An evaluation of MATES in Construction

Queensland Case Management

A report conducted for MATES in Construction

August 2019

Authors

Professor Chris Doran, Ms Laura Adams, Central Queensland University

Dr Carla Meurk, Dr Lisa Wittenhagen, Associate Professor Ed Heffernan, Queensland

Forensic Mental Health Service

Correspondence

Professor Christopher Doran
Centre for Indigenous Health Equity Research
Central Queensland University
Level 4, 160 Ann Street Brisbane 4000 QLD Australia
Mobile: +61 412 935 084
Email: c.doran@cqu.edu.au

Mr Jorgen Gullestrup
CEO – Queensland and Northern Territory
Level 1, 35 Astor Terrace, Spring Hill, QLD 4004
Phone: +61 7 3833 1140; Fax: +61 7 3832 8269
Email: jorgen@matesinconstruction.org.au

TABLE OF CONTENTS

Acknowledgement

The authors would like to thank Jacinta Hawgood for guidance on the proposal, comments on exit survey and report. Thank you to Lars Gullestrup, James Lacey and Jorgen Gullestrup from MATES in Construction for providing ongoing support and clarification throughout the project. Funding was received from MATES in Construction through a grant from the Queensland Office of Industrial Relations.

Executive Summary

MATES in Construction (MATES) is a multimodal workplace suicide prevention and early intervention program, developed in Australia. Case management is a core component of MATES. Qualified case managers work with individuals to develop a plan to address their issues; connect them with appropriate health or social care services; follow-up to ensure that they are receiving the help that meets their needs; and provide advocacy with respect to receiving services, if required. To date, there has been no formal evaluation of the MATES case management database in terms of who is using the service and what outcomes are being achieved. To fill this gap, the research team undertook a descriptive analysis of the Queensland MATES case management database and developed an exit survey to assess the benefits of case management for clients.

The evaluation relied on two data sources: 1) routinely collected data held in the Queensland MATES case management database spanning the period January 2010- December 2018; and 2) data from an exit survey administered to case management clients during June 2019. Ethical clearance was obtained from Central Queensland University (approval number 21603). Analysis of information contained in the Queensland case management database included descriptive statistics, graphical methods and simple inferential statistics. Exit survey data was analysed descriptively.

The findings from the descriptive analysis and exit survey paint a positive picture of MATES and reinforce the important role case managers play in managing psychosocial distress in construction industry workers. Several findings are particularly noteworthy. First, MATES has experienced an overall 265% growth in case management clients since 2010. Second, labourers and operators were the occupational groups with the most case manager contact. Third, presenting issues vary over time with a noticeable spike in suicide related presentations and mental health presentations in more recent years. Fourth, the proportion of clientele experiencing suicidality has varied from a low of 3% in 2011 to a high of 9% in 2017 and 2018. Fifth, beside the ‘other’ category, the most common referral pathway to MATES case management was self-referral and MATES connections. Sixth, although case management is relatively time intensive and costly, it accounts for only a small proportion of the estimated $1.57 billion cost of suicide and non-fatal suicidal behaviour in the Australian Construction Industry.

Several findings suggest room for improvement in data collection and service delivery. First, the large proportion of other or unknown responses related to occupation and pathways to

and from MATES case management services, potentially dilute the usefulness of the information recorded. Second, the case management database currently does not take advantage of data collected from other MATES initiatives such as GAT, Connector or ASIST training programs. Scope may exist to link this information into one central repository to provide a better understanding of the client's journey from first contact to subsequent care. Third, 22% of clients were referred to MATES case management by another MATES service. Out of those referred by MATES, 59% were referred by Connectors, 38% were referred by those with GAT and 2% were referred by those who had undertaken ASIST training These findings reinforce the value of MATES training and the important role Connectors are playing within the work force. Fourth, although Converge International was the preferred service provider, each client may have different needs. A better understanding of clients (through additional data) and a better understanding of service providers (though better training or educational sessions provided by service providers) may help to inform tailoring of referrals to better match clients with the appropriate care required. Fifth, there may be benefit to MATES, for both service delivery and evaluative purposes, to implement a range of evidence-based measures to monitor health of clients during their MATES journey. Finally, given the objective of MATES is to reduce the high level of suicide among Australian construction workers, it is timely to consider the impact case management (and indeed, all MATES programs) may have on client's quality of life, workplace safety and economic benefit.

Several recommendations are proposed:

- Conduct an audit of the case management database to ensure data collected is timely, relevant, useful and in line with best practice and Industry standards.
- Develop a central repository that links data collected from MATES initiatives such as training programs (GAT, Connector, ASIST), case management and, where appropriate, referral agencies (Converge International).
- Revisit MATES case management model to strengthen safety planning and potential involvement of significant others.
- Review the cost structure of MATES initiatives to ensure appropriate costing of case management.
- Implement a range of evidence-based measures to monitor health of clients during their MATES journey.
- Evaluate the economic benefit of MATES initiatives (including case management) on client's quality of life, workplace productivity and Industry performance.

Introduction

MATES in Construction (MATES) is a multimodal workplace suicide prevention and early intervention program, developed in Australia[1]. MATES was established in 2008 and aims to meet the needs of construction industry workers, who are at elevated risk of suicide[2]. MATES comprise multiple components:

- General Awareness Training (GAT) – training delivered to workers to introduce the problem of suicide in the construction industry, and advice on how MATES can help.
- Connectors training – training delivered to volunteers who help those in crisis and facilitate access to professional help.
- Applied Suicide Intervention Skills Training (ASIST) – training in how to talk to someone who is contemplating suicide, to create a 'contract' or 'safety plan'.
- Case management – qualified case managers work with individuals to develop a plan to address their issues. This includes connecting an individual in need with appropriate services, following up with the individual to ensure that they are receiving the help that meets their needs, and providing advocacy with respect to receiving services.
- Outreach – field officers travel between construction sites to establish MIC, and to provide training and support on site.
- Critical incident support – MATES representatives provide on-site support to workers following critical incidents and accidents.
- 24-hour suicide prevention hotline – mental health professionals provide 24/7 emergency assistance to individuals in crisis.
- Postvention support – representatives liaise with building site management following a suicide and provide resources and information about grief. Field officers facilitate discussions with friends and co-workers of the deceased, including face-to-face and phone-call follow-up to those affected.

Several evaluations of MATES have been undertaken. A summary of selected evaluations is provided in Table 1[1-11]. Only one evaluation, published in 2011[1], provided a partial review of the MATES case management model by examining reasons for referral and main referral source[1].

Table 1 Summary of selected evaluations of MIC

Reference	Purpose	Study design and sample	Aims and outcomes	Findings
King et al., (2019)[10]	Evaluation of General Awareness Training	Pre-post evaluation of 19,917 records	Examined age differences in suicide prevention literacy and attitudes to the workplace in addressing mental health.	Young men displayed poorer suicide prevention literacy at baseline but had more favourable attitudes towards the role of the workplace in addressing suicide and mental health. There were changes to some beliefs among young men, post-intervention.
King et al., (2018)[11]	Evaluation of General Awareness Training	Pre-post evaluation of 20,125 records	Examined effectiveness of GAT in its impacts on beliefs and attitudes on suicide prevention.	GAT training resulted in significant improvements in beliefs about suicide and mental health, immediately following training.
AISRAP (2018)[4]	Evaluation of MAT training program	Mixed methods, two-phase design. Qualitative component, N=27. Quantitative component, N=736.	Phase 1 qualitatively assessed motivations, pathways and difficulties in help seeking and help-offering from the perspectives of both volunteers and clients. Phase 2 quantitatively assessed effectiveness of MATES training.	Qualitative analysis showed favourable perceptions of MATES and identified a number of ingredients of success. Quantitative analysis showed positive changes in suicide prevention awareness, knowledge and attitudes.
Ferguson et al., (2017)[8]	Examination of impacts of GAT and Connector Training	Mixed methods, two-phase design. Quantitative component, N=83, Qualitative component N=11.	Phase 1 assessed confidence in talking to mates and family about suicide and use of MATES services and skills. Phase 2 interviews explored experiences of MATES training.	Authors confirmed that MATES was having a positive impact on those who undertake training.
Collimore (2016)[6]	Formative evaluation of the *Fly the Flag* campaign	Mixed methods, two-phase design. Quantitative component N=99, qualitative component N=4.	Evaluated awareness, reach and organisational factors relating to organising the *Fly the Flag* campaign, focussing on possible areas for improvement.	Purpose of evaluation was to troubleshoot teething issues, to improve the viability and success of future iterations of the *Fly the Flag* campaign.
Martin et al. (2016)[2]	Evaluation of implementation, activity and outcomes of MATES programme.	Assessment of suicide rates among construction industry workers in Queensland, in the five years pre-MATES and five years post-MIC	Evaluated impact, activity and outcomes. Outcome measure was change in suicide rates among construction industry workers in Queensland pre- and post-implementation.	An overall, non-significant reduction in suicide death rate of construction industry workers was reported, in the context of an overall increase among Queensland males.
Doran et al., (2016)[7]	Evaluation of the potential economic benefit of MIC	Economic analysis was undertaken using data on MATES activity in Queensland, and estimated relative suicide risk five-years pre- and five-	Quantified economic savings of averted suicide compared with costs of MATES activities.	Analysis showed that for every A$1 invested, there is a return of approximately A$4.60.

