A rapid review of emergency department interventions for children and young people presenting with suicidal ideation

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Title: A rapid review of emergency department interventions for children and young people presenting with suicidal ideation

Short title: Emergency intervention for youth suicidal ideation

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Abstract

Background
Suicidal ideation is an increasingly common presentation to the paediatric emergency department (PED). The presence of suicidal ideation is linked to acute psychiatric hospitalisation and increased risk of suicide. PED has a critical role in reducing risk of suicide, strengthening protective factors, and encouraging patient engagement with ongoing care.

Aims
This rapid review aims to synthesise evidence on interventions that can be implemented in the PED for children and adolescents presenting with suicidal ideation.

Methods
Six electronic databases were searched: PubMed, Web of Science, MEDLINE, PsycINFO, CINAHL and Cochrane for studies published since January 2010. Outcomes of interest included suicidal ideation, engagement with outpatient services, incidence of depressive symptoms, hopelessness, family empowerment, hospitalisation and feasibility of interventions. The Cochrane Risk of Bias Tool was used to evaluate the quality of studies. The protocol for this rapid review was pre-registered with PROSPERO (CRD42021225364).

Results
Six studies of PED-initiated family-based (n=4) and motivational interviewing interventions (n=2) were narratively reviewed. The studies were mainly small and of variable quality. The evidence synthesis suggests that both types of intervention, when PED-initiated, reduce suicidal ideation and improve patient engagement with outpatient services. Family-based interventions also showed a reduction in suicidality, family empowerment, improvement in hopelessness and depressive symptoms.

Conclusions
PED-initiated interventions are crucial to reduce suicidal ideation and risk of suicide, and to enhance ongoing engagement with outpatient services. Further research is needed; however, current findings suggest family-based and motivational interviewing interventions could be feasibly and effectively implemented in the PED setting.
Key Words: suicidal ideation; management; emergency department; children; adolescence

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Ethics Statement: Ethical approval not required.
Introduction

The paediatric emergency department (PED) plays an integral role in ensuring children and adolescents at risk of suicide have timely access to appropriate resources. Suicide rates have increased in adolescents aged 15-19 years old from 3.1 to 5.7/100,000 between 2010 and 2019 in the UK (1). Approximately 13% of 5-19-year-olds have at least one mental disorder (2,3); mental health presentations to a UK emergency care centre have increased threefold compared to 2019 and the most common reason for referral to Child and Adolescent Mental Health Services (CAMHS) in 13-17-year-olds was due to intentional overdose or deliberate self-harm (3). In 2018, there were 204 suicides recorded in England and Wales in young people aged 10-19 years old (4). Suicide denotes ‘the act of intentionally ending one’s life’ (5). Mental health problems among children and young people appear to be increasing, as does suicidal ideation. Moreover, in early 2020, the Coronavirus Disease 2019 (COVID-19) pandemic began to place an additional significant burden on child mental health and substantially impact psychosocial development (6). In Ireland, mental health attendances to PED initially decreased by 26.8% during the first four months of the pandemic; by July and August mental health presentations increased by 54.4% and 45.5% from September to December compared to 2019 data, highlighting the impact of COVID-19 on child mental health (7). Although the strongest predictor for suicide remains a previous suicide attempt, a third of adolescents who experience suicidal ideation for the first time go on to attempt suicide (8,9). Consequently, it is imperative to ensure that interventions offered to children and young people presenting to PED are beneficial. Furthermore, the risk of a repeated suicide attempt is the highest during the first six months after a suicide attempt, which emphasises the importance of providing interventions that have a long-lasting effect, and of the need for robust follow-up post-discharge from PED (10,11).

A presentation of suicidal ideation has been considered as the most important sign of short-term suicide risk and warrants an in-depth clinical assessment (5). Studies have found talking about suicide does not inadvertently create risk and may lead to a reduction in distress in individuals who are experiencing suicidal thoughts (12). However, suicidal intent is difficult to measure and a proportion of suicides occur as a result of individuals misjudging the risk (5). Children understand the concept of suicide and death as permanent by the age of eight (13), nevertheless, clinicians must sensitively assess suicidal cognitions in children by in the context of rapport and empathy, within an open discussion centred around patient wellbeing. Worryingly, 25% of patients presenting to the PED who did not declare suicidal thoughts had suicidal ideation (14) and children and young people who died by suicide did not necessarily express recent suicidal ideation (15). Unrecognised suicidal ideation may be due to insufficient time to explore patient wellbeing or a lack of mental health training within ED clinicians (14). The use of standardised screening tools is recommended (16). Results from a retrospective cohort study demonstrated that 53% of patients who presented to the PED with non-
suicidal complaints, when screened, were identified as having suicide risk(17). Nonetheless, patients with an absence of suicidal ideation should not be deemed as having a lower risk of suicide(5). Self-harm is common in young people and engagement in these behaviours can be strongly linked to suicide(18). Deliberate self-harm refers to ‘intentional self-injury without wanting to die’ and frequently involves cutting, scratching, hitting and drug overdose(19). A UK study highlighted that 44% of deaths in individuals who presented to the hospital with non-fatal self-harm were attributed to suicide within the 10-18 years age group over a 5-year follow up period(19). Thus, children and adolescents presenting to PED with suicidal ideation or self-harm should be considered at suicide risk.

Effective suicide prevention strategies must be informed by the identification of factors which influence suicidality and youth suicide risk(20,21). Suicide occurs as a result of a combination of genetic, biological and psychosocial factors(21). Suicide risk in adolescence is decreased in the context of support provision, family stability, a network of friends, a positive school environment and economic security(21). Common aetiologies for suicidal ideation in the PED include physical and mental health problems, family instability and violence, bullying and school failure, trauma and bereavement, and otherwise insufficient access to resources that aid in the development of coping skills(15,20,21). Mental health problems are perhaps the most closely associated risk factor with suicidality(22). A cohort study found children presenting with a combination of irritability, depressive and anxiety-related symptoms in childhood (6-12 years) were two times more likely to think about suicide or attempt suicide during adolescence (13-17 years), in comparison to those presenting with only irritability or depressive symptoms(23). This emphasises the importance of identifying symptoms in clinical settings and providing appropriate social and emotional support to children. Moreover, children with ASD and ADHD are at a greater risk of depression and suicidal behaviour as they progress to adulthood(24,25).

