NDARC
National Drug &
Alcohol Research Centre

The Difference is Research

UNSW
AUSTRALIA

The costs and consequences of targeting AOD patients presenting to hospital emergency departments

Butler K, Reeve R, Arora S, Goodall S, Van Gool, K & Burns L.

Medicine | National Drug and Alcohol Research Centre

Introduction & Aims

- Drug and Alcohol Consultation Liaison (AOD CL) services aim to improve identification and treatment of patients with AOD morbidity.

  - **Our Aims**
    1. To investigate the **prevalence of AOD** related hospital presentations
    2. To conduct an **economic evaluation** to investigate the cost and consequences of providing AOD CL services

NDARC · UNSW · CHERE · UTS · The Difference is Research · 2

Methods

Baseline and follow-up patient surveys

Patients recruited from ED and selected wards at 8 NSW public hospitals

- **Baseline surveys** administered in each hospital over 10 days, where all waiting patients were approached and screened for eligibility.

- **Follow-up survey** was administered to those who screened positive for having substance use problems, and who consented to be followed up.

NDARC · UNSW · CHERE · UTS · The Difference is Research · 3

Methods

Economic evaluation

- **Linked data analysis – survey participants who consent to data linkage**
  - Medical record data (CL, ED, AP, MBS and PBS) 18 months prior to 12 months post survey
  - Analysis of health system resource use and costs over time.
  - Comparisons of patients with and without AOD problems, and patients with AOD problems who receive and do not receive CL services.
- **Cost-consequences analysis**
  - Estimated impacts of CL compared with the cost of providing CL services.

NDARC · UNSW · CHERE · UTS · The Difference is Research · 4

Patient Survey (baseline)

Measures include:

- reason for presentation
- contribution of substance use to current presentation,
- substance use in past 24 hours,
- recent problematic substance use
- general functioning
- use of drug and alcohol services

Royal Prince Alfred
St Vincent's
John Hunter Hospital
Wollongong
Orange
Lismore
Campbelltown
Albury

NDARC · UNSW · CHERE · UTS · The Difference is Research · 5

Survey response

1,615 completed
1,859 consented
3,043 were eligible
4,132 approached

NDARC · UNSW · CHERE · UTS · The Difference is Research · 6
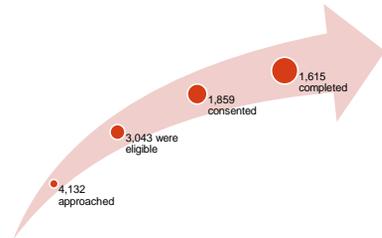
Demographics

Male	53%
Female	47%
Mean Age	41 years old (16-98)
ATSI	5%

■ Male ■ Female

NDARC · UNSW · CHERE · UTS · The Difference is Research · 7
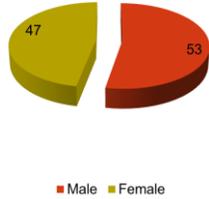
Recent use

Any substance	35
Alcohol	27
Sedatives	5
Opioids	4
Cannabis	4

% who reported use in 24 hours prior (n=1615)

NDARC · UNSW · CHERE · UTS · The Difference is Research · 8
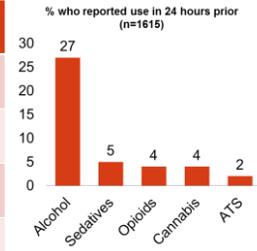
Contribution to presentation

Any substance	30
Alcohol	19
Cannabis	4
Sedatives	3
ATS	2
Opioids	2

% who reported substance use contributing (n=1615)

NDARC · UNSW · CHERE · UTS · The Difference is Research · 9
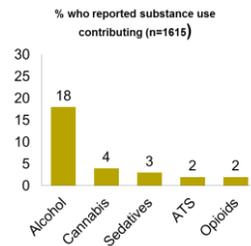
AOD Group

The Alcohol, Smoking and Substances Involvement Screening Test (ASSIST)