		years post implementation of MIC.		
Banks (2013)[5]	Evaluation of ASIST training	Survey of N=69 individuals, including open and closed questions.	Quantified satisfaction with training, use of skills, and interest in continuing involvement with MIC.	Almost all participants rated the training very highly, and more than two-thirds said that they had used the skills at work.
Footprints (2012)[9]	Program Evaluation of MIC	Survey of N=306 construction workers	Awareness, perceived value, experiences, feedback and areas for improvement of MIC.	Survey found 91% of workers were aware of MIC, and its purpose was clearly understood and valued. Three per cent of those surveyed had sought help themselves, and they rated the help received, highly.
Arkaeon (2011)[3]	Evaluation of pilot 'Course in Life Skills'	637 apprentices completed training. N=24 interviews were conducted.	Assessment of course quality, including performance, program content, and program delivery.	Feedback from participants, employers and unions was positive, with interviewees providing a rating of the project's success at 4.25/5.
Gullestrup et al., (2011)[1]	Evaluation of MATES program	7,000 construction industry workers	Assessment of construction industry support, suicide prevention literacy, awareness and confidence, utility with training, uptake of services.	Participation in MATES grew exponentially from inception until 2010. Suicide prevention literacy improved following GAT training. Individuals involved in the Connector component endorsed the importance and perceived effectiveness of MIC. Data showed strong uptake of services. Review of case management clients indicated that the most common reason for referral was "mental health or emotional distress" followed by employment, daily living, and problems with addiction. 101 clients reported suicidal ideation, of which 30 required suicide intervention – 41% clients referred to Converge International.

Evidence-base for a case management model

Case management models for suicide prevention vary in numerous ways, including:

- Referral pathways to a service (many are via emergency departments or other health services);
- Whether case managers provide any psychological treatment or behavioural activation;
- The role of mental health professionals (versus non-mental health professionals) in case management and/or reviews of case managed clients;
- Frequency and duration of contact (between four weeks and 18 months, with varying patterns of follow-up noted);
- Differences in modalities of follow-up (face-to-face, telephone, home visits or combination of one or more of these);
- Whether or not clinical suicide risk assessment or formal monitoring is carried out;
- The role of safety planning;
- The extent of monitoring and support of therapeutic engagement and adherence to treatment;
- Whether case managers provide support in problem solving with a client;
- Whether significant others are involved or engaged; and
- The extent of health and social care coordination that case managers provide.

There is limited evidence regarding the efficacy of case management for suicidal individuals (Table 2)[12-19]. Published studies over the past five years tend to focus on individuals who present to emergency departments as a result of a suicide attempt and are therefore unlikely to be generalisable to prevention or early intervention services, such as MIC. Findings from these studies are mixed, but indicate that case management models are associated with modest reductions in suicide risk[16, 18]. Only one study published in 2007 examined a non-clinical case management approach in patients discharged from psychiatric inpatient settings[12]. De Leo and Heller (20017) reported people randomised to receive intensive case management had significant improvements in depression scores, suicide ideation, and quality of life compared with those in the usual treatment group[12].

Table 2 Selected references on efficacy of case-management models in suicide prevention, past ten years

Reference	Study population	Description of case management model	Evidence
Fernandez-Artamendi et al., (2019)[13]	Patients presenting to an emergency department following a suicide attempt.	Active case management comprised: regular clinical interviews, preferably face-to-face; promotion of continuation and adherence to clinical treatment prescribed by mental health professional; care coordination with treating psychiatrist; encouragement to re-engage with treatment, if required; facilitation of social supports, as required.	No significant differences were identified between case management versus control at 30-month follow-up, either in number of suicide attempts, or number of individuals who attempted suicide more than once. Nonetheless, the authors highlight that there are potential benefits of case management that require further research.
Shin et al., (2019)[18]	Patients presenting to emergency departments following a suicide attempt.	Case managers (social workers, nurses and clinical counsellors) conducted weekly face-to-face or telephone interviews, before being referred to a community mental health service. Case managers monitored and evaluated suicide risks.	There was a statistically significant association between completing case management and reduced suicide risk.
Petersen et al., (2018)[17]	Patients with major depression in primary care.	Twelve-month intervention by health care assistants who contacted patients fortnightly for the first six weeks, and monthly thereafter. Interviews lasted approximately twelve minutes and included: symptoms monitoring and medication adherence using a structured questionnaire; behavioural activation in relation to social activities, participation in enjoyable activities and medication adherence. Information was fed back to GPs in relation to need for further follow-up.	Two sub-groups were identified: “fast improvers” and “slow improvers”. “Fast improvers” achieved larger overall reductions in depressive symptoms. History of prior suicide attempts and number of physical comorbid conditions were associated with rate of improvement.
Kim et al., (2018)[15]	Individuals who present to emergency departments following a suicide attempt.	Four-week case management provided by social workers. Case managers conducted an initial interview in the emergency department. Individuals were followed up weekly for a face-to-face or telephone interview. Case management included assessment of suicidality, safety and psychiatric symptoms. Case managers assessed compliance with prescribed treatment, encouraged ongoing engagement with treatment, and undertook problem solving with clients. Following the case management period, individuals were referred to a regional mental health centre.	Case managed patients had fewer suicide re-attempts in the first six months than did controls. However, there was no difference between case-managed participants and controls over a 19-month period.
Furuno et al., (2018)[14]	Individuals who present to emergency departments following a suicide attempt.	Case managers were mental health professionals (social workers, clinical psychologists, nurses, or psychiatrists). Case managers followed clients up one week following intake, and then monthly for three months, and six monthly thereafter until the end of the trial period (18 months-5 years). Case management included assessment, planning, encouragement and coordination. Assessment included evaluation of treatment status and adherence; suicidal ideation; relationships, social problems and social supports.	Number of self-harm episodes was lower among those who received assertive case management, however there was no difference in the number of individuals who did not have any self-harm or suicide re-attempts.

		Case workers encouraged treatment adherence, and engagement with relevant social care, and helped coordinate this if required. Contact was preferably face-to-face.	
Miller et al., (2017)[16]	Individuals who present to emergency departments following a suicide attempt.	Case management embedded within a multi-component intervention, comprising: (1) secondary suicide risk screening; (2) self-administered safety plan and provision of information by nursing staff; (3) seven phone-call check-ins for one year following an index ED presentation, plus an additional four for significant others. Phone-calls combined principles of case management, psychotherapy and inclusion of a significant other. Check-ins focussed on identifying suicide risk factors, clarifying values and goals, safety and future planning, facilitating treatment engagement and adherence, and facilitating patient-significant other problem solving.	Small but clinically meaningful reductions in suicide risk were noted among those who received an intervention versus those who did not.
Wang et al. (2015)[19]	Individuals who survived an episode of self-harm	Case managers contacted individuals who had self-harmed within one week of the attempt and followed up for six months. Case management was delivered via telephone conversations and home visits. Case management included: provision of psychological support and crisis interventions, encouraging treatment adherence and coordination of social supports.	No significant difference in suicide rates between those who participated in case management and those who did not was noted. However, there was an overall decline in suicide rates among the study sample, consistent with an overall decreasing trend in suicides.
De Leo and Heller (2007)[12]	Individuals discharged from a psychiatric inpatient setting.	Participants were randomly assigned to: Intensive Case Management (ICM) or Treatment As Usual (TAU). ICM featured weekly face-to-face contact with a community case manager and outreach telephone calls from experienced telephone counsellors. TAU participants were discharged under existing hospital practices.	People in the ICM condition had significant improvements in depression scores, suicide ideation, and quality of life. ICM participants reported more contacts with mental and allied health services, had better relationships with therapists, and were more satisfied with the services that they did receive

MATES case managers do not provide mental health care to clients. Rather, MATES utilise the brokerage model - a brief approach to case management in which case managers attempt to help clients identify their needs and broker supportive services over a brief contact period[20]. This model assumes that a client will voluntarily use needed services once they know they are available and learn how to access them. This model works best when a client's biggest challenge is access to services, rather than availability of services. In a brokerage case management model, the case manager/social worker provides very little direct service to the client. Instead, they serve as a link between a client and community resources. The focus is on assessing needs, planning a service strategy, and connecting and follow up with clients. Table 3 outlines the components of case management models utilised by MIC.