A universal screening tool has been proposed in a variety of medical settings including the PED, primary care and school-based clinics. There are no standardised risk assessment tools used in the UK, however, the implementation of screening may be critical in reducing suicide, particularly for patients who do not disclose suicidal thoughts. The National Institute for Health and Care Excellence (NICE) guidance advises clinicians to use a web-based tool ‘STOP’ to assess and monitor suicide risk in children(16). A study highlighted the benefits of using a suicide screening tool in the PED to help inform suicide prevention strategies. Ballard et al investigated the effectiveness of the Ask Suicide Screening Questionnaire (ASQ) on repeated PED visits(26). Results from the retrospective cohort study demonstrated 53% of patients who presented to the PED with non-suicidal complaints, screened positive for suicide risk(27,28). Moreover, chronic childhood illnesses are significantly associated with depression in adulthood, therefore addressing mental health presentations is important in reducing future suicide risk(28). Thus, screening tools that identify conditions such as ASD, ADHD and chronic
illnesses may serve as an essential technique for assessing suicide risk and referral for ED interventions(24).

Currently, patients presenting with suicidal ideation are reviewed, followed up or referred to outpatient services depending on clinical judgement(29). Longer-term outpatient treatments include psychological interventions such as cognitive behavioural therapy (CBT), family-based interventions (FI) and motivational interviewing (MI)(30). CBT is a goal-orientated therapy and involves collaboration between patients and psychotherapists to modify thought processes to facilitate change in mood(31). FI focus on family dynamics and educating parents on signs of suicide, crisis planning and providing information on services(32). MI is centred on helping patients change their behaviours through listening and shared decision making(33). However, implementing brief interventions in the PED where patients are at high risk of suicide may reduce short-term suicide risk and result in better engagement with outpatient follow-up(29). The WHO recommend brief interventions range from 5 minutes for brief advice and up to 30 minutes to include counselling(34). The Department of Health describes brief interventions as a vital approach for frontline workers to utilise with young people who may benefit from receiving information and aid in reducing harmful behaviours such as self-harm(29). Examples of brief interventions include informal discussions with youth, telephone services, one-to-one counselling within a youth program and providing information in general practice or ED to reduce harm(29).

The current review

Previous systematic reviews have been conducted on youth suicide prevention in a variety of settings, yet further research is necessary(35,36). The current review aimed to improve upon the 2010 review by Newton et al, by providing a new up-to-date systematic search and synthesis in line with PRISMA guidelines (35), and to improve upon the 2018 review by Robinson et al (34) by focusing on PED specific interventions (35,36). Therefore, in this review, we aimed to evaluate findings from brief interventions as well as other strategies that could be adapted within the PED and beneficial for managing suicidal ideation presentations. This review focuses on psychological intervention due to the rarity of primary research trials of pharmacological interventions with young people (37), and reported longer-term benefits of psychological interventions, including reducing the burden of ongoing mental health disorders into adulthood and improved quality of life, as highlighted in recent evidence(38,39). In addition, in light of the COVID-19 pandemic, mental health presentations to the PED are expected to continue exponentially, therefore a new review must be conducted to guide future suicide prevention(6). This review restricted focus to RCTs only as they are considered to provide the strongest test of whether an intervention has an effect(40)(41). Through focusing on patients recruited from the PED, it may be possible to determine the factors associated with the success of specific interventions in this context.
This rapid review aimed to synthesise evidence on management interventions for children and adolescents presenting to the PED with suicidal ideation. Outcomes of interest included suicidal ideation, depressive symptoms, hopelessness, family empowerment, hospitalisation, feasibility of the intervention and use of outpatient services and follow-up treatment to ascertain whether interventions improved suicidality.

The specific research questions were:

1. What interventions have been used with children and adolescents presenting to the PED with suicidal ideation?

2. What is the evidence for benefit of these interventions on suicidal ideation, associated mental health symptoms and engagement with outpatient services?

**Methods**

This rapid review (42,43) was conducted in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and conformed to the steps outlined in the 2009 PRISMA checklist (44). The protocol for this rapid review was pre-registered with PROSPERO on the 3rd February 2021 (Reference: CRD42021225364).

**Search Strategy**

Six databases were searched on the 17th December 2020: PubMed, Web of Science, MEDLINE, PsycINFO, CINAHL and Cochrane. Other studies within the bibliography section of included studies were not searched. Medical Subject Headings (MeSH) was used to screen titles, abstracts and keywords: “suicidal ideation”, “emergency department”, “children”, “adolescents” and “management”. Search terms were combined using the Boolean operators “AND” and “OR”. The search was restricted to articles published after January 2010. Filters including free full-text, 10 years publication date and English language were applied to the search results and the full search is outlined in the supplementary files.

**Selection Process**

Articles were sought which reported an evaluation of any psychological/psychosocial/non-pharmacological intervention used with children or young people in the PED setting. Full inclusion and exclusion criteria are provided in Table 1.

[INSERT TABLE ONE HERE]
Database search results were exported into the Mendeley software for screening using the inclusion and exclusion criteria. The first author screened all records at title/abstract stage and full text stage. The second author reviewed all full-text articles independently to determine the articles for final inclusion in the review.

Data Extraction
Data were extracted by the first author using a customised excel spreadsheet. The following data were extracted: study details, design, methods, participants, intervention and outcomes, including statistical significance. Study investigators were contacted for further information, clarification or missing information as necessary.

Analysis
Due to a limited number of included studies and significant heterogeneity between outcome measures and intervention content, a full meta-analysis or sensitivity analysis was not appropriate. Therefore, studies were grouped by intervention and a range of outcome measures were analysed through narrative synthesis (43,45) using synthesis without meta-analysis (SWiM) guidelines(46).