- Tobacco
- Alcohol
- Cannabis
- Cocaine
- Amphetamine-type stimulants
- Sedatives
- Hallucinogens
- Inhalants
- Opioids

■ AOD Group ■ Non-AOD

NDARC · UNSW · CHERE · UTS · The Difference is Research · 10
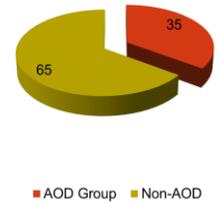
AOD Group demographics

	AOD GROUP (n=553)	NON-AOD GROUP
Male	62%	48%
Mean age Range	37 years 16-96	43 years 16-98
ATSI	6%	4%
WHO-DAS Median score	16*	13

NDARC · UNSW · CHERE · UTS · The Difference is Research · 11

Patient FOLLOW UP Survey

Measures include:

- Change in substance use
- General functioning
- Health and service utilisation
- Client perspectives on the impact of CL intervention on their substance use
- Uptake of referrals to drug and alcohol treatment

■ Followed up
■ Withdrew follow up consent
■ Incomplete, out of date or incorrect followup details
■ Non-contactable

NDARC · UNSW · CHERE · UTS · The Difference is Research · 12
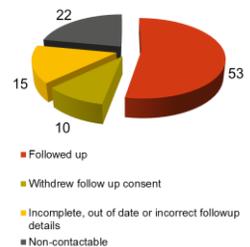
Changes in substance use

ASSIST

37 / 63

■ ASSIST positve ■ ASSIST negative

% who reported high frequency use

53 (Baseline) 29 (Follow up)

NDARC · UNSW · CHERE · UTS

The Difference is Research

13
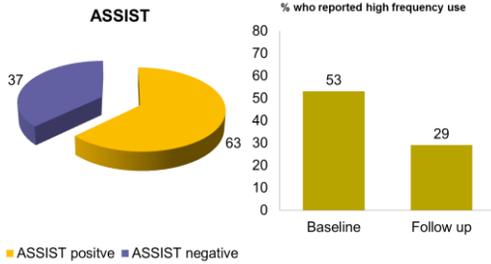
Disability

Disability scores marginally ⬇ in those who no longer met criteria for substance use problems.

Those who no longer met criteria for substance use problems were found to have had better disability scores at baseline.

NDARC · UNSW · CHERE · UTS

The Difference is Research

14

Referrals

% who reported high frequency use

15 (Recently accessed services) 8 (Referred to services)
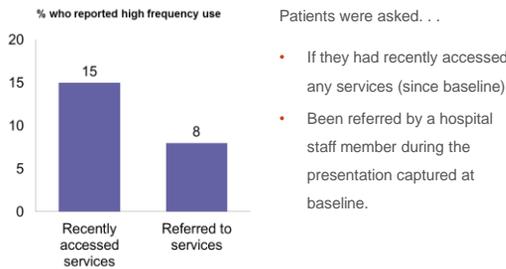
Patients were asked. . .

• If they had recently accessed any services (since baseline)
• Been referred by a hospital staff member during the presentation captured at baseline.

NDARC · UNSW · CHERE · UTS

The Difference is Research

15

Service utilisation

11, 4, 4, 2, 4, 3, 3, 2, 2, 1, 2, 1, 1, 0, 0, 2

Face to face counselling, Support groups, Specialist clinics, Detoxification, Pharmacotherapy, MERIT, Residential Rehab, Phone/internet counselling

■ Recently accessed ■ Referred

NDARC · UNSW · CHERE · UTS

The Difference is Research

16

Economic evaluation

NDARC

The Difference is Research

17
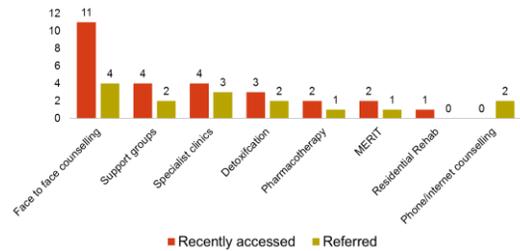
Linked data analysis

Baseline survey data for consenting patients linked to CL, ED, APDC, PBS and MBS data

Analysis of each dataset conducted in 3 parts:

1. Whether outcomes differ for patients who have an underlying AOD problem compared to those who don't – the case for intervention;

2. Whether outcomes for patients with AOD problems differ between those who receive CL services and those who don't – to identify the appropriate comparison group;

3. Regression models to estimate trends over time and changes pre- and post 1st observed contact with CL relative to changes for the comparison group – the impact of CL.