MATES case managers are responsible for providing support and assistance to workers and/or their families in the industry. According to the case management handbook, these responsibilities include:

- Assessing client needs and issues and develop a plan to address such needs and issues. Initial sessions should be far as practicable by telephone contact or, where applicable, face to face.
- Respect worker's confidentiality where harm to self or others is not considered as an issue and apply the MATES confidentiality policy.
- Refer clients to external community services/agencies that are of benefit to them, obtaining clients permission (written/verbal) and documenting actions.
- Seek feedback from clients to ensure the services are appropriate for the client and for future reference.
- Referral to other services/agencies used by MATES is to be documented in the client's case management notes and copies of relevant paperwork e.g. referral forms, attached to the clients electronic file.
- Oversee the quality, responsiveness and availability of contracted, and 'referred to' community services.
- Build a resource database of relevant community agencies used for referrals.
- Networking with other agencies/services – promoting the MATES brand and seeking alternative service providers.
- Participating in consultation processes with other community support services/agencies.
- Keep case notes in the format required and enter such case notes to the database in an accurate and timely manner.
- Ensure timely archiving of clients.

Table 3 Components of case management models utilised in the MATES case management model

✓ Multiple referral pathways to MATES case management via construction sites, MIC, volunteers or concerned others ✓ Contact and follow-up via telephone ✓ Safety planning ✓ Monitoring and support of therapeutic engagement and adherence to treatment ✓ Behavioural activation is not employed ✓ Support in problem solving with a client ✓ Health and social care coordination	× Mental health professionals are not involved in case management × Case managers do not provide any psychological treatment × Significant others are not involved, except as possible referrers to MATES × No clinical/psychiatric suicide risk assessment or monitoring

To gain a better understanding of the MATES approach to case management in Queensland, the aims of this evaluation were to:

- Undertake a descriptive analysis of the Queensland MATES case management database; and,
- Develop an exit survey for Queensland MATES case managers to collect information related to benefits of case management for clients.

Methods

This evaluation uses two data sources: 1) routinely collected data held in the Queensland MATES case management database spanning the period January 2010- December 2018; and 2) data from an exit survey administered to case management clients during June 2019. Ethical clearance was obtained from Central Queensland University (approval number 21603).

Routinely collected administrative data

Measures

Data recorded in the Queensland case management database and analysed include:

- Age (recorded as dd/mm/yyyy or years of age);
- Gender (Male/Female);
- Occupation (Australian and New Zealand Standard Classification of Occupations[21]);

- Referred by (14 options, including MATES volunteers, by type; family; employer; other service provider; self-referred; union; other);
- Suicidality (Yes/No);
- The nature of their presenting concerns (40 concerns to choose from including family, financial, relationships, mental health, suicide ideation, work-related. Full list is provided in Appendix A);
- Days in case management;
- Number of case notes; and,
- Services referred to (120 providers, including Converge International, employee assistance program, dads in distress, etc. Full list is provided in Appendix B).

Exit survey

An exit survey was designed based on discussion between MATES case managers and the research team (Appendix C). The survey consisted of five client feedback questions including:

1. Do you feel the nature of your concerns were met during the case management process?
2. Were the services appropriate in meeting your needs?
3. Did you feel actively involved in the decision-making process?
4. Do you consider that your medical, emotional, mental well-being and spiritual needs were addressed?
5. Would you recommend MATES to co-workers, family and friends?

Responses were recorded using a 5-item Likert scale (absolutely yes; yes; maybe; no; absolutely no). Clients were encouraged to provide further comment about MATES or case management using an open-ended question.

The survey was administered by case managers during a client contact in June 2019.

Analysis

Analysis of information contained in the case management database included descriptive statistics, graphical methods and simple inferential statistics. The unit of analysis was case records. Data were examined for trends over time. Trends are reported where investigators judged it to be of practical or statistical relevance. Exit survey data were analysed descriptively.

Results

Demographic characteristics

Over the period of interest, January 2010 to December 2018 (inclusive), the Queensland MATES case management database had 4,220 records linked to 3,759 individuals, of which 12% (N=461) were repeat clients. Table 4 shows the overall growth in number of case management clients, including a gender breakdown. While there has been a decline in numbers since a peak of 728 cases managed in 2016, overall, MATES has experienced 265% growth in case management clients, since the beginning of the data collection period, in 2010. The median age of clients remained relatively stable over the study period, at 39 years old (range 15 years old – 76 years old) with the majority (92%) of clients being males. The proportion of female clients presenting to MATES for case management was highest in the years 2014 and 2016 (Table 4).

Table 4: Number of clients in Queensland MATES case management database

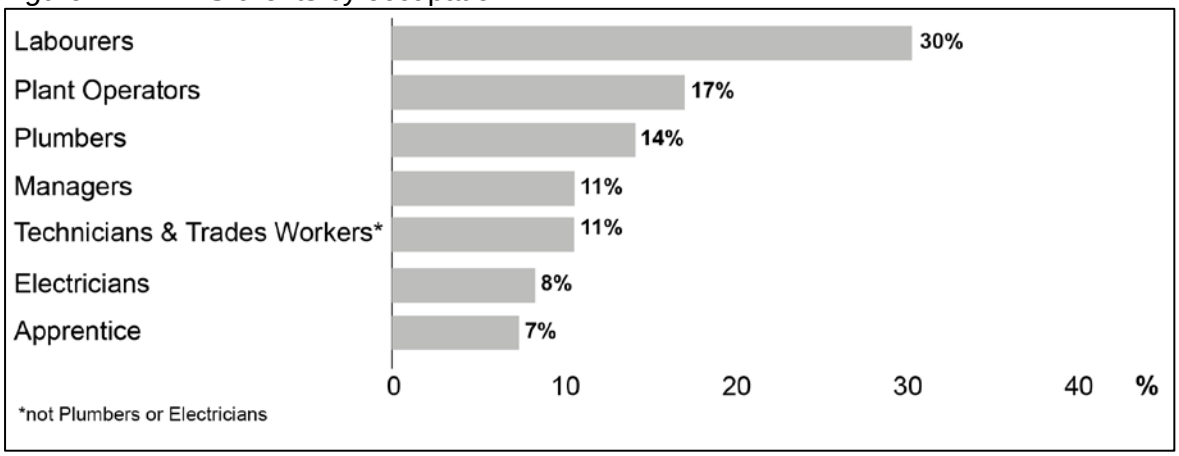
Year	Change** clients	N clients	Change** records	N records	Male	Female	Age median
2010-2018*	↑230%	3759	↑265%	4220	92%	8%	39
2018	↓10%	591	↓09%	613	92%	8%	40
2017	↓06%	654	↓08%	670	93%	7%	38
2016	↑36%	694	↑38%	728	90%	10%	39
2015	↑15%	511	↑15%	528	94%	6%	38
2014	↑16%	446	↑17%	461	90%	10%	37
2013	↑06%	384	↑08%	394	92%	8%	38
2012	↑28%	362	↑25%	365	93%	7%	38
2011	↑72%	282	↑74%	293	94%	6%	37
2010		164		168	97%	3%	40

* 05 January 2010 – 20 December 2018
** in relation to the preceding year

Occupation

Occupations were grouped based on the ABS and Statistics New Zealand Standard Classifications of Occupations[21]. There were a high number (41%) of 'other' and 'unknown' responses regarding clients' occupations. Of those who provided occupational information (Figure 1), the most common occupational group were labourers, who made up 30% of MATES case management clients. This was followed by plant operators and plumbers who comprised 17% and 14% of case management clients, respectively.

