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Evaluation of an intervention for patients with alcohol-related injuries: results of a mixed methods study

Megan Whitty,^{1,2} Tricia Nagel,^{1,3} Linda Ward,¹ Rama Jayaraj,^{1,2} David Kavanagh⁴

In Australia, hospitalisation due to alcohol-related assault is significantly higher for Indigenous people.^{1,2} Recent clinical evidence supports the correlation between levels of intoxication and increased exposure to injury risk, including severe head trauma.³ Jaw fractures are particularly common among Indigenous patients at Royal Darwin Hospital (RDH), 83% of which are caused by assault.⁴ Many of these patients are itinerant or socially disadvantaged and access to health services is complicated by literacy, language, transport and financial challenges.⁵ Despite the availability of Indigenous-specific tools and guidelines,^{6,7} culturally adapted approaches to the detection and management of substance misuse are rarely provided.⁸ Furthermore, strategies that promote uptake of suitable interventions are under-researched.⁹⁻¹¹

Broadening access to treatment for alcohol misuse and follow-up pathways for those experiencing alcohol-related harm is important within a range of health settings. For this to be achieved within hospitals, health personnel require the skills to address client-related alcohol issues and need to work within a system that supports middle-level intervention activities such as alcohol screening and brief intervention (SBI).¹² The most common type of brief intervention (BI) involves short, structured feedback, information and advice on how to reduce harmful drinking.¹³ SBI is a validated¹⁴ and economical option that sits between universal prevention, on the one hand, and

Abstract

Objective: To explore the effect of education and training on the delivery of alcohol screening and brief intervention and referral to high-risk patients in a hospital setting. Main outcome measures included; delivery of training; practice change in relation to staff performing alcohol screening, brief intervention and referrals.

Methods: Observational study design using mixed methods set in a tertiary referral hospital. Pre-post assessment of medical records and semi-structured interviews with key informants.

Results: Routine screening for substance misuse (9% pre / 71.4% post) and wellbeing concerns (6.6% pre / 15 % post) was more frequent following the introduction of resources and staff participation in educational workshops. There was no evidence of a concomitant increase in delivery of brief intervention or referrals to services. Implementation challenges, including time constraints and staff attitudes, and enablers such as collaboration and visible pathways, were identified.

Conclusion: Rates of patient screening increased, however barriers to delivery of brief intervention and referrals remained. Implementation strategies targeting specific barriers and enablers to introducing interventions are both required to improve the application of secondary prevention for patients in acute settings.

Implications: Educational training, formalised liaison between services, systematised early intervention protocols, and continuous quality improvement processes will progress service delivery in this area.

Key words: alcohol screening, brief intervention, implementation, evaluation, Indigenous

specialist alcohol and other drug (AOD) treatment on the other.¹⁵

This paper reports on the effect of promoting primary care interventions on the delivery of alcohol SBI and referral to high-risk patients with alcohol-related injuries in a hospital setting. The impact of education and training workshops on rates of SBI and referral were evaluated with the support of the medical leadership within this specific health care culture. The study received approval from the Human Research Ethics Committee of the

Northern Territory Department of Health and the Menzies School of Health Research (HREC-2011-1553).

Methods

Design

The study was an uncontrolled pre-post dissemination trial that commenced in 2011. A mixed methods approach was used, including audits of medical records and semi-structured interviews with key

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informants at baseline and follow-up. Triangulation of qualitative and quantitative data was undertaken.

Intervention

A best practice pathway and resources detailing four steps to care were developed by a consultant psychiatrist (second author) and the hospitals AOD clinical nurse consultant in consultation with the multidisciplinary research team, an expert reference group and an Indigenous reference group.¹⁶ Links to resources developed can be viewed on the Menzies website (<http://www.menzies.edu.au/page/Research/Projects/Alcohol/PACT/>).

