 0.1 on univariate analysis, was done to identify those variables independently predictive of urine heroin outcome. Data was analysed using SPSS version 18. The study was approved by the DTCB Ethics Committee.

Results

25.5 % from the total 165 admissions during the period of the study (2008) were of one or more repeat admissions of clients. Of the remaining 123 first admissions, 4 were excluded because of retro viral therapy and 2 because of pregnancy. Table 1 includes methadone dose, urine substance analyses and demographic parameters and compares those clients included in the study (80) and those who stopped attending before the end of third month (excluded) (37). Repeat admissions were significantly greater for those who had stopped attending at 3 months. 52.5% of the subjects were prescribed 1 or more methadone take away doses, 63.3% low dose methadone, 15% were sanctioned for a behaviour and 18.2% were prescribed flucloxacillin.

*Significant difference at 5% level.

** Numbers of urines analysed for cannabis were less due to clinical policy.

SD = Standard deviation

CI = Confidence interval

Table 2 shows prescribed methadone doses and urine analyses for the subjects at 3 time points. Of the 80 subjects attending at 3 months, 66 remained at 9 and 56 at 15 months. The other subjects had stopped attending. Only a third of urine samples or less were analysed for alcohol, cannabis and amphetamines compared to other substances, according to the clinical practice at DTCB. As a result it was not possible to present an intermittent positive category for the cannabis results. Significant differences were present between times for urine cocaine analysis only (p<0.05). Number of regular cocaine positive urines increased with duration of attendance. Urines were amphetamine positive for 2 subjects only (2.5%). Table 3 shows the relationship between urine heroin outcome and presence of other substances and methadone dose for the 3 time intervals and the pooled value as the odds ratios. Significantly poorer outcomes were associated with urines positive for cocaine (OR 0.69 CI 0.59-0.81) and benzodiazepines (OR 0.7 CI 0.53-0.93). Methadone dose at 15 months was associated with an improved outcome (OR 0.1.67 CI 1.16-2.41), with an indication of an improved outcome associated with alcohol positive urines (OR 1.34 CI 0.95-1.9).

*Abstinent = urines negative for substance (n)

** Intermittent = less than 20% of urines substance positive (n)

*** Regular = greater than 20 % of urines substance positive (n)

Analyses were determined at random once or twice weekly during the 8 week period following the individual time points

(% value is for 5-8 urine samples per subject for heroin, cocaine and benzodiazepines and 2-3 samples for alcohol and cannabis)

²An intermittent positive category could not be determined in the case of cannabis as there were insufficient urine samples.

³Adjusted for prescribed benzodiazepines

Table 4 shows the relationship between urine heroin outcomes and behavioural and urine substance analysis at time of admission. Improved outcomes were associated with granting of take away methadone (OR 1.34 CI 1.1-1.6) with increased duration of clinic attendance bordering on significance (OR of 1.2 CI 0.99-1.5). Poorer outcomes were associated with heroin positive urine at day of admission (OR 0.74 CI 0.56-0.97), prescribing of low dose methadone (OR 0.65 CI 0.48-0.87) and behavioural sanctions (OR 0.8, CI 0.65-0.98). On multiple regression analysis low dose methadone (OR 0.07 CI 0.01-0.33) prescribing was negatively associated with urine heroin outcome (see table 4). At end of 3rd month, for those on a methadone dose of less 60 mg, 13.6% (4) were heroin abstinent in urine. Of the 3 clients prescribed more than 100 mg of methadone, none were abstinent and 2 had more than 20% urine specimens positive for heroin.

+ A good outcome is defined as negative or less than 20% of urine specimens testing positive for heroin during an 8 week period post the stated time point 14.

*Only abstinent and intermittently heroin positive urines were included in this outcome analysis as these results met the criteria for good outcomes.

** An odds ratio greater than 1 corresponds to a positive effect on urinary heroin outcome and less than 1 to a negative effect on this outcome.

CI = Confidence Interval

+ A good outcome is defined as less than 20% of urine specimens testing positive for heroin during 8 week period post stated time point¹⁴.

*Only abstinent and intermittently heroin positive urines were included in this outcome analysis as these results met the criteria for good outcomes.

** An odds ratio greater than 1 corresponds to an improved urinary heroin outcome and less than 1 to a disimproved outcome.