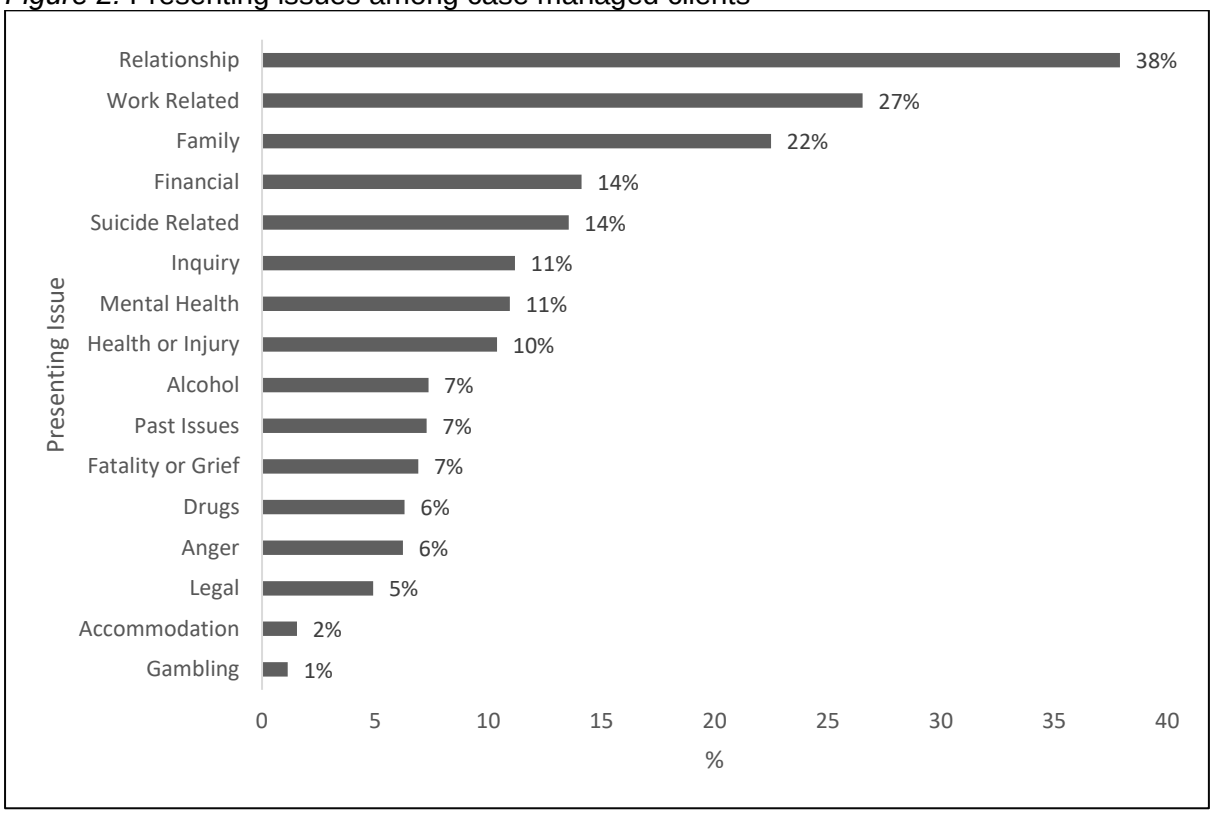
Figure 1: MATES clients by occupation



Nature of presenting issues

Clients could identify multiple presenting issues. Figure 2 shows the most common presenting issue that was identified was relationship issues, identified by 38% of clients. This was followed by work related concerns, identified by 27% of clients, and family concerns, identified by 22% of clients. Suicide related concerns (suicide ideation 11%, suicide intervention 2%, suicide bereavement 0.5%) were the fourth most frequently identified presenting issue (14%). Mental health concerns were identified by 11% as an issue, alcohol by 7%, and drugs by 6%.

Figure 2: Presenting issues among case managed clients



Over the 2010-18 time period, suicidality was noted in 6% of records. As shown in Figure 3, there was an overall increase in numbers of clients identified by case managers as experiencing suicidality between 2013 and 2017. Clientele with expressed suicidality increased substantially in 2017 and 2018, both in raw numbers, and as a total proportion of cases managed. Tables 5 and 6 provide an overview of suicidality by occupation and age group, respectively.

Figure 3: Changes in percentages of records indicating suicidality in relation to the number of cases per year

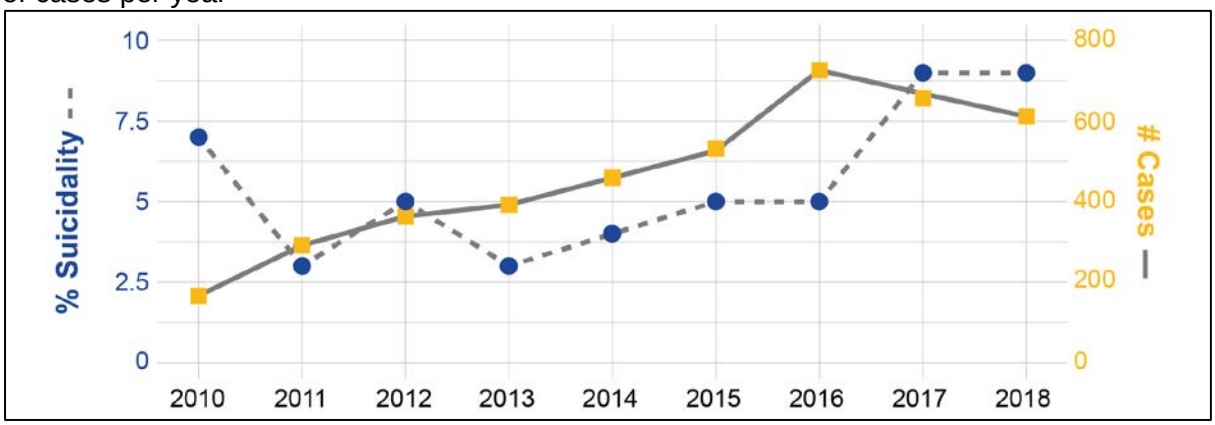


Table 5: Suicidality by occupation

Occupation	Yes	No	N
Labourers	6%	94%	757
Plant Operators	5%	95%	426
Plumbers	4%	96%	354
Managers	7%	93%	266
Technicians & Trades Workers	7%	93%	282
Electricians	5%	95%	208
Apprentice	8%	92%	185

Table 6: Suicidality by age group

Age Group	Yes	No	N
15 to 24	8%	92%	349
25 to 34	7%	93%	937
35 to 44	5%	95%	1060
45 to 54	5%	96%	840
55 to 64	2%	98%	211
65+	7%	92%	23
Overall	6%	94%	

Some changes in the prominence of presenting issues were noticeable over time (Table 7). There was a noticeable spike in mental health as a presenting issue in 2018, noticeable increases in suicide related presentations in 2017 and 2018, and a spike in work related presentations in 2017. The prominence of relationships as a presenting issue fluctuated across the nine-year period examined, between 32%, in 2010 and 46% in 2011 and 2018.

