

## Understanding remote Aboriginal drug and alcohol residential rehabilitation clients: Who attends, who leaves and who stays?

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### Abstract

**Introduction and Aims.** Aboriginal residential rehabilitation services provide healing for Aboriginal people who misuse substances. There is limited available research that empirically describes client characteristics of these services. This study examined 5 years of data of a remote Aboriginal residential rehabilitation service. **Design and Methods.** Retrospective analysis of 329 client admissions to Orana Haven Drug and Alcohol Rehabilitation Centre from 2011 to 2016. Multinomial and binary logistic regressions were conducted to identify trends in the data. **Results.** There were 66 admissions recorded annually, of which most identified as Aboriginal (85%). Mean length of stay was 56 days, with one in three (36%) discharging within the first month. A third (32%) completed, 47% self-discharged and 20% house-discharged from the program. Client age significantly increased over time ( $P = 0.03$ ), with most aged from 26 to 35. Older clients were significantly more likely to readmit ( $P < 0.002$ ) and stay longer than 90 days ( $P = 0.02$ ). Most clients were referred from the criminal justice system, significantly increasing from 79% (2011–2012) to 96% (2015–2016) ( $P < 0.001$ ) and these clients were more likely to self-discharge ( $P < 0.01$ ). Among a subset of clients, most (69%) reported concerns with polysubstance use and half (51%) reported mental illness. **Discussion and Conclusions.** The current study makes a unique contribution to the literature by empirically describing the characteristics of clients of a remote Aboriginal residential rehabilitation service to more accurately tailor the service to the client's needs. Key recommendations include integrating these empirical observations with staff and client perceptions to co-design a model of care, standardise data collection, and routinely following-up clients to monitor treatment effectiveness. [Munro A, Shakeshaft A, Breen C, Clare P, Allan J, Henderson N. Understanding remote Aboriginal drug and alcohol residential rehabilitation clients: Who attends, who leaves and who stays?. *Drug Alcohol Rev* 2018;37:S404–S414]

**Key words:** residential rehabilitation treatment, Aboriginal Australians, substance-related disorders, rural, client characteristics.

### Introduction

The health disadvantage of Australia's Indigenous peoples (hereafter Aboriginal Australians as the term recommended by the Aboriginal Health and Medical Research Council for New South Wales) is a consequence of the complex legacy of intergenerational trauma, the aetiology of which includes colonisation, racism and social exclusion [1–3]. One manifestation of this harmful legacy is the disproportionately higher burden of substance-related harm experienced by Aboriginal Australians,

compared to their non-Aboriginal counterparts [4–6]. Relative to non-Aboriginal Australians, for example, Aboriginal peoples are up to eight times more likely to be hospitalised and five times more likely to die from an alcohol-related condition [7], while Aboriginal Australians aged 15–29 are four to five times more likely to die from alcohol-related suicide than their non-Aboriginal peers [4].

There is no simple way to reduce the burden of substance-related harm experienced by Aboriginal Australians [8] and, as such, a range of effective and

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Received 5 May 2017; accepted for publication 10 December 2017.

culturally safe approaches are required. Gray *et al.* [9] identify appropriate strategies including: acute treatment (sobering-up centres, detoxification) [10]; counselling and residential treatment [11–14]; support services (health services, accommodation, crisis care) and prevention (health promotion, cultural initiatives, supply reduction) [4,15,16]. Regardless of the strategy, access to Aboriginal community-controlled health services is vital to an Aboriginal person's right to self-determination [13,17], even if some Aboriginal patients prefer to access non-Aboriginal-specific services [18].

The provision of Aboriginal residential rehabilitation spans over five decades in Australia [13,19]. Whether Aboriginal-specific or not, it offers a multi-component approach for individuals with complex social, economic, housing and legal difficulties [17]. Multi-component programs are important given the strong association between substance misuse and related issues, such as family violence [20,21], homelessness, mental illness and recidivism [22–25]. Factors associated with improved outcomes from residential rehabilitation include: longer time in treatment [26–30] (and being older is associated with increased length of stay [31–33]); attending for a minimum of 3 months [34]; having previously received fewer episodes of care of a longer duration compared to multiple, shorter episodes of care [26]; having previously completed a residential rehabilitation program successfully [26]; and competent clinical management practices, including strong governance, qualified staff and partnerships with researchers and auxiliary services [13,35].