This pathway outlined key steps in early intervention for those identified with likely comorbid wellbeing concerns (screening, assessment, brief intervention and referral) and associated time frames (admission, during inpatient stay and discharge). Recommended screening tools included the AUDIT C, Trauma Screen Questionnaire and reference to the relevant AOD section of the hospital's General Adult Multi-disciplinary Tool. Six hospital-based workshops were delivered by the consultants who designed the best practice pathway for RDH medical, surgical and nursing departments and involved presentations by allied health staff and community-based AOD and mental health services. The education and skills training workshops were one hour long and covered screening, brief alcohol-focused interventions and referral to specialist services. Results from an evaluation of the workshops are reported elsewhere.¹⁷

Data collection

Quantitative data were collected to measure the impact of the education and training workshops on routine practice, whereas qualitative data assisted in constructing an ethnographically rich picture of the issues affecting the dissemination of AOD secondary prevention programs in the context of the hospital. By understanding the emic perspectives of health care workers in the field, barriers to implementation can be deconstructed and empirically based recommendations for improving real world implementation can be made.

File audits

Procedure: The file audits aimed to extract evidence of alcohol screening in patients

treated for maxillofacial trauma and the clinical actions that were taken when a patient screened positive and was identified as 'at risk'. An audit data collection form was developed, together with definitions of audit items. Outcome measures included the proportion of eligible clients and baseline versus post-intervention with: i) general demographic information; ii) admission details; iii) screening and assessment for AOD use; and iv) screening and assessment for wellbeing concerns. Closed-ended questions were used and a clinical audit database was created for data storage and analysis purposes.

To obtain the appropriate files, a report of all patient admissions within the two selected six-month periods (1 June 2010 – 31 December 2010 and 1 February 2012 – 31 July 2012) was requested from hospital records. The baseline period preceded study commencement and there was no crossover with other interventions in the same setting that could confound results. The post intervention file audit was timed to capture changes in practice after the workshops.

Alternating files on patients admitted for maxillofacial injury were requested from RDH archives. Some files were not obtained despite two requests (five at Baseline, eleven at Post). These were recorded as 'missing files' and excluded. There was no significant difference between pre- and post-intervention samples. A check to ensure that the Baseline and post-intervention samples were independent resulted in the loss of a further nine files from consideration. All extracted data were de-identified. The accuracy of audit data was validated by an independent check of 10% of data entered.

Analysis: File audit data were stored in a Microsoft Access database and analysed using Stata version 12.¹⁸ Changes from baseline to post intervention were detected using descriptive and inferential statistics. Statistical significance was determined as $p < 0.05$.

Interviews

Procedure: Key informants were identified based on the relevance of their role to study objectives and the ability to inform main outcome measures. Staff involved in assessing and documenting patient episodes were targeted. Snowball sampling was used to recruit key informants from specialist surgical and inpatient units. The interviews were semi-structured, electronically recorded

and lasted around 45 minutes. Interviews were transcribed and textually analysed to identify common response themes. Post-training interviews revisited issues covered in the baseline interviews, explored practitioners' perceptions and experiences of barriers and enablers to alcohol SBI and referral, and examined perceived changes in clinical practice.

Analysis: Steps included: 1) coding transcribed data; 2) grouping into thematic categories; 3) extracting significant statements; 4) thematic mapping; and 5) corroborating findings. Initial codes were identified and a codebook was developed with the frequency of each code being calculated manually. Co-occurring codes were grouped and inductive categories were tabulated. Themes with insufficient data to support them were discarded. Thematic analysis was undertaken to consider and interpret findings within each theme and then across all data. A thematic matrix was used to identify connections and pictorially depict relationships. The qualitative data was corroborated through a process of feedback and discussion within the research team.

Triangulation analyses: This paper presents the triangulated quantitative and qualitative data collected at follow-up. A framework informed by process evaluation theory was used to assess the multiple data sets as a group.¹⁹ Program logic and concurrent triangulation strategies were employed to structure data analysis (see Figure 1). Qualitative responses and quantitative data were compared to determine differences and convergences.²⁰

Results

File audits

Demographic characteristics of the sample are presented in Table 1. Most patients identified as Indigenous at baseline and follow-up. Indigenous men, on average, were more at risk of sustaining a facial injury than their non-Indigenous counterparts. Injury secondary to assault was the most common cause for admission, and alcohol was a contributing factor in the majority of cases.

The results in Table 2 indicate an increase in screening for AOD issues using a standard tool from 9% at baseline to 81% at follow-up ($p=0.001$). Informal screening for AOD issues, reflected in the recording of an AOD concern in patient files, also increased significantly from 57% to 84%. Screening for emotional wellbeing showed moderate

Table 1: Demographic and admission characteristics.

