SUBSTANCE USE AMONG ADOLESCENTS: CAUSES, COMORBIDITIES AND INNOVATIVE APPROACHES

Symposium Presenters:

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Aim of Abstract: This symposium aims to explore the causes and comorbidities of adolescent substance use, and to present innovative approaches to identifying and addressing substance use, and related issues, in youth.

This session will examine a number of comorbidities including between disordered eating and substance use, trauma and substance use and relationships between social media, parental monitoring and alcohol use. Innovative prevention and intervention approaches will also be discussed including how to improve targeted prevention interventions, effectiveness of school-based prevention programs, and the importance of integrated treatments.
Presentation 1 – Comparing the effectiveness of universal, selective and combined prevention for alcohol misuse: Three year outcomes from the CAP (Climate and Preventure) study.

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Introduction and Aims: Alcohol use is a leading cause of disease burden among youth, highlighting the need for effective prevention. The Climate and Preventure (CAP) study was the first trial of a comprehensive alcohol use prevention approach which combined a universal intervention (delivered to all) with a personality-targeted selective intervention (high-risk students only).

Design and Methods: A cluster randomized controlled trial was conducted in 26 high schools (n=2190, $M_{\text{age}}=13.3$yrs). Participants were randomized to one of four conditions; universal prevention for all (Climate); selective prevention for high-risk students (Preventure); combined universal and selective prevention (Climate and Preventure; CAP); or health education as usual (Control). All students were assessed over 3 years and a longer-term follow-up is currently underway.

Results: Analyses up to 3-years demonstrate the effectiveness of universal, selective and combined approaches in preventing harmful alcohol use among both low- and high-risk adolescents, as well as reducing mental health symptoms in the high-risk students. Compared to controls, effect sizes for the universal, selective and combined interventions ranged from $d=-0.21$ to $-0.56$ ($p<0.05$), and Number Needed to Treat values ranged from 6 to 12. These compare favourably to other alcohol prevention programs.

Discussion and Conclusions: Universal, selective and combined approaches to alcohol prevention were effective up to 3 years post-baseline. As very little is currently known about the effectiveness of school-based prevention beyond age 17, the longer-term follow-up of this cohort will address a crucial knowledge gap.

Implications for Practice or Policy: Findings from the 7-year follow-up will indicate which prevention approaches are most sustainable long-term, vital information to inform policy nationally and internationally, as economic modelling suggests substantial societal benefit can be gained from even modest reductions in alcohol use.

Implications for Translational Research: Our findings provide support for the dissemination of universal, selective and combined alcohol interventions in Australian schools.
Presentation 2 – Parenting in the tech age: The relationship between social media, alcohol use and parent monitoring across adolescence

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Introduction and Aims: Australian teens spend an average of 3+ hours per day on social networking sites (SNS) (APS, 2017). More time spent on SNS has been linked to problem drinking, with peer alcohol-related content named as a critical factor in this relationship. The potentially protective effect of parent monitoring of social media remains largely overlooked. The aim of this study is to examine the effect of time on SNS and peer-generated alcohol content on problem drinking in early adolescence, and the effect of parent monitoring on this relationship.

Design and Methods: The present sample comprised the control group (n=432; 71% female) of the Climate and Preventure (CAP) study (Newton et al., 2012), a longitudinal cohort of Sydney secondary school students. SNS habits and parent monitoring were assessed via teen self-report. Logistic regression analysis was used to assess the effect of social media habits at baseline on drinking and binge drinking across adolescence.

Results: Preliminary analyses revealed that time spent on social media and seeing images of peers drinking at baseline were associated with increased odds of drinking over time (p < 0.001), while parent monitoring of social media use was associated with decreased odds (p < 0.001). Mediation analyses will be conducted with results presented.

Conclusions: This study provides support for previous findings that time spent on SNS, and seeing images of peer substance use, are associated with an increased likelihood of drinking over time. Furthermore, parent monitoring of social media use was associated with decreased odds of drinking.