Quality Assessment
The Cochrane Risk of Bias Checklist (CRBT) for RCTs was used to evaluate the quality of the included studies(47). The studies were classified into “low risk of bias”, “high risk of bias” or “unclear risk of bias” an algorithm generated by the CRBT tool that highlights features of the trial that are at risk of bias. The second author assessed the quality of studies independently.

Results
Study Selection
The initial literature search yielded a total of 948 articles: 33 articles were published in PubMed, 100 in Web of Science, 153 in MedLine, 569 in PsycINFO, 77 in CINAHL and 16 in Cochrane, outlined in the PRISMA flowchart (Figure 1). After duplicates were removed, 856 articles were screened at the title/abstract stage. At full text stage, 17 articles were screened by the first and second author. A total of 6 articles met the criteria for final inclusion in the review.

Study Characteristics
The study characteristics for the six included studies(48–53) are outlined in Table 2. All studies were published between 2010 and 2019. All included studies were conducted and published in the USA. Study sample sizes varied across all studies; the largest sample comprised 181 participants and the smallest sample included 49 participants. Participants were aged between 10-19 years. All studies took place in clinical settings (48,50–54) recruited all participants in the PED setting. Participants were
excluded from studies if they had signs of active psychosis, were requiring psychiatric hospitalisation or had been recently discharged from hospital.

The studies evaluated FI (n=4) and MI (n=2). Three FI studies conducted a brief intervention in PED followed by longer term sessions post-discharge as therapy. One FI study conducted all stages of the RCT in the Department of Psychiatry at the Children’s Hospital in Philadelphia. The MI studies took place as brief interventions in the PED including follow-up telephone calls post-discharge. Control conditions in the studies included provider education, a brief mental health referral, facilitated referrals, crisis cards and ongoing monitoring. Outcome measures differed between studies, measures included a short-term risk of suicidal behaviour, motivation to seek follow-up treatment, suicidal ideation, depressive symptoms, family empowerment, hospitalisation and feasibility of interventions. Study follow-up durations varied between 2, 3 and 6 months. Hughes et al did not comment on the study source of funding, however all other included studies were funded via health research grants.

**Study Quality**

The CRBT tool was used to assess the quality of included studies. Figure 2 summarises the risk of bias assessments(47). Two studies were assessed as a low risk of bias (47, 48). Two studies were assessed as unclear risk of bias due to the lack of information regarding randomisation, allocation concealment, blinding of outcome assessors and incomplete outcome data(48,51). Two studies were given a high risk of bias; one study had missing data without explanations(44,45).
Type of intervention

**Family-based interventions**

Four studies investigated the impact of FI interventions on suicidal adolescents. The nature, content, duration, outcomes and follow-up period were variable across these four studies (48–50, 53). Two studies explored the Family Intervention for Suicide Prevention (FISP) ED intervention, which included telephone contact post-discharge to motivate participants to engage with outpatient services (50, 53). The FISP intervention by Asarnow et al involved a brief youth and family session in the PED focusing on educating families and developing a safety plan for future crises, delivered by clinicians with graduate mental health training who received didactic training with role playing (53). Following this session structured telephone contacts were made to youth to motivate and support outpatient treatment within 48 hours of discharge (53). Additional contacts were made at 1, 2- and 4-weeks post-discharge. Hughes et al designed the FISP intervention as a brief youth and family therapy session delivered in the ED. The full FISP intervention was delivered to 80.9% of participants in ED, for youth discharged prior to completion of the FISP had the intervention delivered on inpatient units after transfer from ED (12.4%), other community locations (3.4%) or via phone (2.4%) (53). Youth were discharged with a safety plan card with coping strategies and useful contacts (53). The intervention was delivered by clinicians with graduate training in psychology, social work, psychiatry or a related mental health field (53). Youth were contacted via telephone within 48 hours of discharge and additional contacts were made at 1, 2- and 4-weeks post-discharge (53). Diamond et al investigated an intervention, referred to as Attention-Based Family Therapy (ABFT), that focused on strengthening parent-adolescent bonds through face-to-face sessions and was delivered by PhD or Master of Social Work level therapists who were trained by two of the study authors (49). Participants completed 5 tasks within 6-8 sessions that promoted family connectedness and adolescent autonomy (49). Parents were present for 4-6 sessions and adolescents completed 2 tasks alone (49). Wharff et al investigated the Family-Based Crisis Intervention (FBCI), designed to take place in ED and was delivered by trained psychiatric social workers (48). This involved psychiatric evaluation including a 60-90-minute session helping families with psychoeducation and safety planning (48). Participant follow-up durations differed between studies from 2, 3 and 6 months (48–50, 53).

**Motivational Interviewing interventions**

Two studies examined the effects of MI on suicidal adolescents; Grupp-Phelan et al also explored the impact of MI on treatment initiation and attendance within 2 months of discharge from the PED (51, 52). The nature of MI intervention differed between the two studies however both interventions took place within the PED. The study by Grupp-Phelan et al involved four brief MI
sessions delivered to the adolescent and parent by trained social workers that targeted mental health care-seeking behaviour, barrier reduction discussion and referral(52). The adolescent and parent were interviewed alone for the first session; subsequent sessions involved adolescent and parent together to discuss mental health options, potential barriers and next steps(52). After these sessions, participants received 1 or 2 follow-up telephone calls to discuss potential problems within their outpatient mental health treatment(52). Participants were followed up at 2 and 6 months(52). In the King et al study, participants received a 35-40 minutes MI session with a certified MI mental health professional and a handwritten note from their therapist 2-5 days post-discharge; follow-up took place over 2 months(51). The study team also gave participants a crisis card for emergency suicidal support contacts and written information regarding depression, suicide risk, firearm safety and local mental health services(51).