	Baseline (%) n=76	Follow up (%) n=68
Gender		
Male	56 (74)	53 (78)
Female	20 (26)	15 (22)
Ethnicity		
Indigenous ^a	48 (63)	47 (69)
Non-Indigenous	28 (37)	21 (31)
Marital status		
Single	53 (70)	51 (75)
Married	20 (26)	13 (19)
Other	3 (4)	4 (6)
Residence		
Urban	41 (54)	32 (47)
Rural	33 (43)	34 (50)
Remote	2 (3)	2 (3)
Alcohol-related admission	46 (61)	50 (74)
Recorded BAL^b	6 (8)	3 (4)
Mechanism of injury		
Fall	6 (8)	4 (6)
MVA ^c	3 (4)	2 (3)
Assault	60 (79)	53 (78)
Domestic violence	5 (7)	3 (4)
Sporting	2 (3)	1 (1)
Other	0	4 (6)

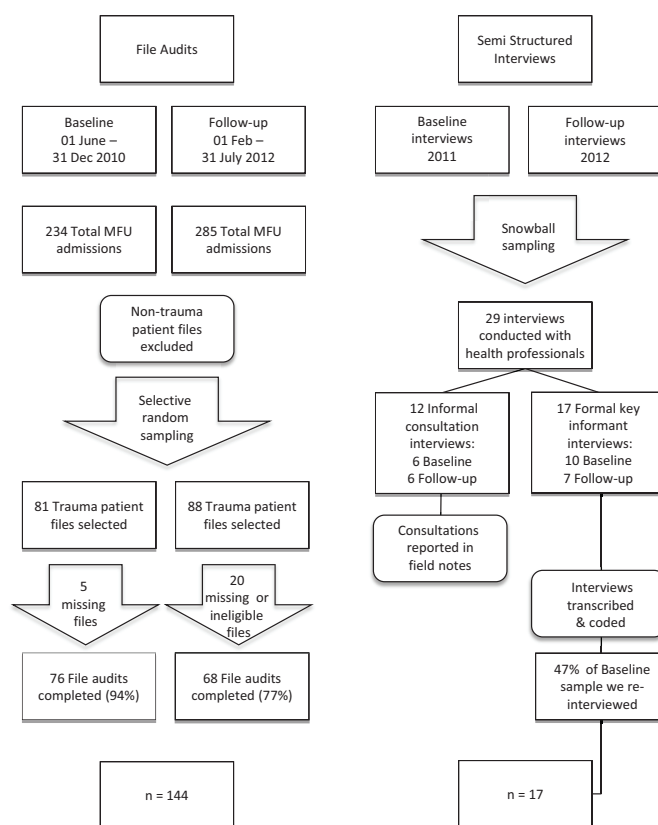
NB: Percentages calculated to 2 decimal places
a. Indigenous: Aboriginal and/or Torres Strait Islander
b. BAC: Blood alcohol level
c. MVA: Motor vehicle accident

improvement from 7% at baseline to 18% at follow-up ($p=0.037$). The General Adult Multi-disciplinary Admission/Discharge Tool was being completed with more consistency in the follow-up audit, particularly the assessment criteria for lifestyle factors, where alcohol intake and other drug use was officially recorded by nurses. However, both baseline and follow-up data showed limited documentation of brief interventions or referrals to AOD/mental health services for 'at-risk' patients. The most common recorded response was referral to internal allied health services, which decreased in the follow-up audit (see Figure 2).

Follow-up interviews

Qualitative analysis produced several main themes; key concepts are presented below. Baseline interviews revealed that general staff were more confident in identification of AOD misuse among patients than in referral or conducting brief interventions. Time constraints, insubstantial interagency networks, competing priorities and attitudinal barriers were key themes. More detail is reported elsewhere.¹⁷

Figure 1: Data collection and sample size at baseline and follow-up participants.



Clinical environment

Time constraints, busy workloads, competing clinical priorities, privacy concerns and high staff turnover were reported to inhibit the implementation of alcohol brief interventions and referral processes for high-risk patients in the hospital setting.

