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Poster

# Using Technology to Identify Risk and Meet Demands: An Innovative Clinical Pathway

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## Abstract

**Background:** Over the past decade, there has been a significant push by the Australian government to fund youth-friendly mental health services that are non-stigmatizing, low cost, and accessible. One such organization is headspace: the National Youth Mental Health Foundation. This initiative has been highly successful; unfortunately, workforce and funding resources have not been able to keep up with the ever-growing demand, resulting in increasingly lengthy wait times for young people.

**Objective:** The aim was to investigate how technology could be integrated into current pathways of care to reduce wait times for young people accessing headspace centers and to help identify those young people at greatest risk. Objectives were to understand current clinical pathways, determine the technological requirements needed to ensure seamless integration, identify indicators of risk that highlight those young people in greatest need for immediate care, and develop a new clinical pathway that seamlessly incorporates the new technology.

**Methods:** An electronic holistic psychosocial assessment tool (EhHAT) was developed in collaboration with young people and service providers, with service providers specifying “critical” items they considered most indicative of risk. Center managers were also interviewed to determine current and potential pathways of care and technological requirements. The EhHAT was then administered to 151 young people attending a headspace center to determine the “critical items” most likely to identify the top 10%-20% of young people at greatest risk of harm.

**Results:** The critical items considered most indicative of risk included but were not limited to a suicide screen score  $\geq 10$ , current homelessness, self-harming behaviors in the previous month, psychotic experiences in the previous month, daily use of drugs, and an extreme K10 score. After administering the ehHAT to young people, it was found that the suicide screen would positively identify the top 11.9% of young people most at risk. In addition to those already identified via the suicide screen, a further 13.24% would be identified as “at risk” by endorsing 3 or more “critical” items or a further 5.29% identified by endorsing 4 or more items. Interestingly, while 23.07% of participants who endorsed 3 or more critical items also had a suicide screen of  $\geq 10$ , 72.72% of those who endorsed 4 or more items also had a suicide screen of  $\geq 10$ . In order to ensure seamless integration into clinical pathways, technological requirements included the ability to complete the assessment via mobile, tablet or computer, automated risk alerts to clinicians via text, clear highlighting of risks to clinicians via a summary, and the ability to integrate this assessment into current client data management tools.

**Conclusions:** With appropriate considerations and adaptations, technology can be integrated into clinical pathways to assess young people before they see a clinician. Such assessment ensures young people at the greatest risk of harm receive care quickly. Furthermore, the early identification of those with milder symptoms allows young people to be re-directed to alternative treatment

options. Utilizing this stepped care approach will reduce wait times for those with more severe symptomology and those at greatest risk of harm.

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**KEYWORDS**

youth mental health; technology; risk assessment

This poster was presented at the Connected Health Symposium 2016, October 20-21, Boston, MA, United States. The poster is displayed as an image in [Figure 1](#) and as a PDF in [Multimedia Appendix 1](#).

**Figure 1.** Poster.

**Using technology to identify risk and meet demands: An innovative clinical pathway**  
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**Background**  
 headspace, the National Youth Mental Health Foundation, provides free or low cost face-to-face and online services to young people aged 12-25 years with emerging mental health problems. Unfortunately, workforce and funding resources have not been able to keep up with the growing demands, resulting in lengthy wait times for young people. Information Communication Technologies (ICT) may provide an answer by supporting an innovative stepped care approach to service delivery [Burns & Birrell, 2014; Rickwood, 2012].