Outcomes of interventions

Suicidal Ideation

Five studies examined the impact of interventions on suicidal ideation and outcome measures varied across studies (48,49,51–53). One study measured suicidal ideation using the Harkavy Hasnis Scale to assess active and passive suicidal ideation(53). Three studies used the Suicidal Ideation Questionnaire-Junior (SIQ-Jr) to assess suicidal ideation (48,51,52). One study measured change over time in adolescent suicidality (RFL-A)(48). Asarnow et al evaluated suicidality as an exploratory outcome; results illustrated no statistically significant intervention effects on suicidality(53). In the MI intervention by Grupp-Phelan et al, there was a significant decrease in suicidal ideation across groups(52). Diamond et al found a slightly higher rate of improvement due to a rapid reduction in suicidal ideation in the ABFT intervention group in comparison to the control group(49). At the end of the follow-up period, 82.1% of participants receiving the intervention reported no suicidal ideation in the past week compared to 46.2% of Enhanced Usual Care (EUC) participants(49). Over the 6-month follow-up, 4/35 intervention group participants (11.4%) compared to 7/33 (21.2%) EUC participants made a suicide attempt(49). King et al reported a significant decrease in time for suicidal ideation over the study period(51). Wharff et al reported increases in the mean RFL-A total scores over the study period, however there were no significant differences between the groups(48). This intervention illustrated that participants had lower levels of suicidality over time compared to their baseline assessment at 1-month follow up(48).
Depressive Symptoms and Hopelessness

Three studies explored the impact of the intervention on depressive symptoms (49,51,52). Diamond et al measured depression using the self-report Beck Depression Inventory (BDI-II) and results showed significant effects supported by large effect sizes(49). After treatment, at 6-month follow-up 54.8% of ABFT participants and 31.0% of EUC participants had non-clinical depression scores(49). The Reynolds Adolescent Depression Scale Short Form (RADS2:SF) was used by King et al to measure depression; Teen Option for Change (TOC) participants demonstrated a significant positive change in depression with a large effect size from baseline to follow-up(51). King et al also measured hopelessness using the Beck Hopelessness Scale (BHS) and results showed a moderate effect size for hopelessness (51). In contrast, Grupp-Phelan et al results showed no significant difference in depressive symptoms between STAT-ED and EUC groups(52).

Engagement with outpatient services

Two studies investigated the impact of interventions on engagement with outpatient services and treatment initiation(52,53). Grupp-Phelan et al explored treatment initiation and attendance. Exploratory outcomes showed no significant difference between Suicidal Teens Accessing Treatment After an Emergency Department Visit (STAT-ED) and EUC in the rate of mental health appointments at 2 months follow-up(52). However, by 6 months, follow-up participants in the STAT-ED group were more likely to initiate mental health treatment and the overall rate of mental health appointments were significantly higher in STAT-ED in comparison to EUC(52). Asarnow et al intervention included a telephone contact within 48 hours of discharge from the PED to motivate and support outpatient treatment(53). More FISP participants were likely to receive outpatient treatment and had significantly more visits in comparison to the control(53).

Family Empowerment

In one study, family empowerment was measured as an outcome(48). Scores were obtained using a 34 item self-report Family Empowerment Scale (FES) that measures the level of empowerment of parents of a child with emotional difficulties(48). The FES questionnaire is completed by parents to assesses family, child and parental involvement within the community(55). Parents answer questions such as “I feel I am a good parent”, “I make sure I stay in regular contact with professionals who are providing my child services” and “I have ideas about the ideal service system for children”(55). The scoring scale is rated from 1-5; 1 equates to ‘never’ and 5 to ‘very often’(55). Wharff et al reported higher scores for family empowerment during the study(48). At a 1-month follow-up, there were statistically significant increases in the FES(48).
Hospitalisation
One study evaluated the impact of the intervention on inpatient psychiatric hospitalisation (48). The FBCI demonstrated that participants randomised to the intervention were significantly less likely to be hospitalised compared to Treatment As Usual (TAU) (48). During the study, 68% of TAU participants were hospitalised however only 38% of FBCI participants were hospitalised (48).

Feasibility
Hughes et al conducted a follow-up study of Asarnow et al to ascertain the feasibility of delivering FISP in the PED (50, 53). Results showed that 80.9% received the intervention in PED, however, due to discharge, FISP was delivered on inpatient units (12.4%), in the community (3.4%) or by phone (2.2%) (50). In addition, 78.7% of FISP session were delivered with a parent and youth, however, 16.9% of FISP session were conducted with youth only as some youth were brought to the PED by ambulance or police without their parents (50). Phonecalls were made to youth to enhance motivation and support for follow-up treatment at 48 hours, 1, 2- and 4-weeks post-discharge, however 88.8% of youth received at least one telephone call (50). This highlights potential barriers that become apparent after discharge as successful contact with families requires clinicians and families to work together effectively. In addition, 3 participants withdrew from FBCI in the Wharff et al study and 10 participants were lost to follow-up due to being unable to reach by telephone (48). Similarly, 4 participants receiving TOC were discharged or left the hospital before MI took place; 3 participants were lost to follow-up (51).

Discussion
This rapid review aimed to investigate interventions used in the PED setting for children and adolescents presenting with suicidal ideation. Six studies met the review inclusion criteria. All studies were initiated in the PED. The studies provided evidence for the impact of these interventions on suicidal ideation (48–53). Studies also outlined positive effects of interventions on patient engagement with outpatient follow-up treatment, depressive symptoms, hopelessness, family empowerment, hospitalisation and intervention feasibility (48–53). Our study is the most recent and first rapid review to our knowledge, to focus on a broad range of outcome measures to support PED care for young people presenting with suicidal ideation, as well as identifying areas requiring further research.