One reason Aboriginal clients may prefer Aboriginal-specific residential rehabilitation is that treatment can incorporate cultural dimensions [36,37]. Although a greater degree of cultural components in treatment has been found to increase clients' wellbeing and reduce recidivism to substance misuse [17,38–40], the mechanisms by which cultural components improve outcomes, and identifying which specific cultural activities are most effective, is yet to be determined [37,40,41].

Nevertheless, it is likely that cultural components will be optimally effective if they are tailored to the specific characteristics of clients admitted to Aboriginal residential rehabilitation services [26,33,34,42]. Despite the need to define client characteristics, a systematic review of studies of Aboriginal residential treatment services from New Zealand, Canada, the USA and Australia, published between 2000 and 2016, identified only eight studies that systematically described their clients [11,41,43–48], of which three [10,41,49] were Australian [43]. Consequently, this paper has three aims. First, to empirically describe the demographic, referral type and service utilisation

characteristics of all recorded presentations to, and clients of, a remote Aboriginal residential rehabilitation service over a five-year period. Second, to examine the differences between the characteristics of clients with single, compared to multiple, admissions. Third, to identify the client characteristics which predict length of stay and self-discharge.

## Methods

### *Ethics*

Ethical approval was granted by the Human Research Ethics Committees of the Aboriginal Health and Medical Research Council and the University of New South Wales.

### *Setting and treatment program*

Orana Haven Drug and Alcohol Rehabilitation Centre (OH) is an Aboriginal residential rehabilitation service located in Western New South Wales (NSW), approximately 700 km northwest of Sydney. It has been operating since 1982 and offers a three-month voluntary rehabilitation program for Aboriginal males. OH is situated on 10 hectares of traditional country of the Ngemba people.

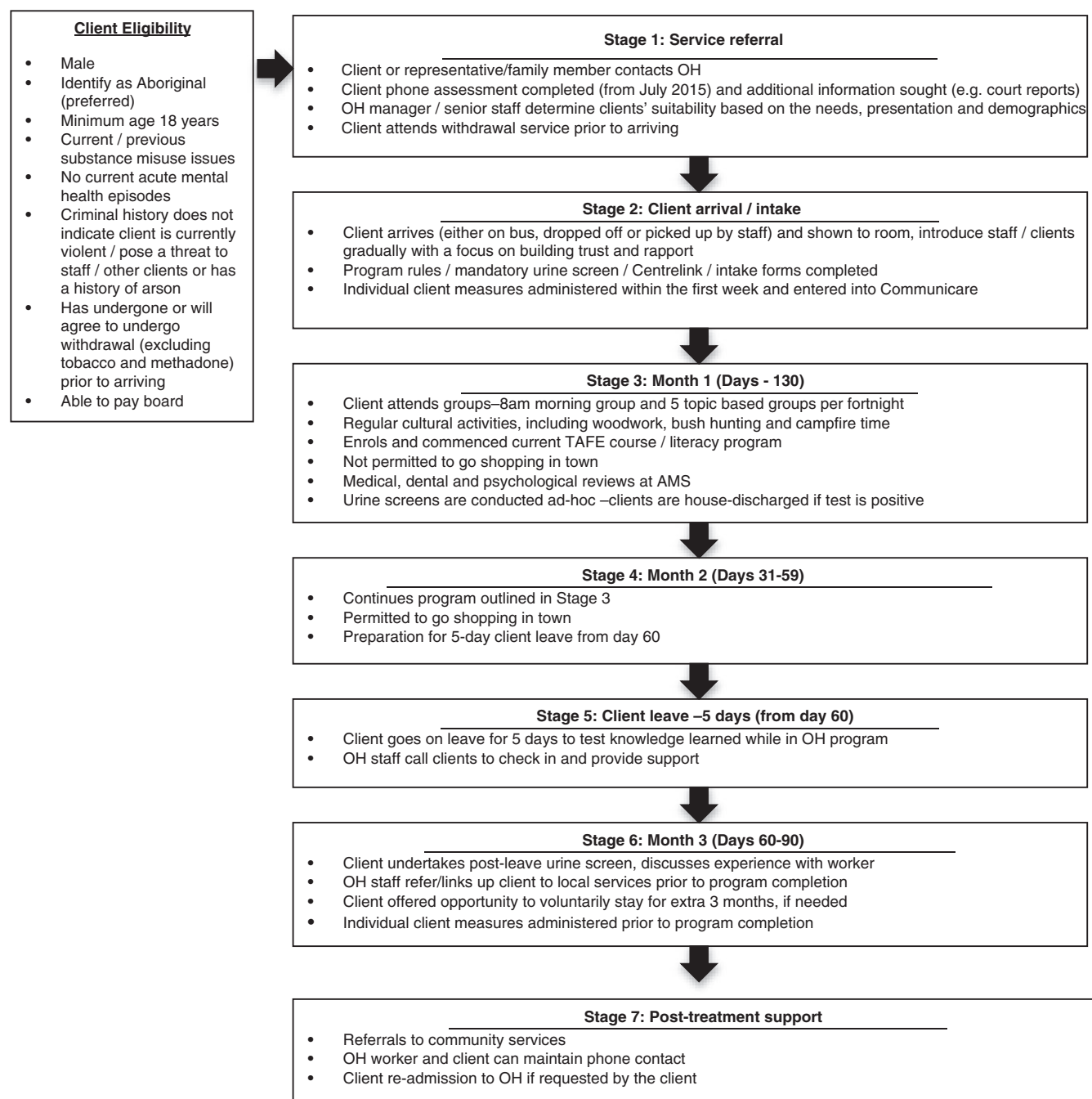
OH's broad objective is to provide a culturally safe drug and alcohol healing centre that maximises the strengths of Aboriginal people and their communities. The program has evolved from an abstinence-based, 12-step treatment modality to encapsulate broader Aboriginal spirituality and belief systems. The multi-component program features: two daily groups (a morning 'check-in' group and a psycho-educational group); individual case management and counselling; cultural activities, including fishing and carving wood artefacts (such as didgeridoos); a focus on mental and physical wellbeing; and undertaking vocational skills-based training. OH's client eligibility, referral process and key program stages are summarised in Figure 1.