Patient characteristics

The challenges facing patient access to external services were cited as another set of barriers. These include: residence in regional or remote communities; transport issues; low literacy levels; and a lack of culturally specific services. Comorbid physical and wellbeing concerns can complicate referral to services. It was commonly perceived among staff that patients with alcohol-related problems rarely exhibit help-seeking behaviour, intensifying the difficulty associated with treatment and aftercare for this high-risk group.

Access issues

Accessing on-going care in the wider service setting was reported by hospital-based health professionals to be the biggest barrier to ongoing treatment. Explanations

for this included limited service capacity and underdeveloped referral networks. Specifically, health care practitioners reported a lack of: opportunities for timely assessment; appropriate referral options for patients; follow-up support; and confidence in inter-organisational networks. Scepticism over the ability of alcohol services to accept referrals was seen as the primary inhibiting factor.

Resource priorities

One of the most prominent themes was the perceived importance of increasing people resources in order to better manage alcohol-related problems in this busy clinical setting.

The biggest barrier is the referral process. Greater availability of services or a service that is based in the hospital would be much simpler... [than SBI as an individual staff directive] (Surgical registrar)

Coordination of assessment, brief interventions and referral within the maxillofacial unit was the most common recommendation for system improvement. Training targeted at key personnel within the hospital, such as the registrar, adolescent health nurse, Indigenous Liaison Officers and discharge planners, was also seen

as important in streamlining the referral process. Additionally, the importance of facilitating networks between the hospital and community-based services by promoting inter-personal connections between organisations was emphasised.

Inter-service relations

Frustration related to communication with community services and coordination of in-hospital assessment for at-risk patients

was commonly expressed. Low referral rates were ascribed to the belief that patient referrals were not being followed up or that services did not have the capacity to promptly respond to treatment requests. Some variability in referrals over time was perceived to be related to changes in the visibility of AOD staff within the inpatient units. A 'structured approach' to patient needs was suggested, incorporating routine checks by clinical management.

Networking

Informants from community services confirmed access as an issue, particularly for Indigenous and remote patients who were only briefly in hospital care and were difficult to follow up. However, most community service providers considered high staff turnover to be the main factor inhibiting access to treatment, not a lack of services themselves.

Having connections with people there at Royal Darwin Hospital really helps facilitate access... because of Darwin's transient population we find that once a connection is made it is often broken when that person leaves and that is a barrier. (Community service provider representative)

Referral agencies indicated that creating links with key hospital staff to strengthen strategic relationships between RDH and their services would ultimately enable pathways to care for post-trauma patients with underlying AOD or mental health issues.

Information sessions were helpful... but you would have to take that further... and look at ways [to] develop partnerships or build relationships. (Youth mental health service CEO)

Figure 2: Baseline and follow-up file audit data (SBI and referral practices).

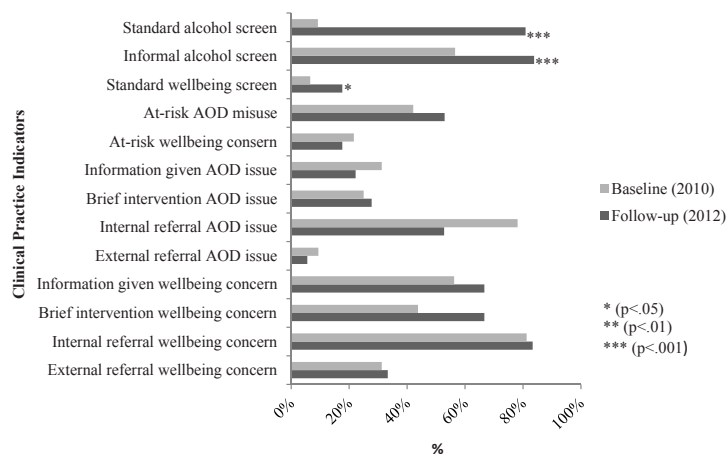


Table 2: Screening, brief intervention and referral practices.