Two potential interventions were identified in this review; four studies involved FI and two studies comprised of MI interventions (48–53). Overall, findings suggest FI are associated with a reduction in suicidal ideation, whereas evidence for the benefit of motivational interviewing is more equivocal. Overall, there is a lack of high-quality evidence due to several limitations within the included studies, therefore the conclusions should be drawn with caution.
Included studies that investigated the effects of FI on suicidal ideation consisted of dedicated sessions with families and patients in the PED to strengthen family bonds during a time of crisis. This is in keeping with a clinical review that highlighted early involvement of the family, formulation of risk evaluations and care based upon suicide risk and the availability of resources promote better outcomes(56). One study measured family empowerment and found statistically significant increases in the FES(48), thus it may be that the impact of family interventions is through the mechanism of empowering the family and mobilising family-based coping. Nonetheless, more high-quality studies investigating FI are required, with specific attention to the mechanisms of impact. However, a focus on family-based interventions must not detract from the importance of alternative intervention options in situations where family intervention may be inappropriate or unsafe, for example, for looked after children, or in the context of family conflict or domestic violence or abuse. Thus, it is important for PED to be equipped with multiple intervention options and the skills to negotiate appropriate intervention provision, whilst retaining an atmosphere of collaborative patient care.

Furthermore, FI and MI show some effect on depressive symptoms and hopelessness. Previous studies have (23) suggested suicidality is linked to the experience of mental health problems such as depression (22). Moreover, hopelessness is implicated in suicidality, with greater hopelessness differentiating adolescents who attempt suicide from those with suicidal ideation but no attempts(22). However, further research is necessary to evaluate whether reductions in depression and hopelessness result in a reduction in suicidality.

An important component of suicide prevention is outpatient engagement as studies have shown that patients who engage with services have a decreased risk of suicide(57). Two studies demonstrated that FI(50) and MI(52) can increase outpatient treatment initiation and service use, within the immediate two days after PED discharge(50) and over the longer-term i.e., 6 months after the intervention(52).

In the study evaluating MI, efforts were made in the intervention group to follow-up patients to check whether they were able to attend scheduled appointments and calls were made within 2 days post-discharge(52). The timing of follow-up contact has been highlighted as an important factor in managing suicide risk in patients who have been discharged after psychiatric hospitalisation(57). A recent cohort study found that youth who (58,59) had an outpatient mental health visit within 7 days after discharge had a decreased risk of suicide during 6 months after psychiatric hospitalisation(57). Thus, as a suicide prevention effort, contact must be made with patients within 7 days of discharge from any clinical setting(57).

**Strengths and Limitations**

This novel rapid review has several strengths. First, the search of six high yield databases facilitated a comprehensive search of relevant literature(44). Studies published within the last ten years were included, which ensured conclusions drawn were up to date. Only RCTs were eligible for this review;
RCTs are considered the most valuable study methods for generating reliable high-quality data and assessing the effectiveness of interventions (40,41). The screening process was undertaken by one reviewer and the data extraction and quality assessment were checked by a second reviewer to minimise bias during this process. Whilst the main outcome measure was a reduction in suicidal ideation, a broader set of outcomes were considered to ensure inclusion of additional factors associated with ongoing suicide risk and intervention implementation.

Some important limitations must nonetheless be borne in mind. Eligibility criteria were limited to studies published in the English Language; broadening the criteria to non-English studies may have resulted in additional studies, albeit their relevance to the UK healthcare system may be limited. Furthermore, this review yielded a small number of studies that displayed significant heterogeneity in interventions, outcomes and population. As such, a meta-analysis could not be performed, because variations in interventions and outcomes, and primary research that has considerable risk of bias may produce misleading or inappropriate meta-analytic results (46). Therefore, we made no pooled estimate of intervention effectiveness.

In addition, an important consideration is the exclusion of severe cases of suicidal ideation within reviewed studies; therefore, results may represent effects with young people presenting with less severe suicidality than seen in PED generally. This reflects a broad tension in research trials around maximizing the reach of an intervention (and research outcomes) to people potentially most at need of support, whilst balancing safety concerns. Safety is an important consideration, for psychological interventions may cause harm as well as give rise to benefits, and negative experiences of care immediately after events such as self-harm is seen to increase risk of further self-harm and hinder future disclosure (60). Current UK guidelines are to make an urgent referral to CAMHS for children and young people presenting with high risk of suicide (and depression), with the provision of a safe space to prevent injury as needed – and not to provide any psychological intervention in situ (61). Nonetheless, evidence for effective interventions that could be safely deployed in PED for high risk children and young people, in the context of very high demand on CAMHS services (62) could build much needed health service capacity and help to prevent deaths by suicide. The development of intervention protocols and evidence regarding intervention safety and effectiveness for adults and young people in the high-risk suicidality spectrum remains an important goal (63).

All included studies were published and conducted in the US; this highlights that the results of the review may not translate to the UK or to other countries (48–53). Consequently, there are implications for the universal application of the interventions to other healthcare systems. For example, in the UK, mental health service funding is significantly limited, therefore, replicating the interventions in UK hospitals might be difficult (64). A literature review and thematic analysis of ED staff attitudes towards
patients with a mental health problem highlighted that staff perceived caring for individuals with a mental health concern as a challenge and felt ill-prepared in assessing individuals (65). Therefore, this demonstrates that there is a lack of confidence in ED staff approaching mental health presentations.

The studies reviewed were largely at high risk of bias. Many studies did not publish protocols or outline randomisation processes and sample sizes were relatively small (48–53). Moreover, two studies (48,52) recruited participants within restricted staff working hours, which in one study was reported as office hours only (52), and therefore the samples may not be representative of children presenting outside of usual office hours. Diamond et al recruited 75% of participants from primary care and 25% from the PED (49). This study did not disaggregate results for primary care and PED participants; there is a possibility that participants recruited through primary care differ in terms of initial presentation and response to intervention (49). Moreover, the eligibility criteria for participants in this review ranged from 6-19 years however the age of participants ranged from 10-19 years within included studies (48–53). Therefore, as the included studies did not test the intervention with children aged under 10 years, we could make no conclusions about the effectiveness and feasibility of delivering interventions in the PED this group. This is a small group. However, children show signs of emotional and behavioural distress when exposed to parental conflict, thus it is important that FI are appropriate for all age groups and adapted for younger children (66,67).