Table 7 Change in presenting issues overtime

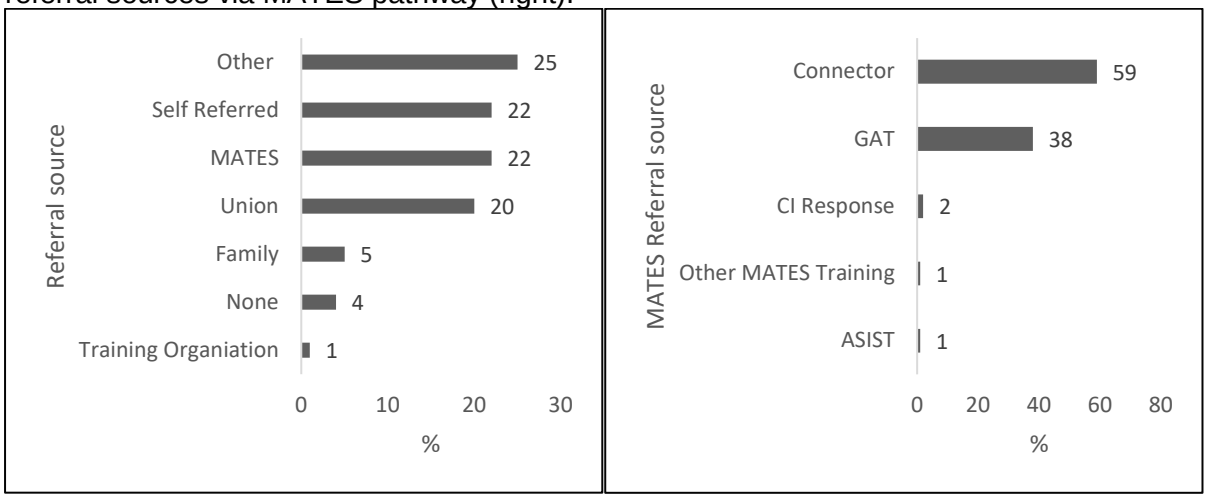
	2010	2011	2012	2013	2014	2015	2016	2017	2018
Relationship	32	46	34	35	37	36	34	39	46
Work Related	26	22	26	24	23	27	23	33	31
Family	24	16	19	22	17	23	20	21	36
Financial	17	17	16	15	11	15	13	11	17
Suicide Related	13	11	11	8	10	12	11	19	23
Inquiry	36	25	7	11	11	6	20	4	3
Mental Health	8	8	10	6	7	9	5	8	32
Health or Injury	13	12	10	9	10	12	11	7	11
Alcohol	9	16	6	9	6	7	6	6	6
Past Issues	15	8	8	8	7	9	6	5	6
Fatality or grief	8	8	8	6	5	9	5	8	8
Drugs	10	10	7	6	5	8	6	4	5
Anger	7	9	8	9	5	7	5	5	6
Legal	7	8	8	6	4	4	2	3	7
Accommodation	1	2	1	3	2	1	1	1	2
Gambling	1	1	1	2	0	1	1	1	2

NB: Values given are percentages, calculated in relation to the number of cases for that year.

Pathways to MATES case management services

Figure 4 shows the referral pathways to MATES case management services. The most common referral pathway was ‘other’ (25%). The most common identified referral pathway to case management was self-referral, and MATES connections (including ASIST, GAT, Connector and Critical Incident support persons), both identified in 22% of cases. Of those who were referred by MATES, 59% were referred by Connectors, and 38% by those who had undertaken GAT. Unions were the third most common identified referral pathway, identified in 20% of cases.

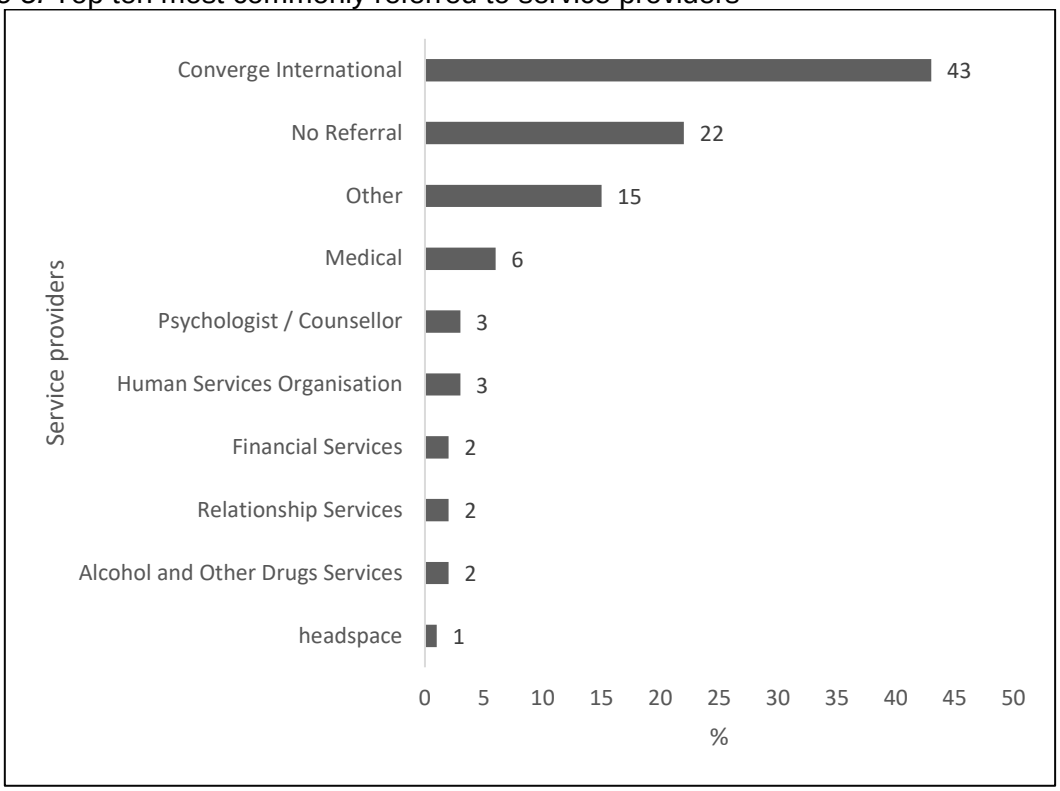
Figure 4: Sources of referral for MATES case management cases (left), and breakdown of referral sources via MATES pathway (right).



Pathways from MATES case management services

Figure 5 shows the top ten most common referral pathways from MATES case management to other health or social care services. The most commonly referred to provider was Converge International (43% of cases). No referrals were made in 22% of cases. Referral to a medical professional (non-specialist) was made in 6% of cases. MATES have contracted hours with Converge International, funded by the Building Employees Redundancy Trust (BERT), for members to receive free counselling. Such a relationship facilitates a seamless transition of clients from MATES case management to Converge International reflected in the high update of clients referred to Converge International taking up the service.

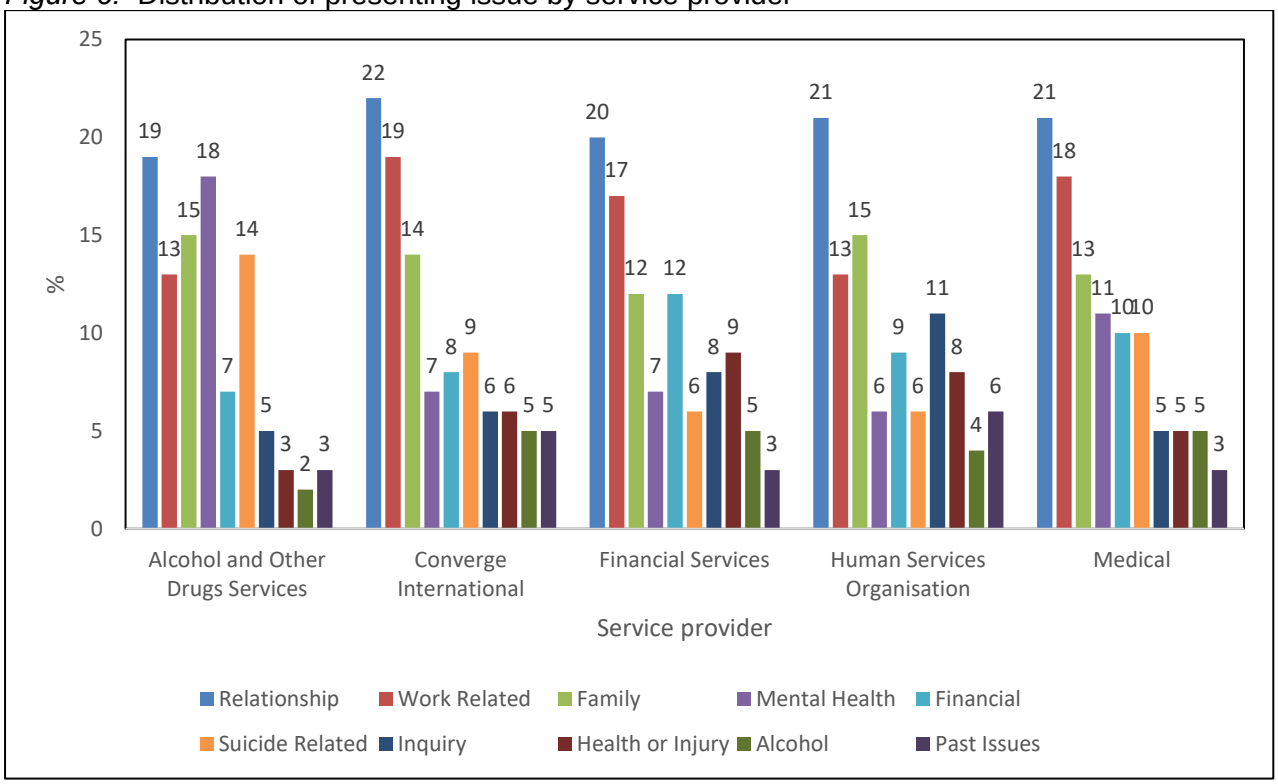
Figure 5: Top ten most commonly referred to service providers