	Baseline (n=76)	Follow-up (n=68)	p value
Screening activities			
Screen using a standard tool			
AOD ^a issue	9% (7)	81% (55)	≤0.001
Wellbeing screen	7% (5)	18% (12)	0.037
Record of AOD issue (informal screen)	57% (43)	84% (57)	≤0.001
Patient recorded at-risk			
AOD issue	42% (32)	53% (36)	0.193
Wellbeing concern	22% (16)	18% (12)	0.552
Clinical action taken for patients at-risk of AOD issues (n=32 / n=36)			
Information given	31% (10)	22% (8)	0.528
Brief intervention conducted	25% (8)	28% (10)	0.688
Internal referral (one or more services)	78% (25)	53% (19)	0.077
AOD	9	19	
Social work	17	9	
ILO ^b	11	5	
Domestic Violence	0	11	
Psych	3	1	
External referral	9% (3)	6% (2)	0.616
Clinical action taken for patients at-risk of wellbeing concerns (n=16 / n=12)			
Information given	56% (9)	67% (8)	0.384
Brief intervention conducted	44% (7)	67% (8)	0.137
Internal referral (one or more services)	81% (13)	83% (10)	0.488
Social worker	19	21	
ILO	5	5	
Domestic violence	0	16	
Psych	11	2	
External referral	31% (5)	33% (4)	0.782

a: Alcohol and other drugs
b: Indigenous Liaison Officer

Overall, the education and training workshops were reported to have raised staff awareness about the prevalence of alcohol issues and wellbeing concerns among trauma patients. The workshops and resources were considered useful tools for educating staff about available services and culturally appropriate strategies for engaging Indigenous patients. However, only a slight increase in referrals was thought to have occurred as a result of the educational intervention.

Data saturation was reached. The goal was to obtain an understanding of service provider perceptions in relation to at-risk patient management and improving access to treatment. However, the extent to which these perceptions were based on personal experience or more conjecture is not easily defined.²¹ The results reflect an interpretation of perceptions and attitudes expressed by interviewees that are interrelated and context specific, rather than isolated concepts. Understanding these issues is critical to designing appropriate and effective coordinated care models for this high-risk patient group.

Between-method triangulation

We used multiple data collection methods to elicit a more in-depth understanding of a complicated phenomenon. Triangulation of qualitative and quantitative data was used to minimise the respective shortcomings of each approach and compensate for this by applying the methodological strengths of the other approach.²² File audits were conducted to provide statistical evidence of any change in practice and to mediate the subjectivity of using qualitative data alone. Together, the data show an increased awareness of alcohol and wellbeing concerns in post-trauma patients after the education and training workshops. This corresponded with improved use of existing resources and an appreciation of newly available culturally adapted tools. Although we cannot report on behavioural changes among staff, the file audit data provide evidence that some change in clinical behaviour took place. Interviewees' comments regarding the over-representation of Indigenous people from remote communities in this patient group was reflected in the documented admission data from the file audits. Follow-up interviews also confirmed audit data that showed screening had increased, but the provision of opportunistic brief interventions remained limited and was still considered by some to be an activity for trained AOD staff. The theme of access as a barrier established through qualitative methods was reflected in the limited number of recorded referrals from quantitative findings within the file audit. Despite being strongly supported as best practice and identified as important early intervention strategies, few interventions and referrals were recorded.

Conclusion

This study's findings support the assertion that the incidence of alcohol-related injury and subsequent hospital admission caused by assault is high among facial trauma patients at RDH, particularly among young Indigenous men.

This study adapted education and training workshops to the local setting by collaborating with key stakeholders and targeting specific service provider groups in accordance with recommended implementation techniques.^{9,15}

The interviews with service providers revealed important issues affecting the implementation

of SBI in the local setting. The data also reinforced barrier and enabler themes that have emerged from other qualitative research in the field and appear to be common across tertiary care. These include: time limitations; attitudinal barriers; inadequate knowledge and skills among health care providers; and insufficient resources.^{13,15,23} The educational intervention increased awareness of alcohol-related concerns and alcohol treatment options, including brief interventions. File audits confirmed that screening is generally accepted as a component of comprehensive patient assessment and management in hospital.

The study identified two strategies that promote screening and referral: 1) networking between services and hospital staff; and 2) development of collaborative relationships. Other enablers of change were noted to be cultural adaptation of resources and training, and clear, accessible referral pathways including the visible presence of relevant specialised services within ED and clinic settings.