Implications and priorities for future research
This review identified two interventions that demonstrated some improvements in suicidal ideation, with stronger evidence for the effectiveness of FI, especially on outpatient engagement. Currently, in the UK, patients requiring hospitalisation are admitted as an inpatient; a child mental health liaison team within an acute hospital setting is rare therefore patients are seen by a Child and Adolescent Mental Health Services (CAMHS) professional the following day or they may wait several hours before seeing CAMHS within the PED. There is sufficient evidence to highlight the role of family as a protective factor against suicide; promoting cohesion and education of parents and children leads to better outcomes (15). Our results have shown promising approaches to family-based therapy, particularly ABFT (49). Based upon the literature supporting the importance of family-child relationships in suicidality onset and outcomes, we propose a FI within the PED and contact within 2 days post-discharge in a follow-up clinic (16,44,58). A priority must be to use a co-design process with children, young people, families and PED professionals to adapt interventions used in the US for appropriate delivery in the UK PED setting. However, we acknowledge that some young people have difficult family relationships or do not have contact with parents or a guardian, such as looked after children, thus brief MI may be an appropriate alternative (56). Although our review focused on managing suicidal ideation, we recommend training for ED staff in both being able to screen, assess and effectively
identify young patients with suicidality(68), and in delivering brief psychological interventions in the PED setting (29). This would encourage patients to seek outpatient follow-up treatment, prevent readmission and keep costs minimal, which may aid in supporting community suicide prevention efforts.

This review has highlighted the lack of high-quality evidence to support the implementation of evidence-based interventions for youth suicidality in the PED setting. Thus, we recommend high-quality randomised trials with larger sample sizes, investigating and comparing family intervention and motivational interviewing approaches, alongside other promising interventions. We recommend studies consider relevant subpopulations, including the evaluation of alternative interventions not involving family as relevant, for example, young people at very high risk of suicide, looked after children, and children with historical and/or current experiences of domestic violence and abuse. However, involving family where appropriate by asking family empowerment questions within PED to ascertain how families are coping may result in better patient outcomes. We recommend performing cost-analyses of potential interventions(64) to ensure intervention delivery would be cost-effective and sustainable. These recommendations would enable future systematic reviews and meta-analyses to be based upon more reliable studies.

**Conclusion**

Finally, despite the significant recent rises in suicide rates in young people generally and throughout the COVID-19 pandemic, there is limited high-quality evidence to illustrate the effectiveness of interventions. This review highlights the apparent benefits of psychological interventions delivered within the PED setting for children and young people presenting with suicidality, including improving mental health, positive impacts on depressive symptoms, hopelessness, family empowerment and hospitalisation. Therefore, it is imperative to conduct more high-quality research to clarify definitive intervention outcomes. Studies must be undertaken within the UK specifically to establish successful ED-based interventions that can work effectively within this context.

**References**


34. WHO | Effectiveness of brief intervention and contact for suicide attempters: a randomized controlled trial in five countries. WHO. 2011;


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47. Chapter 8: Assessing risk of bias in a randomized trial | Cochrane Training [Internet]. [cited 2021 Mar 14]. Available from: https://training.cochrane.org/handbook/current/chapter-08


55. Scoring directions for the “Family Empowerment Scale.” 1992;


61. Overview | Depression in children and young people | Quality standards | NICE.


**Table 1: PICOS inclusion and exclusion criteria.**

<table>
<thead>
<tr>
<th></th>
<th><strong>Inclusion Criteria</strong></th>
<th><strong>Exclusion Criteria</strong></th>
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<tbody>
<tr>
<td><strong>Population</strong></td>
<td>- Children and adolescents aged 6-19 years.</td>
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<td>- At least 25% patients recruited from PED.</td>
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<td><strong>Intervention</strong></td>
<td>- Psychological/Psychosocial/non-pharmacological interventions targeting suicidality.</td>
<td>- Pharmacological interventions.</td>
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<td><strong>Comparator</strong></td>
<td>- Any comparator, including TAU.</td>
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<td><strong>Outcomes</strong></td>
<td>- Suicidal ideation, depressive symptoms, hopelessness, family empowerment and/or hospitalisation.</td>
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<td>- And/or the feasibility of the intervention.</td>
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<td></td>
<td>- And/or outpatient services and follow-up treatment.</td>
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<tr>
<td><strong>Study Design</strong></td>
<td>- Randomised Controlled Trials (RCTs)</td>
<td>- Non-RCTs</td>
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<td></td>
<td>- Full text in the English language</td>
<td>- Non-English language</td>
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<td></td>
<td>- Intervention deployed in clinical setting.</td>
<td>- Published before January 2010</td>
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<tr>
<td><strong>Setting</strong></td>
<td>- Any country.</td>
<td>- Interventions deployed outside clinical settings.</td>
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</tbody>
</table>
Figure 2: Summary of the risk of bias assessment using the CRBT.

<table>
<thead>
<tr>
<th></th>
<th>Random sequence generation (selection bias)</th>
<th>Allocation concealment (selection bias)</th>
<th>Blinding of participants and personnel (performance bias)</th>
<th>Blinding of outcome assessment (detection bias)</th>
<th>Incomplete outcome data (attrition bias)</th>
<th>Selective reporting (reporting bias)</th>
<th>Other bias</th>
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<tbody>
<tr>
<td>Asarnow 2011</td>
<td>+</td>
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<td>-</td>
<td>+</td>
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<tr>
<td>Grupp–Phelan 2019</td>
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<td>King 2015</td>
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<tr>
<td>Wharff 2017</td>
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</table>
Figure 1: illustrates a PRISMA flow diagram detailing the screening and selection process.