NDARC · UNSW · CHERE · UTS

The Difference is Research

18

Sample and CL data extraction

Hospital	Patients surveyed	Identified with AOD problems	Survey participants with data linkage	Patients in the linked sample with AOD problems	Patients in the linked sample with CL data*
1	247	102	172	75	4
2	208	62	145	53	12
3	90	33	70	26	1
4	142	48	129	46	2
5	216	66	159	48	3
6	257	83	215	69	10
7	202	65	76	28	N/A
8	253	94	135	57	7
Totals	1615	553	1101	402	39

- *At least one CL referral in the 2.5 year extraction period (18 months pre- to 12 months post-survey).*

Choosing the comparison group

Descriptive comparisons of baseline and ED data showed that patients referred to CL during the observation period are similar to those screened as requiring an intensive intervention but who were not seen by CL.

o Both groups more likely to depart without waiting and present more frequently, and had similar substance use patterns than people who screened as requiring only a brief intervention.

o Suggests that the intensive need (no CL) group are an appropriate comparison group for the evaluation.

Estimating changes over time (pre and post intervention)

•Interrupted time series models to estimate differences between those who saw CL and the comparison group before and after the intervention

•"Difference in difference" approach, to control for baseline differences.

•Controls for survey period, to avoid selection bias

•Controls for patient differences (age, gender, Indigenous status, socioeconomic status)

•Controls for the hospital

•Analysis of ED presentations and costs, inpatient admissions and costs, PBS and MBS utilisation and costs

Regression analysis: key findings

- Relative to the comparison group and controlling for other factors (including baseline differences), after the intervention people seen by AOD CL services have:

o Reduced average length of stay in ED over time

o Improved emergency admission performance

o Reduced rate of presentations over time

o Reduced cost of ED presentations over time, with predicted savings of $860.40 per person in the year following 1st CL visit

•decreases the rate of inpatient admissions over time (although no significant difference in change in cost of admissions)

•increases the uptake of selected PBS drugs and associated costs but with no overall increase in PBS costs

Cost-consequences analysis: Cost

•Data provided by Directors of AOD services on CL costs per annum and number of new patients per annum used to derive average cost per patient

Hospital *	Average annual cost of providing CL $			Number of new patients per annum	Average cost per new patient $
	Staff	Consumables	Total		
1	340,000	10,000	350,000	716	489
2	180,000	20,000	200,000	422	474
4	109,828	4,758	114,586	80	1432
5	609,592	14,886	624,478	936	667
6	84,750	5750	90,500	405	223
Overall average				512	657

Cost-consequences analysis: Cost-benefit

•The average cost of providing CL per new client is estimated at $657.

•Average number of new clients per site per annum is 512.

•From the regression results, **predicted ED cost savings** of **$860** per new CL client in the year following their first contact with CL

•Based on this estimate CL is expected to result in net savings to NSW Health of $203 ($860 - $657) per new CL client in the first year post CL.

•On average this amounts to an estimated **net benefit of $103,936 per annum per site** ($203x 512 new clients per site).

Cost-consequences analysis

In addition to an estimated **net benefit of $103,936 per annum per site,** evidence from regression analysis that CL:

•prevents an increase in average LOS in ED over time

•prevents a worsening in emergency admission performance

•decreases frequency of presentations over time

•decreases the rate of admissions over time

•increases the uptake of selected PBS drugs and associated costs but with no overall increase in PBS costs

As CL services currently only see ¼ of patients requiring intensive intervention, expanding these services may lead to even greater cost savings.

Thank you
Kerryn.butler@unsw.edu.au