Associations between the top five identified service providers (i.e., excluding the categories other and no referral) and the top ten most commonly identified presenting issues were examined. There was a significant association between service provider referred to and presenting issue (χ^2=69.773, p<0.001). As shown in Figure 6, individuals who were referred to an alcohol or drug service or medical service were more likely to have presented with suicide related issues or mental health problems than clients who were referred to Converge International or a financial or human service organisation. Similarly, those who were referred to financial services or medical services were more likely to have presented with

financial issues than those who were referred to Converge International, an alcohol or drug service or a human services organisation. Relationship and work-related presenting issues were evenly prevalent across all service types referred to.

Figure 6: Distribution of presenting issue by service provider



Number of case notes

A case note is the term applied to a chronological record of interactions, observations and actions relating to a client[(20)]. The median number of case notes per client was 4, with 50% of clients having between 3 and 7 notes. There was a statistically significant relationship between presenting with suicidality and number of case notes (mean number of case notes for those with suicidality = 6.78, mean number of case notes for those who were not at risk of suicide = 5.69, $t = 2.54$, $p = 0.01$). There was also a modest but statistically significant positive correlation between number of presenting issues and number of case notes (Pearson's $r = 0.24$, $t = 16.169$, $p < 0.0001$).

Time and cost of MATES case management

Data obtained for 2018 suggests that case managers devoted an estimated 1,388 hours to case management. There were an estimated 613 clients in 2018 suggesting an average time of 2.26 hours per client. Assuming an hourly wage of $50 per case manager together

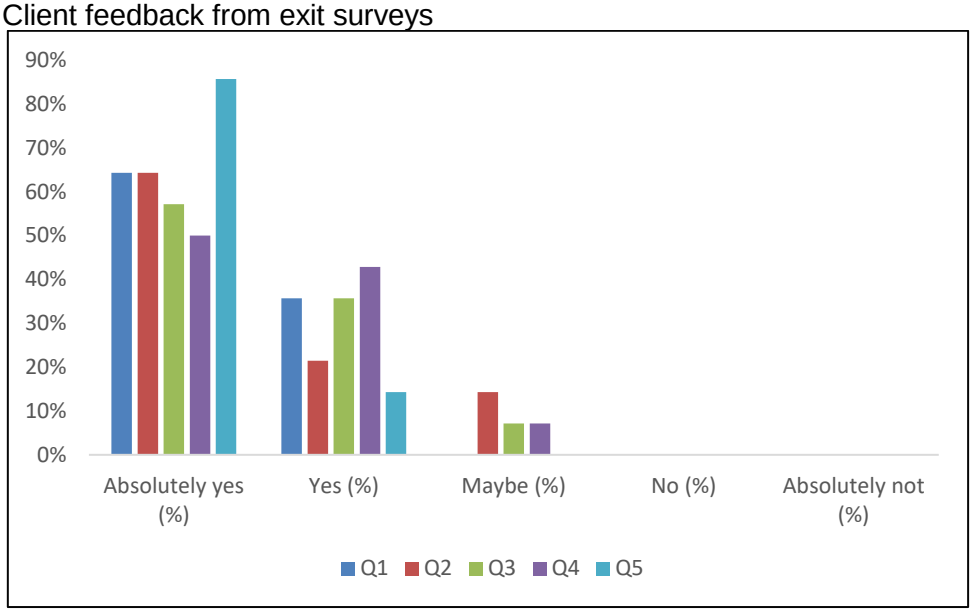
with 50% on-costs (i.e., total cost per hour of $75), this suggests that it cost MATES over $100,000 in 2018 in case managers time. This is likely to be an underestimate as it does not reflect administration, infrastructure or maintenance costs of delivering the service. It also does not include the more than 1,000 hours of Converge International support that cost an additional $155,000 in 2018 alone.

Consistent with the finding above in terms of a statistically significant relationship between presenting with suicidality and number of case notes, research suggests that the more severe the problem the longer the time taken to recover and return to duties and the higher the economic cost to employees, employers and the government[22-24]. Hilton et al (2010) estimated that psychological distress produces an annual decrease of $5.9 billion in Australian employee productivity[25]. Ling et al (2016) estimated the annual economic impact of lost productivity in 2015 due to psychological distress in the Australian Coal Mining Industry at $153.8 million – largely as a result of high stress levels among machine operators and drivers and technicians and trade workers[22]. Doran et al (2016) estimated the costs associated with suicide and non-fatal suicidal behaviour in the Australian Construction Industry at $1.57 billion.

Exit surveys

A total of 14 exit surveys were administered by case managers during June 2019. Figure 8 provides an overview of the results. All respondents agreed that: the nature of their concerns was met during the case management process (question 1); and, would recommend MATES to co-workers, family and friends (question 5). Ninety-three percent of respondents agreed that: they felt actively involved in the decision-making process (question 3); and, considered that their medical, emotional, mental well-being and spiritual needs were addressed (question 4). Eighty-six percent agreed that MATES services were appropriate in meeting client needs (question 5).

Figure 7 Client feedback from exit surveys



NB: zero responses were recorded in the no or absolutely not category

Qualitative comments provided by clients to case managers identified that clients appreciated case managers "checking in" with them, providing hope, and connecting them with other services:

> "*Mates was great at keeping in contact and checking in with me to make sure I was ok, while I was going up and down with my emotions and situation and making sure I stayed positive and could see a way forward.*"

> *"Great support and engagement by mates, keeping me honest, checking in weekly around mental wellbeing due to my separation. Connected me into counselling and separation support services that really helped lower my mental strain and suicidal thoughts."*

> *"So thankful for the support …. as well as contacting me lots to check in and make sure that I was going ok."*

> *"Mates was really easy to engage and supported me to move through separation as well as checking in with me consistently to make sure I was ok."*

Discussion

The aims of this research were twofold: 1) to undertake a descriptive analysis of the Queensland MATES case management database; and, 2) develop and implement a short exit survey for Queensland MATES case managers to use to assess the benefit of case management for clients.

The role of the MATES case manager is considered key to enhancing engagement of workers with external services, providing a 'safety net' between agencies to ensure continuity of care and follow-up, to ensure that workers' needs are being met, and advocating for further assistance where necessary.[1] As indicated in the literature review on case management models, MATES differs from typical case management services in that it does not provide any form of mental health care or psychological intervention to clients. Rather, qualified case managers work with individuals to develop a plan to address their issues. A key component to MATES case management that was identified in qualitative responses to the exit survey, is the value of MATES case managers checking in with clients, being generally supportive and giving hope to those experiencing distress.