### *Sample*

All recorded OH client admissions over a 5-year period from 1 May 2011 to 30 April 2016.

### *Measures*

Two sets of measures were obtained:



AMS, Aboriginal Medical Service; OH, Orana Haven Drug and Alcohol Rehabilitation Centre.

**Figure 1.** Description of client eligibility and the seven stages of OH program.

1. Client details were handwritten into a service admission book on arrival at, and exit from, OH. The data collected were: *demographics* (age, date of birth, Aboriginality); *referral type* (criminal justice referred) and *service utilisation characteristics* (days in treatment, discharge type).
2. A service-developed phone assessment form was implemented (in addition to the data collected on

arrival) from 1 July 2015 to 30 April 2016. These additional data collected were: *previous rehabilitation service experience* (location, reason for referral); *previous and current legal history* (bail or parole conditions, legal representative details, pending court dates); *drug and alcohol history* (details of last use, frequency of use and substance(s) of concern); *current government payments* (type of benefit) and

current health status (mental illness, medical conditions or disabilities)

### Procedure

Data for this study were extracted into an excel file by the first author from the handwritten service book or the phone assessment form. Data extracted from the handwritten service book were categorised as follows (Table 1):

1. *Year.* The first complete month of data available was May 2011. In order to maximise the data included in the analysis, year categories were defined as 1 May to 30 April each year.
2. *Age.* Categories were classified to reflect clinically relevant information sought by the Board, such as whether younger clients were less likely to stay in the program: 18–25 years; 26–35 years; 36–45 years and  $\geq 46$  years.
3. *Aboriginality.* Categorised into Yes/No.
4. *Referral type.* Clients were categorised as being referred from criminal justice or not. A criminal

justice referral was allocated to clients on parole from incarceration or on bail.

5. *Length of stay.* Constructed to reflect key stages of the program. Clients who remained in treatment for 1–30 days were defined as short stay. Clients who remained in treatment from 31 to 59 days were defined as medium stay. Clients who remained at OH for 60 to 90 days were defined as long stay. The 60-day lower limit was selected because after 60 days in treatment the clients become eligible for a 5-day leave to return to their community and practice the skills that they developed in treatment. Clients who stayed longer than 91 days were classified as extended long stay.
6. *Discharge type.* Categories were classified as program completion (minimum of 90 days), self-discharge (voluntarily discharged without OH staff consent), or house-discharge (discharged by staff for not abiding by OH rules).