Records identified through database searching:
- PubMed: (n = 33)
- Web of Science: (n = 100)
- MedLine: (n = 153)
- PsycINFO: (n = 569)
- CINAHL: (n = 77)
- Cochrane: (n = 16)

**Total studies: (n = 948)**

Records after duplicates removed (n = 856)

Records screened (n = 856)

Full-text articles assessed for eligibility (n = 17)

Records excluded (n = 839)

Full-text articles excluded, with reasons:
- non-paediatric population (n=6)
- non eligible setting (n=1)
- protocol for a study (n=1)
- Incorrect study design (n=1)
- Participants not recruited with suicidal ideation (n=2)

Studies included in qualitative synthesis (n = 6)
<table>
<thead>
<tr>
<th>Author(s), year of publication, country</th>
<th>Target Population</th>
<th>Design</th>
<th>Participants</th>
<th>Intervention(s)</th>
<th>Control Condition</th>
<th>Outcomes post-intervention</th>
<th>Outcomes at follow-up</th>
<th>Outcome measure, overall result and follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asarnow et al. (2011) California, USA(53)</td>
<td>Inclusion: “Presenting to ED with a suicide attempt and/or suicidal ideation.” (p.2)</td>
<td>RCT</td>
<td>Sample: N=181 Age Range = 10-18 Treatment group N = 89 Control group N = 92</td>
<td>FISP in ED designed to increase motivation for follow up treatment and safety supplemented by telephone contacts after discharge.</td>
<td>EUC: ED staff received one training session.</td>
<td>Outpatient mental health treatment: FISP patients were significantly more likely than controls to be linked to outpatient treatment (92% vs 76%; OR=6.2; 95% CI=1.8–21.3, p=.004).</td>
<td>Outpatient mental health treatment: Only reported post-intervention Suicidality: At follow-up, nine youths had attempted suicide (6%), four who received the FISP intervention (6%) and five who received enhanced usual emergency care (6%). There was one completed suicide. Depression: NR post-intervention</td>
<td>Primary outcome: linking patients to outpatient mental health treatment and suicidality. Exploratory outcomes: depression Overall result: Effective in linking youth to follow-up care and no statistically significant effect on suicidality. Follow-up: 2 months</td>
</tr>
<tr>
<td>Diamond et al. (2010) Philadelphia, USA (49)</td>
<td>Inclusion: “Adolescents who scored above 31 on the SIQ and above 20 on the BDI-II.” (p.5)</td>
<td>Exclusion: “Adolescents needing psychiatric hospitalisation, recently discharged from a psychiatric hospital, had current psychosis or had mental retardation or history of borderline intellectual functioning.” (p.5)</td>
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<td>Recruited from: Primary care (75%) and PED (25%).</td>
<td>Sample: N=66 Age Range: 12-17 Treatment group N = 35 Control group N = 31</td>
<td>ABFT included strengthening parent-adolescent bonds to create a protective and secure base for adolescent development. Therapy starts by discussing what enables adolescents to turn to his or her parent(s) when contemplating suicide. The adolescent alliance task is a session for the adolescent to identify core family conflicts linked to suicide and prepares the adolescent to speak to his or her parent(s) in the next sessions. The parent alliance task focuses on parental love, empathy and focused on parenting skills. Families come together for the reattachment task to discuss identified problems and practice new communication skills. The competency task promotes adolescent autonomy (e.g., improving school functioning) while maintaining a family connection.</td>
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<td>RCT</td>
<td>EUC included a facilitated referral process with ongoing monitoring. Other providers set up initial appointments and encouraged participant attendance.</td>
<td>Suicidal ideation: NR at post-intervention Depressive symptoms: NR at post-intervention</td>
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<td>Suicidal ideation: At 24 weeks, 82.1% of the ABFT participants and 46.2% of the EUC participants reported no suicidal ideation in the past week (OR = 5.37, 95% CI: 1.56-18.49; ( \chi^2(1) = 7.66, P = 0.006 )) Depressive symptoms: At 24 weeks follow-up, 58.1% of ABFT participants and 38.5% of EUC participants reported non-clinical depression scores (OR = 2.21, 95% CI: 0.76-6.42; ( \chi^2(1) = 2.17, P = 0.14 )).</td>
<td>Primary outcomes: Suicidal ideation and depressive symptoms. Overall result: ABFT showed a slightly higher rate of improvement for suicidal ideation. The intervention group showed significant improvements in depressive symptoms. The number of cases of suicidal ideation and repetition of self-harm was similar for both groups at the post-intervention period.</td>
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<td>Follow-up: 6 months</td>
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<tr>
<td>Study</td>
<td>Inclusion</td>
<td>Sample</td>
<td>Age Range</td>
<td>Treatment Group</td>
<td>Control Group</td>
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<tr>
<td>Grupp-Phelan et al. (2019) Ohio, USA</td>
<td>Adolescents aged 12-17 at the time of recruitment, positive screen for suicide risk on the ASQ tool, lived within 100 miles of the hospital/ had no contact with a mental health practitioner in the 90 days preceding the index ED visit and were stable as determined by vital signs and triage criteria.</td>
<td>N=168</td>
<td>12-17</td>
<td>N = 84</td>
<td>N = 84</td>
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<tr>
<td>Hughes et al. (2013)</td>
<td>Presenting to ED with a suicide</td>
<td>N=181</td>
<td>10-18</td>
<td>N = 84</td>
<td>N = 84</td>
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</table>

**RCT**

**Inclusion:**
- “Adolescents aged 12-17 at the time of recruitment, positive screen for suicide risk on the ASQ tool, lived within 100 miles of the hospital/ had no contact with a mental health practitioner in the 90 days preceding the index ED visit and were stable as determined by vital signs and triage criteria.” (p.4)

**Exclusion:**
- “Chief concern of suicidal behaviour or a primary or secondary psychiatric concern or altered mental status attributable to illness or medication, lacked telephone access, were unable to understand the study process or were unable to speak or read English adequately to participate in study procedures.” (p.4)

**Recruited from:** PED

**Inclusion:**
- “Presenting to ED with a suicide
- Age Range = 10-18

**RCT**

**Sample:** N=181

**FISP delivered in the ED. This included a care linkage component with follow-up telephone**

**Usual ED care enhanced by**

**Mental health treatment initiation:**
- At 2 months, the STAT-ED participants had similar rates of mental health treatment initiation compared with youth receiving EUC as assessed by parent report (29 [50.9%] vs 22 [34.9%]; adjusted OR, 2.08; 95% CI, 0.97-4.45) and administrative data from mental health care agencies (19 [29.7%] vs 11 [19.3%]; adjusted OR, 1.77; 95% CI, 0.76-4.15).