The increase in standardised screening indicates an improvement in evidence-based practice, while the increase in informal screening in patient files indicates improvement in an awareness of the need to screen for alcohol. Low rates of documented brief interventions imply that the delivery of opportunistic brief interventions is limited and its documentation inconsistent. Methodological triangulation offers insights into why this occurred and suggests that, while there is clearly a recording component to the issue, there is a range of other complexities.²⁴

A key barrier to changing practice was ongoing doubt about the perceived effectiveness of brief interventions in everyday practice. Despite empirical evidence that brief feedback by a respected medical professional can be a catalyst for changing consumption patterns following alcohol-related injury,^{14,25} brief interventions tended to be viewed as a task reserved for specialists. Consistent with research conducted by Clifford and associates, a further-identified barrier to early intervention was a perceived lack of alcohol treatment referral options. This perception could reflect a limited understanding of (or confidence in) brief interventions as an "effective alcohol treatment in itself"²¹ in spite of it being widely recognised in the literature as an important secondary prevention opportunity.

Also relevant to this context, and reflected in previous research, is the impact of organisational factors such as "readiness to change"²⁶ or the presence of a degree of "institutional inertia"²⁷ in terms of altering and/or integrating existing networks and resources upon the implementation of new early intervention pathways in this setting.²⁸ There was a tendency for staff to expect new activities to be conducted by the research team rather than to be integrated into their own routine practices. Although there was no detectable change in documented brief interventions or referrals during this study, it is likely that the newly developed pamphlets were being distributed at that time. These culturally adapted resources were well received by hospital staff and community AOD service networks and feedback has indicated their continued use.

Contrasting with the limited interventions implemented for at-risk drinkers, those traditionally defined as 'heavy' or 'problem' drinkers (and who exhibit symptoms associated with alcohol-related diseases) are more likely to be systematically identified and treated.¹⁵ File audit findings reflect a reliable adherence to alcohol withdrawal monitoring protocols¹⁵ and anecdotal evidence extracted from quantitative data reveals a greater reluctance among staff to intervene for those with binge drinking patterns than for those with problem drinking behaviour. This is cause for concern given that binge drinkers (i.e. patients targeted in this study) respond better to brief, hospital-based interventions aimed at addressing their high-risk alcohol use and that intervention can prevent exposure to lifetime risk.

Limitations

This study had a few key limitations, one being the pre-post-test study design and its impact on the extent to which changes can be attributed to the intervention or other factors. The inter-rater reliability of audit data was not independently validated and only provides evidence of what was recorded in the patient files. Informant and group discussions; however, indicated that brief intervention usually equates to verbal advice and/or the distribution of information, which is often not recorded. Furthermore, the audit findings are affected by several confounding factors such as the changing availability of different services within the hospital, staff turnover and the introduction of a separate automated prompt system within the

Maxillofacial Surgery Unit. Further refinement of standardised training effectiveness measures for detecting SBI frequency rates would greatly assist evaluations of this type in future.^{29,30}

Implications

Dissemination challenges in AOD and SBI research translation are well known. The next step is researching tangible strategies for improvement. This study represents an effort to move away from the tendency to simply discuss the issues in descriptive style in favour of offering a contribution to evidence-based implementation approaches using mixed methods.^{10,31,32} It demonstrated that increased attention to the problem of high-risk alcohol misuse among trauma patients can lead to improved awareness and screening for such problems, while having less impact on delivery of brief interventions by hospital staff. The results allow enablers to implementation to be identified from the outset and barriers such as staff attitudes and resource issues to be specifically targeted to ensure improved sustainability and maximise use of limited resources within busy hospital settings. Increased screening is an encouraging demonstration of the possibility of sustained practice change, but systemic change is needed to increase external referrals through effective relationship building and inter-agency networks.

Recommendations

Key identified barriers to early intervention, such as limited staff awareness and confidence, attitudinal resistance, and the lack of systematised screening and supporting protocols and guidelines can be addressed through undergraduate and ongoing in-service training, more stringent endorsement from upper management and quality improvement processes. Systematising linkages between available training AOD internal services and hospital specialist clinics and formalising liaison services with external AOD services will also assist in continuity of care. Alcohol and assault-related facial injuries are particularly common among Indigenous, itinerant or socially disadvantaged people whose access to health services is complicated by literacy, language, transport and financial challenges. Adapting AOD training and resources within hospital and undergraduate settings to the needs of this vulnerable group is pivotal to

broadening access to early intervention and effective treatment.

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