Data extracted from the phone assessment form used the same categorisations as the handwritten service book for age, aboriginality, referral type, length of stay and discharge type, and included the following additional categorisations (Table 2):

**Table 1.** Demographic, referral type and service utilisation characteristics of OH client admissions over 5 years: 1 May 2011–30 April 2016

Characteristics	Year 1	Year 2	Year 3	Year 4	Year 5	Total	F or $\chi^2$ (df); P value
	2011–2012	2012–2013	2013–2014	2014–2015	2015–2016	N (%)	
<b>Total admissions</b>	72 (22)	58 (18)	62 (19)	67(20)	70 (21)	329 (100)	
<b>Demographics</b>							
<i>Age (mean, years)</i>	32	32	33	36	35	34	$F(4) = 2.39, P = 0.05$
				%			
18–25 years	29	31	32	21	12	81 (25)	$\chi^2(4) = 11.10, P = 0.03$
26–35 years	36	35	29	27	51	118 (36)	$\chi^2(4) = 11.03, P = 0.03$
36–45 years	29	26	19	36	20	86 (26)	$\chi^2(4) = 6.44, P = 0.17$
$\geq 46$ years	6	9	16	16	17	42 (13)	$\chi^2(4) = 6.89, P = 0.14$
<i>Aboriginality</i>	94	83	79	85	80	278 (85)	$\chi^2(4) = 8.08, P = 0.09$
<b>Referral type</b>							
<i>Criminal justice referral</i>	79	69	47	88	96	252 (77)	$\chi^2(4) = 52.09, P = 0.001$
<b>Service utilisation</b>							
<i>Length of stay (mean, days)</i>	49	57	58	56	62	56	$F(4) = 0.93, P = 0.44$
				%			
1–30 days	40	33	36	37	34	119 (36)	$\chi^2(4) = 0.98, P = 0.91$
31–59 days	20	19	13	16	14	54 (16)	$\chi^2(4) = 1.55, P = 0.82$
60–90 days	40	43	44	37	36	131 (40)	$\chi^2(4) = 1.30, P = 0.86$
91 > days	0	5	8	9	14	25 (7)	$\chi^2(4) = 11.44, P = 0.02$
<i>Discharge type<sup>b</sup></i>							
Completed	29	36	31	27	39	106 (32)	$\chi^2(4) = 2.97, P = 0.56$
Self-discharge	46	52	50	51	37	154 (47)	$\chi^2(4) = 3.89, P = 0.42$
House-discharge	18	12	19	22	24	64 (20)	$\chi^2(4) = 3.52, P = 0.48$

<sup>a</sup>N = 327—two client ages missing in Year 3. <sup>b</sup>N = 324—five client discharge types missing in Year 1. OH, Orana Haven Drug and Alcohol Rehabilitation Centre.

**Table 2.** Characteristics of OH clients ( $n = 51$ ) from 2015 to 2016

Characteristics	2015–2016
	<i>n</i> (%)
Total admissions	51
<i>Demographics</i>	
Age (mean, years)	35
Aboriginality	40 (78)
<i>Referral type</i>	
Criminal justice referral	49 (96)
<i>Service utilisation</i>	
Length of stay (mean, days)	62
<i>Discharge type</i>	
Completed	20 (39)
Self-discharge	19 (37)
House-discharge	12 (24)
<b>Substance(s) of concern</b>	
<b>Polysubstance</b>	<b>35 (69)</b>
<i>Methamphetamine and alcohol</i>	<b>3 (6)</b>
<i>Methamphetamine and cannabis</i>	<b>8 (16)</b>
<i>Methamphetamine, alcohol and cannabis</i>	<b>11 (21)</b>
<i>Cannabis and alcohol</i>	<b>7 (14)</b>
<i>Methamphetamine and other substances (including heroin, cocaine, methadone and oxycontin)</i>	<b>6 (12)</b>
<b>Alcohol</b>	<b>8 (15)</b>
<b>Methamphetamine</b>	<b>4 (8)</b>
<b>Cannabis</b>	<b>3 (6)</b>
<b>Methadone</b>	<b>1 (2)</b>
<b>Client location prior to OH admission</b>	
<b>Currently in custody</b>	<b>10 (19)</b>
<b>Metropolitan NSW</b>	<b>6 (12)</b>
<b>Rural/remote NSW</b>	<b>30 (59)</b>
<b>Mental health institution</b>	<b>1 (2)</b>
<b>Homeless</b>	<b>4 (8)</b>
<b>Main source of income</b>	
<b>Unemployment benefit</b>	<b>30 (59)</b>
<b>Disability benefit</b>	<b>14 (27)</b>
<b>Carer/parenting benefit</b>	<b>4 (8)</b>
<b>Currently employed</b>	<b>1 (2)</b>
<b>Not specified</b>	<b>2 (4)</b>
<b>Current mental health diagnosis</b>	
<b>Depression</b>	<b>12 (24)</b>
<b>Anxiety disorder</b>	<b>2 (4)</b>
<b>Bipolar disorder</b>	<b>2 (4)</b>
<b>Schizophrenia</b>	<b>5 (10)</b>
<b>Co-occurring diagnoses</b>	<b>5 (10)</b>
<b>Not specified</b>	<b>25 (49)</b>