**Depression:**
- (95% CI -3.3-8.3, P=0.40).

**Suicidal ideation:**
- (95% CI -4.2-3.7, P=0.90).

**Mean difference at 2 months = 2.49.**

**Primary outcomes:**
- Mental health treatment initiation and attendance within 2 months of ED discharge. Suicidal ideation and depression symptoms at 2 and 6 months.

**Exploratory outcomes:**
- treatment initiation and attendance and suicide attempts at 6 months.

**Overall result:**
- No significant benefit on treatment initiation, attendance at 2 months and mental health outcomes at 2 and 6 months. In exploratory outcomes, STAT-ED outperformed EUC at 6 months in linking youth screening positive for suicide risk to initial and ongoing mental health treatment.

**Primary outcomes:**
- Feasibility of FISP in ED
<table>
<thead>
<tr>
<th>Location</th>
<th>Inclusion</th>
<th>Exclusion</th>
<th>Sample</th>
<th>Treatment group N = 89</th>
<th>Control group N = 92</th>
<th>Contact to motivate and support linkage to outpatient treatment</th>
<th>Feasibility: NR at post-intervention.</th>
<th>Feasibility: feasible and effective in linking youth to follow-up treatment.</th>
<th>Overall result: feasible and effective in linking youth to follow-up treatment.</th>
<th>Follow-up: 2 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>California, USA</td>
<td>“being 14-19 years of age; having a positive suicide risk screen, defined as suicidal ideation, a recent suicide attempt or positive screens for both depression and alcohol or drug abuse. Presenting with a non-psychiatric chief complaint.”</td>
<td>“Level one trauma (critically ill/medically unstable), significant acute psychotic symptoms or symptoms that would impair the ability to consent or complete assessments, non-English speaking youths, non-English or non-Spanish speaking parents.”</td>
<td>N=49</td>
<td>Age Range = 14-19</td>
<td>Treatment group</td>
<td>Telephone contact: first call within the first 48 hours after ED or hospital discharge with additional contact at 1,2 and 4 weeks after discharge.</td>
<td>Deliveried by: FISP clinicians</td>
<td></td>
<td></td>
<td>2 months</td>
</tr>
<tr>
<td>Michigan, USA</td>
<td>“attempt and/or suicidal ideation; aged 10 to 18.”</td>
<td></td>
<td></td>
<td></td>
<td>Control group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 months</td>
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</table>

**Primary outcomes:**

- **Suicidal ideation:**
  - TOC intervention showed a decrease in suicidal ideation over the course of the study. ($d=0.22, F=7.41, df=1.44, p<0.01$)
  - Adolescents showed a decrease in suicidal ideation over the course of the study. ($d=0.22, F=7.41, df=1.44, p<0.01$)

- **Depression:**
  - NR at post-intervention.
  - NR at post-intervention.

- **Hopelessness:**
  - NR at post-intervention.
  - NR at post-intervention.

**Overall result:**

- TOC intervention resulted in a greater reduction in depressive symptoms. TOC had a non-significant effect on suicidal ideation, both groups showed a significant reduction in suicidal ideation over the two months.

- TOC intervention showed large positive effects for depression ($d=1.07$) and moderate positive effects for hopelessness at follow-up. ($d=0.40$) ($F=9.89, P=0.01$)

- TOC intervention showed large positive effects for depression ($d=1.07$) and moderate positive effects for hopelessness at follow-up. ($d=0.40$) ($F=9.89, P=0.01$)
Inclusion: Adolescents presenting to the ED, N = 71. Adolescents were considered suicidal if they self-identified as suicidal, in the prior 72 hours, or had a parent/responsible adult noted behaviours indicating suicidality. Presence of a consenting parent or legal guardian is necessary.

Exclusion: Either adolescent or parent lacked fluency in English, adolescent was not medically stable including intoxication, adolescent was not medically stable including intoxication, adolescent was not medically stable including intoxication, or the adolescent or parent lacked fluency in English.

Recruited from: PED. Delivered by: Study therapists completed 40 hours of training conducted by a member of the MI Network.

RCT Sample: N=142 Age Range = 13-18. FBCI received standard psychiatric evaluation and experimental intervention. A 60-90 mins session helping family and adolescent create a joint crisis narrative and taught them cognitive behavioural skill-building, therapeutic readiness, psychoeducation about depression and safety planning. Upon completion, the clinical team made recommendations for treatment with input from the patient and family.

Hospitalisation: CI participants were less likely to be hospitalised compared to TAU (odds ratio, 3.4; 95% confidence interval, 1.7–6.8; P < 0.005). Follow-up: 3 months post-ED visit.
demonstrated cognitive limitation prohibiting completion of research instruments, adolescent presented with active psychosis, adolescent required psychical or medication restraint in the ED.” (p.2)

Recruited from: PED

Table 2: Outlines the key characteristics of the included studies.

ED, Emergency Department, RCT, Randomised Controlled Trial, FISP, Family intervention for suicide prevention, EUC, Enhanced Usual Care, PED, Paediatric Emergency Department, MI, Motivational Interviewing, STAT-ED, Suicidal Teens Accessing Treatment After an Emergency Department Visit, ASQ, Ask Suicide Screening Questions, SIQ, Suicidal Ideation Questionnaire Junior, BDI-II, Beck Depression Inventory II, ABFT, Attention-Based Family Therapy, TOC, Teen Option for Change, FBCI, Family-Based Crisis Intervention, TAU, Treatment as Usual.