Several findings from the descriptive analysis are noteworthy. First, the demand for case management services offered by MATES has increased markedly over time. This increased demand may be the result of many factors including increased penetration of MATES in the construction industry together with an increased awareness of mental health issues in the workplace and society. Although these data suggest a slight dip in numbers over the past two years, MATES has experienced an overall 265% growth in case management clients since 2010. Second, the majority of clients from identified occupations include labourers and operators, consistent with previous evidence of elevated suicide risks within these occupational groups[26, 27]. Third, clients tend to present for several issues, including relationship and work-related concerns. However, presenting issues appear to have varied over time with a noticeable spike in suicide related presentations in 2017-2018 and mental health presentations in 2018. These spikes may be the result of changes in coding or a reflection of the changing nature of suicidality. Perhaps the latter is more plausible given evidence to suggest variations in suicide fatality rates over time[28] and earlier work conducted by Gullestrup et al (2011)[1]. Fourth, the proportion of clientele experiencing suicidality has varied from a low of 3% in 2011 to a high of 9% in 2017 and 2018. Fifth, the most common self-referral pathway identified in the case management database was "other" followed by self-referral and MATES connections. However, it is also important to note that no referral was made to a service provider in 22% of all cases. Sixth, case management is

relatively time intensive given the non-clinical nature of engagement, reflected in average number of days in case management, average number of case notes per client and average time spent by case managers directly with clients and indirectly updating files, following up with clients and referral services. A conservative estimate for 2018 suggest that case management costs MATES over $100,000 in case managers time in assisting clients. This is likely to be an underestimate at it does not reflect administration, infrastructure or maintenance costs of delivering the service. Other research suggests that the more severe the problem the longer the time taken to recover and return to duties and the higher the economic cost to employees, employers and the government. Doran et al (2016) estimated the economic cost of suicide and non-fatal suicidal behaviour in the Australian Construction Industry at $1.57 billion[23].

The results from the exit survey obtained by case managers indicate that clients appreciate the MATES case management service. Although the survey was limited to only fourteen respondents in Queensland, clients agreed that MATES services were appropriate in meeting their needs, the nature of their concerns were met, and that they would recommend the service to co-workers, family and friends. Clients also appreciated the pro-active nature of case managers in checking in and making sure clients stayed positive and focussed on finding a positive way forward. It is important to note that there might have been the potential for response bias as the survey was administered by case managers to clients who may have felt obliged to provide a positive response. Further, the results may not reflect the views of clients that may have dropped out after initial contact with case managers.

The findings from the descriptive analysis and exit survey paint a positive picture of MATES and reinforce the important role case managers play in managing psychosocial distress in the construction industry. However, some of the findings suggest there is room for improvement in data collection and service delivery. First, the large proportion of other or unknown responses related to occupation and pathways to and from MATES case management services, potentially dilute the usefulness of the information recorded. The extensive list of presenting issue options (appendix A) and wide range of referral providers (appendix B) is overly complex and would benefit from streamlined classification. To a large extent, the case management database has evolved over time and has been modified according to legislative and reporting requirements. It may be timely to conduct a thorough review of information captured to ensure it is timely, relevant and useful. This is akin to the quality assessment process that MATES use to update the case management handbook[20]. Second, the case management database currently does not take advantage of data collected from other MATES initiatives such as GAT, Connector or ASIST training programs.

These programs / initiatives collect a range of data on knowledge, attitudes and behaviour. Scope may exist to or link this information into one central repository to provide a better understanding of the client's journey from first contact to subsequent care. Third, 22% of clients were referred to MATES case management by another MATES service. Out of those referred by MATES, 59% were referred by Connectors, 38% were referred by those with GAT and only 2% were referred by those who had undertaken ASIST training. These findings reinforce the value of MATES training and the important role Connectors are playing within the workforce. Fourth, although Converge International was the preferred service provider, each client may have different needs. There was some evidence of tailoring of referral pathways, for example, clients who were referred to an alcohol or drug service or medical service were more likely to have presented with mental health or suicide related concerns. A better understanding of clients (through additional data) and a better understanding of service providers (though better training or educational sessions provided by service providers) may be solutions to better match clients with the appropriate care required, irrespective of contractual arrangements between MATES and Converge International. Fifth, there may be benefit to MATES, for both service delivery and evaluative purposes, in better understanding the mental health, substance use and overall health of clients during initial contact (or as soon as practicable thereafter), and overtime (e.g., 3-6 months post-initiation). There are a range of easy to implement evidence-based measures available, including the Kessler tests of psychological distress;[29] AUDIT or DUDIT tests for alcohol or drug use (3-10 questions depending on version used);[30, 31] and self-rated health using one question. Finally, given the objective of MATES is to reduce the high level of suicide among Australian construction workers, it is timely to consider the impact case management (and indeed, all MATES programs) may have on client's quality of life, workplace safety and economic benefits.

Recommendations

- Conduct an audit of the case management database to ensure data collected is timely, relevant, useful and in line with best practice and Industry standards.
- Develop a central repository that links data collected from MATES initiatives such as training programs (GAT, Connector, ASIST), case management and, where appropriate, referral agencies (Converge International).
- Revisit MATES case management model to strengthen safety planning and involvement with significant others.

- Review the cost structure of MATES initiatives to ensure appropriate costing of case management.
- Implement a range of evidence-based measures to monitor health of clients during their MATES journey.
- Evaluate the economic benefit of MATES initiatives (including case management) on client's quality of life, workplace productivity and Industry performance.

References

1. Gullestrup J, Lequertier B, Martin G. MATES in Construction: Impact of a Multimodal, Community-Based Program for Suicide Prevention in the Construction Industry. Intern J Environ Res Pub Health. 2011;8:4180-96.
2. Martin G, Swannell S, Milner A, Gullestrup J. Mates in Construction Suicide Prevention Program: A Five Year Review. Journal of Community Medicine and Health Education. 2016;6(4):1-8.
3. Arkaeon. Course in Life Skills: Pilot Project Evaluation Final Report. Brisbane: MATES in Construction; 2011.
4. Australian Institute for Suicide Research and Prevention. An evaluation of the effectiveness of the Mates in Construction program: Results of a mixed-method, two-phase study. Brisbane: Griffith University; 2018.
5. Banks C. MATES in Construction: ASIST Workers Survey Report. Available online: Cate Banks Consulting in conjunction with Awareness Australia; 2013.
6. Collimore S. Evaluation of Fly the Flag 2016. Available online: Australian Catholic University; 2016.
7. Doran CM, Ling R, Gullestrup J, Swannell S, Milner A. The Impact of a Suicide Prevention Strategy on Reducing the Economic Cost of Suicide in the New South Wales Construction Industry. Crisis. 2016;37(2):121-9.
8. Ferguson M, Eaton H, Procter N. The Impact of Mates in Construction: A mixed-methods study of GAT and Connector Training in the South Australian Construction Industry. Adelaide: University of South Australia; 2017.
9. Footprints Market Research. MATES in Construction: Program Evaluation. Queensland: Footprints Market Research; 2012.
10. King T, Batterham P, Lingard H, Gullestrup J, Lockwood C, Harvey S, et al. Are Young Men Getting the Message? Age Differences in Suicide Prevention Literacy among Male Construction Workers. International Journal of Environmental Research and Public Health. 2019;16(475):1-12.