<sup>a</sup>Bold texts are data unique to the 2015–2016 phone assessment form. OH, Orana Haven Drug and Alcohol Rehabilitation Centre.

1. *Substance(s) of concern.* Categorised into drug type or polysubstance when more than one substance was reported.
2. *Client location prior to OH admission.* Categorised as currently in custody, metropolitan NSW, rural/remote NSW, mental health institution and homeless as reported by clients.

3. *Main source of income.* Categorised into the type of benefit (unemployment, disability and carer/parenting), currently employed or not as reported by clients.
4. *Current mental illness.* Categorised into type of diagnosed disorder or co-occurring diagnoses when more than one diagnosis was reported.

### Statistical methods

Data for client admissions from 2011 to 2016, and the phone assessment subset of data, are presented as means for continuous variables and percentages for categorical variables. Data for single and multiple admission clients were identified using clients' date of birth and initials. Results of inferential statistical tests report the  $F$ -statistic (for means) or the  $\chi^2$ -statistic (for percentages) as appropriate, and the probability value ( $P$ ).

Two regression models were estimated to identify client characteristics that predict length of stay and self-discharge. For these models, only single client admissions were used to ensure the independence of the sample ( $n = 246$ , 75% of the total sample). Predictors of length of stay (short, medium, long and extended stay) were examined using a multinomial logistic regression model. Medium stay was used as the reference category because identifying which types of clients were likely to stay for shorter or longer periods was considered clinically relevant by OH staff. There was adequate distribution of the sample in each outcome category (Table 4). Self-discharge was analysed using a binary logistic regression model where categories were categorised as self-discharge ( $n = 154$ , 47% of sample) or not ( $n = 175$ ). Self-discharge was selected because almost half of the sample self-discharged from the program. The predictors for both regression models were: age, Aboriginality and type of referral. These predictor variables were selected because they were the only variables available. Results of the regressions are presented as odds ratios (OR) with exact  $P$  values (due to small sample sizes). All analyses were conducted using SPSS Version 23.

## Results

### Sample

The characteristics of the 329 clients admitted to OH over the period 1 May 2011 to 30 April 2016 are summarised in Tables 1 and 2.

### Demographics

OH recorded a mean of 66 admissions each year (range 58–72), which remained stable over time. Although there was a significant increase in mean age of clients ( $P = 0.05$ ), the range from 32 to 36 years suggests this increase was of marginal clinical importance. The proportion of clients admitted aged 18–25 years significantly declined from 32% in 2013–2014 to 12% in 2015–2016 ( $P = 0.03$ ), while the proportion of clients aged 26–35 significantly increased from 27% in 2014–2015 to 51% in 2015–2016 ( $P = 0.03$ ). Most clients identified as Aboriginal (mean 85%, range 79–94%).

### Referral type

The majority of clients (77%) were referred from criminal justice and the proportion significantly increased over time from 79% in 2011 to 96% in 2016 ( $P < 0.001$ ). Most clients were referred from criminal justice across all years (range of 69% to 96%), except in 2013–2014 (47%).

### Service utilisation characteristics

Mean length of stay was 56 days (range 49–62 days). Half the clients (52%) remained in the program for less than 60 days. In 2011–2012, 60% of clients left before 60 days, which reduced to 48% in 2015–2016. The percentage of clients staying longer than 90 days significantly increased from none in 2011–2012 to 7% of clients in 2015/16 ( $P = 0.02$ ). A third of all clients (32%) completed the program (range 27–39%). Rates of self-discharge ranged from 37–52% (mean 47%). Although the proportion of house-discharged clients doubled from 12% in 2012–2013 to 24% in 2015–2016, this increase was not statistically significant. There was a non-significant increase in the proportion of clients who completed treatment (from 31% to 39%) and a non-significant decrease in the proportion of clients who self-discharged (from 52% to 37%).