**Objectives**  
 The aim was to investigate how technology could be integrated into current pathways of care to reduce wait-times for young people accessing headspace centers and to help identify those young people at greatest risk. Specific objectives were to:  
 • Understand current clinical pathways  
 • Determine the technological requirements required for seamless integration  
 • Identify indicators of risk that put young people in the greatest need for immediate care  
 • Develop a new clinical pathway incorporating the new technology

**Methods**  
 The study utilised a two-phase mixed methods design, consisting of qualitative focus groups to identify both technological and content requirements, and a pilot trial to determine which indicators of risk could identify those young people most in need of immediate support.  
**Focus Groups**  
 The total sample (N = 184) consisted of 129 young people aged 12-25 years, 52 mental health professionals, and 3 headspace centre managers, from across Canberra in the Australian Capital Territory and Melbourne, Victoria, Australia. Interviews were transcribed verbatim and analysed using a hybrid approach of deductive and inductive thematic coding.  
**Pilot Trial**  
 Participants were 151 young people, aged 12-25 years attending their first session at a headspace Centre in Canberra. All young people attending their initial appointment between July and December 2014 were invited to participate. Data from the Electronic Holistic Assessment Tool (EHAT) was extracted for each young person on the pre-identified indicators of risk. For each item young people were coded as either 'met the cut off' or 'not met'. Total percentages that 'met cut off' were identified for each critical item to determine overall requirements to identify the top 10-20% of young people.

**Results - Critical Items considered indicative of risk and percent of young people meeting 'cut off' criteria**

Indicator of Risk	% Meeting 'Cut Off' (N = 151)	% Endorsed with Suicide Score ≥ 10
Suicide screen score ≥ 10	11.9	100 (n = 18)
Current homelessness	0	0
Daily use of alcohol or other drugs	17.2	23.1 (n = 26)
Having ever injected a drug	1.3	0 (n = 0)
Self-harm in the previous month	47.2	23.5 (n = 34)
Having hurt someone else in the previous month	4.6	14.3 (n = 7)
Psychotic experiences in the previous month	24.5	24.3 (n = 37)
'Most or All' days in previous week unable to complete role	17.9	18.5 (n = 27)
K10 - 30	41.0	24.8 (n = 40)
K10 - 40	9.9	27.8 (n = 18)
1 or more critical items endorsed*	62.9	15.9 (n = 95)
2 or more critical items endorsed*	31.8	20.8 (n = 48)
3 or more critical items endorsed*	17.2	23.1 (n = 26)
4 or more critical items endorsed*	8.6	38.3 (n = 13)

\*Note: \*Using a K10 cut off of <math>\geq 40</math> and not including the suicide screen score.

**Results - Technological Requirements**  
 Key requirements identified by young people, clinicians and centre managers included:  
 • Ability to complete EHAT via mobile, tablet or computer  
 • Automated risk alerts to clinicians via text  
 • Highlighting of risks to clinicians via clinician summary  
 • Integration into current client data management tools

**Results - New Clinical Pathway**

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    graph TD
        A[New referral] --> B[Link sent to young person to complete EHAT]
        B --> C[Critical threshold met]
        B --> D[No serious risk identified]
        C --> E[Youth worker notified via email or text, and risks highlighted on EHAT dashboard]
        E --> F[Youth worker notified via email or text, and risks highlighted on EHAT dashboard]
        F --> G[Contracted A&P support offered or referred for more crisis intense support if required]
        G --> H[Placed on wait list for face-to-face support]
        D --> I[Results reviewed by youth worker]
        I --> J[Offered less intensive/alternative therapeutic approaches (self-help interventions, psychoeducation ect.)]
    
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**Summary and Conclusion**  
 With appropriate considerations and adaptations, technology can be integrated into standard face-to-face clinical pathways to assess young people before they see a clinician. By using both a suicide screen and a range of other critical items, the EHAT can be used to identify those most at risk. Specifically, a suicide screen score of ≥ 10 was found to identify the top 11.9% of the sample most at risk, and of those not already identified by the suicide screen, an additional 5.29% were identified by endorsing 4 or more risk factors. Such assessment ensures young people at the greatest risk of harm receive care quickly. Furthermore, the early identification of those with milder symptoms allows young people to be re-directed to alternative treatment options. Utilizing this stepped care approach will reduce wait times for those with more severe symptomology and those at greatest risk of harm.

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**Multimedia Appendix 1**

Poster.

[\[PDF File \(Adobe PDF File\), 138KB-Multimedia Appendix 1\]](#)

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