11. King T, Gullestrup J, Batterham P, Kelly B, Lockwood C, Lingard H, et al. Shifting Beliefs about Suicide: Pre-Post Evaluation of the Effectiveness of a Program for Workers in the Construction Industry. International Journal of Environmental Research and Public Health. 2018;15(2106):1-13.
12. De Leo D, Heller T. Intensive Case Management in Suicide Attempters Following Discharge from Inpatient Psychiatric Care. Australian Journal of Primary Health — Vol 13, No 3, December 2007. 2007;13(3):49-58.
13. Fernandez-Artamendi S, Al-Halabi S, Buron P, Rodriguez-Revuelta J, Garrido M, Gonzalez-Blanco L, et al. Prevention of recurrent suicidal behavior: Case management psychoeducation. Psicothema. 2019;31(2):107-13.
14. Furuno T, Nakagawa M, Hino K, Yamada T, Kawashima Y, Matsuoka Y, et al. Effectiveness of assertive case management on repeat self-harm in patients admitted for suicide attmept: Findings from ACTION-J study. Journal of Affective Disorders. 2018;225:460-5.
15. Kim H, Park J, Kweon K, Ahn J. Short- and Long-term Effects of Case Management on Suicide Prevention among Individuals with Previous Suicide Attempts: a Survival Analysis. J Korean Medical Science. 2018;33(32):e203.
16. Miller I, Carmargo C, Arlas S, Sullivan A, Allen M, Goldstein A, et al. Suicide Prevention in an Emergency Department Population: The ED-SAFE Study. JAMA Psychiatry. 2017;74(6):563-70.
17. Petersen JJ, Hartig J, Paulitsch MA, Pagitz M, Mergenthal K, Rauck S, et al. Classes of depression symptom trajectories in patients with major depression receiving a collaborative care intervention. PLOS ONE. 2018;13(9):e0202245.
18. Shin H, Park G, In Y, Kim S, Kim H, Lee S. The effects of case management program completion on suicide risk among suicide attempters: A 5-year observational study. American Journal of Emergency Medicine. In press.
19. Wang L, Wu Y, Chen C. Is Case Management Effective for Long-Lasting Suicide Prevention? A Community Cohort Study in Northern Taiwan. Crisis. 2015;36(3):194-201.
20. MATES in Construction. MATES in Construction Case Management Handbook V2. Brisbane: MATES in Construction; 2019.
21. Australian Bureau of Statistics. Australian and New Zealand Standard Classification of Occupations. Cat. No. 1220.0. Canberra: ABS; 2018.
22. Ling R, Kelly B, Considine R, Tynan R, Searles A, Doran CM. The Economic Impact of Psychological Distress in the Australian Coal Mining Industry. J Occup. Environ Med. 2016;58(5):e171-e6.

23. Doran CM, Ling R, Milner A, Kinchin I. The economic cost of suicide and non-fatal suicidal behaviour in the Australian construction industry. Int J Men Health & Psych. 2016;2(4).
24. Safe Work Australia. The Cost of Work-Related Injury and Illness for Australian Employers, Workers, and the Community, 2012–2013. Canberra: Safe Work 2015.
25. Hilton M, Scuffham P, Vecchio N, Whiteford H. Using the interaction of mental health symptoms and treatment status to estimate lost employee productivity. Aust N Z J Psychiatry. 2010;44(2):151-61.
26. Milner A, Niven H, LaMontagne A. Suicide by occupational skill level in the Australian construction industry: data from 2001 to 2010. ANZJPH. 2014;38(3):281-5.
27. Milner A, Spittal MJ, Pirkis J, LaMontagne AD. Suicide by occupation: systematic review and meta-analysis. British J Psychiatry 2013;203:409–16.
28. Australian Bureau of Statistics. Causes of death, Australia. Catalogue number 3303.0 Canberra: ABS; 2018.
29. Kessler RC, Barker PR, Colpe LJ, Epstein JF, Gfroerer JC, Hiripi E, et al. Screening for serious mental illness in the general population. Arch Gen Psychiatry. 2003;60(2):184-9.
30. Berman AH, Bergman H, Palmstierna T, Schlyter F. DUDIT — The Drug Use Disorders Identification Test, MANUAL Version 1.1. Stockholm: Karolinska Institute, Department of Clinical Neuroscience, Section for Alcohol and Drug Dependence Research; 2007.
31. Saunders JB, Aasland OG, Babor TF, de la Puente JR, Grant M. Development of the Alcohol Use Disorders Screening Test (AUDIT). WHO collaborative project on early detection of persons with harmful alcohol consumption. Addition. 1993;88:791-804.

Appendix A – Presenting Issue Options

ID	Name
1	Financial
2	Relationship
3	Family
4	Work Related
5	Alcohol
6	Drugs
7	Inquiry
8	Legal
9	Personal injury/ Health
10	Anger
11	Employment
12	Suicide Ideation
13	Mental Health (Diagnosed)
14	Employer
15	Fatality/grief
16	Suicide Intervention
17	Training / Education
18	Accommodation
19	Past Issues
20	Issues re: Existing Service Provider
21	Past Abuse
22	Working Hours
23	Gambling
24	Employee Related
25	Mental Health (Undiagnosed)
26	Suicide Bereavement
27	Suicide Attempt
28	Disability (Intellectual/Physical)
29	Sexuality
30	CALD (Cultural & Linguistical Diverse)
31	First Australian
32	Veteran
33	Harassment
34	Bullying
35	Under Employed
36	Long / Irregular work hours
37	Grief
38	Fatality
39	Unemployed
40	Follow up

Appendix B - List of referring providers

Value	Text	EAP
1	PFG Financial Services	0
2	Converge International	1
3	Other Psychologist / Counsellor	0
4	Other Financial Services	0
5	Psychiatrist	0
6	Medical i.e.: GP	0
7	Human Services Organisation	0
8	Lawyer	0
9	Government Departments	0
10	Family	0
11	Union	0
12	Employer	0
13	Training Services Provider	0
14	Industry Funds (BERT, CIPQ, BUSSQ)	0
18	No Referral Required at this time	0
19	Couples Counselling	0
20	Legal Aid	0
21	Fair Work Australia	0
22	Workcover/ Workers compensation	0
23	Detoxification	0
24	ATODS	0
25	Rehabilitation	0
26	Alcoholics Anonymous	0
27	Drugs Anonymous	0
28	Gamblers Anonymous	0
29	Hospital	0
30	Police	0
31	Ambulance	0
32	Colleague	0
33	Veterans	0
34	Australian Defence Force	0
35	Emergency Shelter	0
36	Specialised Service (i.e. Children, Family, Disability)	0
37	Other	0
38	No referral required at this time	0
39	Unspecified	0
40	Medical	0
41	Windsor Management	0
42	No Referral Required	0
48	BSS Employee Assistance	1
49	IPS Worldwide	1
50	Optum	1

51	D'Accord	1
52	Workforce Wellbeing. com	1
53	Workforce Wellbeing.com	1
54	Acacia Connection	1
55	Employee Assistance Program	1
56	Drake Workwise	1
57	Partners in Recovery North Brisbane	0
58	Homeless Hotline	0
59	Acute Care Team QLD Health	0
60	Relationships Australia	0
61	Partners In Recovery Brisbane South	0
62	Drugarm	0
63	Mensline	0
64	Standby	0
65	Kids Helpline	0
66	DV Mensline	0
67	National Debt Helpline	0
68	Gambling Helpline	0
69	VAKS	0
70	Homeless persons information service	0
71	Lives lived well	0
72	headspace	0
73	Alcohol and Drug information service	0
74	Suicide Callback Service	0
75	Dads In Distress	0
76	Mens Shed	0
77	Beyondblue	0
78	Pregnancy Counseling Link	0
79	ParentLine	0
80	Triple P Parenting	0
81	Mental Health Care Plan	0
82	Apprenticeships Queensland	0
83	Misa	0
84	Living Well	0
85	NewAccess Beyondblue	0
86	Kidshelpline	0
87	Perinatal and Infant Mental Health	0
88	BlueKnot Foundation	0
89	LifeLine	0
90	Family Relationship Centre	0
91	Quitline	0
92	Caps Suicide	0
93	Assure	1
94	NSW Family Relationships Advice Line	0
95	Quihn	0
96	Family Drug Support	0

97	Acute Care Team Mental Health QLD	0
98	Mankind Project	0
99	Davidson Trahaire	1
100	1800Respect	0
101	Mens Rights Agency	0
102	Griefline	0
103	StandBy Response Service	0
104	Pathways Gold Coast	0
105	Bric Housing	0
106	Footprints	0
107	Centacare	0
108	Basic Rights Queensland	0
109	Mercy Services	0
110	Child Safety	0
111	Artius	0
112	National association for Loss and Grief (NSW)	0
113	Sands	0
114	Victims Counselling Support Services	0
115	Mens Wellbeing Common Ground	0
116	OpenArms	0
117	Gold Coast Youth Service	0
118	Brisbane Youth Service	0
119	Crohns Disease Support	0
120	Residential Tenancies Authority	0

Appendix C - Exit survey

Case Number:_____	Absolutely Yes	Yes	Maybe	No	Absolutely Not
Do you feel the nature of your concerns were met during the case management process?					
Were the referral services appropriate in meeting your needs					
Did you feel actively involved in the decision-making process?					
Do you consider that your medical, emotional, mental wellbeing and spiritual needs were addressed?					
Would you recommend Mates in Construction to co-workers, family and friends?					

Any comments about MATES or case management you would like to make:

_____

_____

_____