### Characteristics of OH clients assessed using the phone assessment form in 2015–2016 ( $n = 51$ )

Most clients reported that they were concerned about their polysubstance use (69%). Methamphetamine was the most commonly reported substance of concern ( $n = 32$ ; 63%), whether it was used in combination with other substances ( $n = 28$ ) or as methamphetamine only ( $n = 4$ ), followed by alcohol [total  $n = 29$

(57%);  $n = 8$  alcohol only] and cannabis [total  $n = 29$  (57%);  $n = 3$  cannabis only]. Prior to OH admission, most clients resided in rural or remote NSW (59%); had been in custody (19%); resided in metropolitan NSW (12%); were homeless (8%); or had been in a mental institution (2%). Most clients (94%) received government payments: unemployment benefits (59%); disability benefits (27%) or a carer/parenting benefit (8%). Half (51%) reported that they had been formally diagnosed with at least one current mental illness.

### Differences between the characteristics of single admission clients and multiple admission clients

Table 3 shows that older clients were statistically significantly more likely to have multiple admissions to OH over the 5-year period ( $P < 0.002$ ).

### Predictors of short, medium and long stay in treatment

Table 4 shows that older clients were significantly more likely to complete an extended, relative to a medium stay ( $P = 0.02$ ). The lower likelihood that Aboriginal clients would complete an extended stay approached significance ( $P = 0.06$ ).

### Predictors of self-discharge

Table 4 shows that clients referred from a criminal justice setting were significantly more likely to self-discharge, relative to clients who did not self-discharge ( $P < 0.01$ ).

## Discussion

The current study makes a unique contribution to the literature by being the first to empirically describe the characteristics of clients of a remote Aboriginal residential rehabilitation service. The following synthesises the main findings relating to this study.

### Key findings

*Trends relating to age.* Although the mean age of OH clients significantly increased over time, the marginal extent of this mean increase is reflected by the significant reduction in the proportion of clients aged 18–25 (from 32% in 2013–2014 to 12% in 2015–2016) being largely offset by the significant increase in the

**Table 3.** Differences between the characteristics of single admission clients and multiple admission clients to OH from 2011 to 2016

Characteristics at first admission	Single admission clients <i>n</i> = 246	Multiple admission clients <i>n</i> = 37	Statistical difference? <i>F</i> or $\chi^2$ (df), <i>P</i> -value
<i>Mean or % (SD)</i>			
Age, years <sup>a</sup>	33 (9.36)	36 (10.15)	<b>F(2) = 6.61, P = 0.002</b>
Aboriginal status	84 (0.37)	84 (0.37)	$\chi^2(2) = 0.88, P = 0.65$
Criminal justice	77 (0.42)	68 (0.48)	$\chi^2(2) = 2.12, P = 0.35$
Length of stay	55 (38.83)	58 (44.75)	F(2) = 0.30, <i>P</i> = 0.74
Type of discharge <sup>b</sup>			
Completed	33 (0.47)	30 (0.46)	$\chi^2(2) = 0.58, P = 0.75$
Self-discharge	47 (0.50)	43 (0.50)	$\chi^2(2) = 0.38, P = 0.82$
House-discharge	18 (0.39)	27 (0.45)	$\chi^2(2) = 1.55, P = 0.46$

<sup>a</sup>Two client ages missing in Year 3. <sup>b</sup>Five client discharge types missing in Year 1. OH, Orana Haven Drug and Alcohol Rehabilitation Centre.

**Table 4.** Predictors of short (1–30 days), long (60–90 days), extended stay (91 > days) and self-discharge among single client admissions (*N* = 283) at OH from 2011 to 2016