*** Refers to most recent methadone dose prescribed during the 2 week period preceding admission.

**** Refers to analysis result for routine urine taken on the day of admission to the program.

CI = Confidence Interval

Discussion

The percentage of heroin positive urines reported for our subjects (pooled value of 82%) is greater than value of 66% reported for DTCB subjects in 2004⁹. The overall mean daily methadone dose prescribed for the present study was 60.75+25 mg compared to 74 mg in the earlier study. A methadone dose above 60 mg led to a significantly improved outcome in present study at 15 months. Improved outcomes and greater retention in treatment at higher methadone doses are widely reported^{3,13,33}. The incidence of cocaine positive urines for our subjects at 22.9%, for pooled time intervals, is lower compared to 39% reported by Kamal et al^{18,49}. Thula¹⁶ reported that 9% of clients attending DTCB, had greater than 50 % of their urines positive for cocaine. The direct comparative figure was 6.6% cocaine positive urines for present study. The urine analyses tentatively indicate that there has been a decline in the incidence of cocaine positive urines at DTCB since 2004. Such reduction a cocaine use may reflect differences in availability of supply of the substance between the 2 periods. The NACD^{18,49} reported a life time prevalence for cocaine use in the general population in Ireland as 8% (age 15-34) and 3% (age 35-64). Reported figures for cocaine use by those on methadone treatment for other locations range from 14% to 55 %.

Urine benzodiazepine (73.3%) and alcohol (14%) presence for combined data was similar to previous DTCB figures comparison is for subjects not prescribed benzodiazepines. Published studies for benzodiazepine use by clients on methadone include values above 50%^{23,33}. In the present study there was an indication that alcohol use increased with time attending the clinic. Ryder et al²¹ in an Irish general practice survey of methadone clients found that 14% met criteria for alcohol dependence using the AUDIT screening test. Our results for cannabis positive urines (51.5%) compare to published values 54%²² for subjects on methadone treatment.

⁹. The

The present finding of poorer outcomes for methadone treated clients who used cocaine and non prescribed benzodiazepines are consistent with Karmal et al^{23,33}. Poor outcomes associated with cocaine use are reported by a number of authors^{9,20} and associated with benzodiazepine use by others²⁴. The poorer outcomes for clients prescribed low dose methadone (20 mg) agree with published findings²⁴ that such a dose is sub therapeutic. There was an indication from our findings of improved urine heroin outcomes for clients using alcohol. Kamal et al^{18,49} findings indicated improved urine heroin outcomes for regular alcohol users but the results were non significant. A reduction in heroin positive urines for clients taking alcohol might tentatively be related to these clients having a reduced requirement for heroin. The significantly improved outcomes for clients prescribed take away methadone confirms that the granting of take aways is dependent on the provision of clean urines by the attending clients. The positive association between behavioural sanctions and poorer urinary heroin outcomes provides further evidence that adverse client behaviour is related to heroin use for patients prescribed methadone.

Limitations of this study include the exclusion of subjects who dropped out before 3 months. They had significantly more repeat admissions compared to those remaining. Numbers were small, including only subjects from one DTCB sector DTCB, which is a specialised methadone clinic, has clients with more chronic substance abuse problems and may not be a truly representative population⁹. The primary outcome of this study was the presence of heroin in urine. As previously described⁹ urine analysis is an objective method for detecting illicit substance use, but is confounded by differences in elimination half life. Co morbid psychiatric illness as reported here was based on diagnosis in the clinical notes and not derived using a structured diagnostic instrument. The clinical notes did not always record whether or not a dual diagnosis was present and it was assumed for the purposes of the study that these clients did not have a dual diagnosis. Our values for presence of a dual diagnosis may as a result be an under estimate. A randomised control double blind study would have been a more appropriate statistical design for this this study with allocation of clients to specific methadone doses.

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Benefits of this study are that it can be compared with previous studies carried out at the same centre since 2004 It provides data on the same patient sample at 3 time intervals and on behavioural outcomes, antibiotic prescribing and provides information on cannabis use which was absent from an earlier study⁹. In conclusion cocaine and benzodiazepine abuse by clients and prescribing of low dose methadone were significant factors negatively impacting on methadone outcomes. A prospective study should be undertaken of all clients attending DTCB service looking at the effects of variable methadone doses, of subject counselling and co morbid psychiatric illness on heroin use and client behavioural outcomes.

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Acknowledgements

The contribution of nursing, laboratory and other staff at DTCCB to this study. R Conroy, RCSI for valuable comments on the statistical methodology.

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