Predictors	Multivariate OR					
	OR (95% CI)	<i>P</i> -value	OR (95% CI)	<i>P</i> -value	OR (95% CI)	<i>P</i> -value
Model 1: Predictors of short, long and extended stay <sup>a,b</sup>	Short stay (1–30 days) <i>n</i> = 102		Long stay (60–90 days) <i>n</i> = 121		Extended stay (91 > days) <i>n</i> = 16	
Aboriginal status	0.70 (0.26, 1.91)	<i>P</i> = 0.49	0.68 (0.26, 1.80)	<i>P</i> = 0.44	0.29 (0.08, 1.07)	<i>P</i> = 0.06
Age	1.00 (0.97, 1.04)	<i>P</i> = 0.99	1.02 (0.98, 1.05)	<i>P</i> = 0.32	1.06 (1.01, 1.12)	<b>P = 0.02</b>
Criminal justice	0.50 (0.22, 1.10)	<i>P</i> = 0.08	0.93 (0.42, 2.08)	<i>P</i> = 0.93	1.31 (0.31, 5.62)	<i>P</i> = 0.08
Model 2: Predictors of self-discharge among single client admissions <sup>c</sup>	Self-discharge <i>n</i> = 131					
Aboriginal status	0.89 (0.46, 1.70)	<i>P</i> = 0.72				
Age	1.00 (0.98, 1.03)	<i>P</i> = 0.90				
Criminal justice	2.53 (1.43, 4.46)	<b>P = 0.01</b>				

<sup>a</sup>The reference category is: medium stay: 31–59 days (*n* = 42). <sup>b</sup>Two missing (*N* = 281). <sup>c</sup>The reference category is: other discharge (*n* = 152). CI, confidence interval; OH, Orana Haven Drug and Alcohol Rehabilitation Centre; OR, odds ratio.

proportion of clients aged 26–35 (from 27% in 2014–2015 to 51% in 2015–2016). The fall in the proportion of younger clients admitted to OH is reflected by the broader decline in the proportion of 20–29 year olds treated for drug and alcohol misuse, reducing from 33% to 27% of treatment episodes in Australia between 2005 and 2015 [5]. The decrease in young people accessing residential treatment may suggest that Aboriginal residential rehabilitation facilities, or the treatment provided, could be modified to increase their appropriateness for young people. Alternatively, it may reflect that fewer young Aboriginal people are attending residential rehabilitation because they are being incarcerated at increasingly high rates (there was a 77% increase between 2000 and 2015 for adult Aboriginal imprisonment [44]).

Older clients were more likely to have extended stays during the study period (relative to medium stays), which is consistent with Australian research that found older residential rehabilitation clients had significantly longer treatment episodes, and were more likely to have multiple admissions, compared to younger clients [31]. Given the evidence that treatment characterised by fewer episodes of care that are of longer duration is associated with better outcomes (compared to multiple, shorter episodes of care) [26], OH could provide additional support to older clients who re-admit, to increase the likelihood that they will stay for the duration of their treatment, rather than relapse into further iterations of discharge and readmission. The specific nature of that support could be co-designed by clients and staff, integrated into a

revised model of care and evaluated to quantify its impact and costs.

*Criminal justice system referrals.* The majority of clients were referred from the criminal justice system, ranging from 90% (2011–2012) to 96% (2015–2016) and these clients were significantly more likely to self-discharge. The significant increase in clients referred from the criminal justice system is consistent with the reported 77% increase between 2000 and 2015 in the number of adult Aboriginal prisoners [43], and the disproportionately high prevalence of substance misuse among prisoners [44,45]. In Australia, for example, 84% of prisoners reported illicit drug use, 58% reported harmful alcohol consumption and 61% reported being under the influence of substances at the time they committed their current offence [45,46]. Numerous reports have advocated for an increase in the availability of culturally responsive diversionary programs from prison to residential treatment settings [47,48,50,51]. Since criminal justice referrals were more likely to self-discharge, future research could usefully determine why these clients are more likely to self-discharge, given the reasons could vary from clients engaging in the minimal amount of residential rehabilitation in preference to jail, to the need to tailor programs to better meet the risk factors that are specific to these clients [52].

*Program completion and length of stay.* A third of clients completed the program, 47% self-discharged and 20% house-discharged. The average length of stay was 56 days, although 36% left within the first month. The average length of stay of 56 days is higher than for mainstream residential rehabilitation services, which have been reported as 26 [31], 32 [33] and 37 days [26]. Although 36% of clients left treatment within the first month, this compares favourably to 56% for residential treatment for dual diagnosis clients [33]. OH's completion rate of 32% is comparable to the 34% reported for non-Aboriginal residential rehabilitation services in Australia [26], but it is possible this could be improved given the 62% completion rate reported in one study [52].

*Polysubstance use.* Most clients in the 2015–2016 dataset reported concerns with polysubstance use (69%). Methamphetamine was identified as being the most prevalent substance of concern, whether it was used in combination with other substances or as methamphetamine only (nominated by 63% of clients). This finding is consistent with increased methamphetamine use in Australia generally [53] and among offenders [54], and an increase in demand for treatment from clients with methamphetamine dependence

[54]. Residential rehabilitation is an appropriate option for treating methamphetamine dependence, given client outcomes at 3- and 12-months post treatment have been shown to be significantly better than for clients who received detoxification only [55]. Despite the increase in demand for treatment for methamphetamine dependence, the total proportion of treatment seeking clients whose primary drug of concern includes methamphetamine is still comparable to alcohol and cannabis (57% for both). This finding, along with the finding that most clients reported concerns with polysubstance use (69%), highlights the importance of programs focusing on substance abuse disorders generally, not just risk factors associated with individual substances.

### *Limitations*

A number of limitations merit discussion. First, while length of time in treatment is a good predictor of outcomes, follow-up data were not collected. Follow-up data would help identify which clients would benefit most from aftercare aimed at preventing re-admission [56,57]. Second, limited staff uptake of the electronic client management system, a reliance on handwritten intake and client files, and *ad hoc* screening processes all increased the likelihood of missing data. The potential to improve data collection and routine monitoring across the Aboriginal community-controlled health services sector has been noted previously [17,58], and the phone assessment data for the 2015–2016 period in this study demonstrates that it is feasible for services to routinely collect more comprehensive data. Additional measures could include those specifically developed for Aboriginal substance misuse clients, such as Indigenous Risk Impact Screening [59], or those with Aboriginal-specific cut-off scores, such as Alcohol Use Disorders Identification Test—Consumption [60], or those that measure a wider-range of potential psychosocial benefits from Aboriginal residential rehabilitation, such as empowerment [61] and quality of life [41]. Third, this study was conducted in a single setting, meaning the results are of unknown generalisability to comparable services. Replicating this study in other Aboriginal residential rehabilitation services would facilitate useful comparisons and identify opportunities for greater standardisation in client assessments.

### *Implications for research, clinical practice and policy*

OH has clear potential to increase the rate with which clients complete treatment from the mean completion rate of 32% over the last 5 years. It could also tailor



treatment to improve outcomes for high-risk clients, including older clients with a history of multiple admissions and clients referred from the criminal justice system. Beyond OH, this study highlights the opportunity for Aboriginal residential rehabilitation services to collect follow-up data, standardise client assessments and embed routine data collection. The latter has been successfully done in Aboriginal-specific primary health-care services in partnership with the authors, which suggests it would be feasible for Aboriginal residential rehabilitation services [62,63].

This study also underlines the value of a service-researcher partnership in improving both service delivery and research outcomes. Such partnerships should be a priority given Recommendation 69 of the Royal Commission into Aboriginal Deaths in Custody, which articulates the need to assist Aboriginal organisations to develop effective evidence-based programs aimed at minimising harms from substance misuse and criminal activity [64].

In addition to quantitative analyses, research could be improved by incorporating the personal experiences of those who misuse substances, and the professional experiences of staff, through methodologically robust qualitative research [65]. The combination of both quantitative and qualitative data could be utilised by OH and other residential rehabilitation services to inform the development of evidence-based models of treatment that are feasible to implement, acceptable to clients and staff and tailored to the specific needs of clients.

## Conclusion

Creating partnerships between services and researchers to utilise both the clinical expertise within services and the evaluation expertise of researchers represents best-evidence practice [66]. This study makes a unique contribution to the literature and this remote Aboriginal residential rehabilitation service as the data can be used to more accurately tailor the service to clients' needs. Key recommendations are to integrate these empirical observations with the perceptions of staff and clients to co-design an improved model of care that would be adaptable to other Aboriginal residential rehabilitation services, to standardise data collection across Aboriginal residential rehabilitation services, and to implement a process of following-up clients routinely to monitor treatment effectiveness.

## Acknowledgements

The authors would like to acknowledge the ongoing support and hard work of the team at Orana Haven

Drug and Alcohol Rehabilitation Centre, especially Mr. Norm Henderson, Mr. Alan Bennett and the OH Board. Funding to undertake this evaluation was part of a Doctoral stipend provided by Far West Medicate Local from 2014–2017.

## Conflict of Interest

The authors have no conflicts of interest.

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