Implications for Practice or Policy: These findings have encouraging implications for practice given that 60% of Australian parents report never monitoring their child’s social media use (APS, 2017).
Presentation 3 – Predicting future alcohol use in adolescents using machine learning approaches

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Introduction and Aims: Identifying risk factors associated with alcohol use does not necessarily lead to accurate predictions about who will use or abuse alcohol. Here, we apply machine learning techniques to longitudinal data from a large-scale cluster randomised trial, to predict future alcohol use in Australian adolescents.

Design and Methods: 6,411 participants (mean age 13.5 years) from 71 schools completed questionnaires about their alcohol use, mental health, and personality. Machine learning models including elastic net regression and random forests used baseline measures to predict drinking and binge drinking at final follow-up 2 years later.

Results: Results showed that elastic net regression models achieved the greatest prediction accuracy (AUC 0.761 for classifying participants who had recently had a full standard drink, and AUC 0.782 for participants recently binge drinking). Higher sensitivity was achieved when using resampling methods that accounted for the imbalance in outcomes in the sample (fewer drinkers than non-drinkers). The most important predictors in these models were baseline alcohol use measures, peer substance use and personality measures such as sensation seeking, impulsivity and hyperactivity.

Discussions and Conclusions: With the collection of larger data sets in the drug and alcohol field we have the opportunity to use powerful statistical techniques such as machine learning to achieve more accurate prediction. This is one of the first applications of these techniques in Australian prevention research, and demonstrates its potential to predict outcomes by combining information from multiple predictors.

Implications for Practice or Policy: Targeted prevention interventions for high-risk individuals could be improved using machine learning techniques to more accurately identify those at risk, making use of all available information to capture complex relationships between predictors.
Presentation 4 – Treating trauma and substance use in adolescents

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Introduction and Aims: Up to 80% of adolescents have experienced trauma and one-in-seven suffer from post-traumatic stress disorder (PTSD), a chronic, debilitating psychiatric disorder. For 50% of these adolescents, the course of their illness is further complicated by a co-occurring substance use disorder, which often develops from repeated self-medication of PTSD symptoms. Once established, both disorders serve to maintain and exacerbate the other leading to extensive social, educational, physical and psychological impairments and a chronic course of illness. It is imperative to intervene early in the trajectory in order to prevent the severe and long lasting burden associated with this common comorbidity. In this presentation we provide an overview of the evidence regarding treatment options available for co-occurring PTSD and substance use, and promising new early interventions for adolescents.

Design and Methods: A review of the peer-reviewed literature regarding treatment of PTSD and substance use was undertaken, and best practice approaches for the treatment of adolescents identified.

Results: International guideline recommendations have shifted away from traditional sequential models of treatment for these disorders towards integrated models where both disorders are treatment simultaneously. There is however, limited research regarding integrated treatment for adolescents. Based on the evidence-base surrounding the treatment of adults, and recommendations for the treatment of each disorder singularly among adolescents, we have developed and are currently trialing a new integrated treatment for adolescents called COPE-A.

Discussion and Conclusions: There is growing evidence for the integrated treatment of PTSD and SUD among adults, but the research pertaining to adolescents is in its infancy. Our current trial examining the efficacy of COPE-A will provide much needed evidence as to how these conditions may best be treated in adolescence before they become chronic disabling conditions.
Presentation 5: Is personality risk-targeted, coping skills enhanced motivational interviewing (MI) more efficacious than MI alone in young people with alcohol related-injuries accessing emergency department and crisis support care?

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Introduction and Aims: There is a growing evidence base for brief interventions (BI) for alcohol use in young people. However, it is unclear which type of BI is most effective and there is significant scope to increase their impact. This randomized controlled trial determines if motivational interviewing (MI) enhanced with personality risk-targeted coping skills training (MIC) is more efficacious than MI alone or an assessment feedback/information (AFI) only control.

Design and Method: Participants were 394 young people (16-25 years) accessing an emergency department or crisis support service with an alcohol related injury/illness. Young people were randomized to receive (i) 2 sessions of MI; (ii) 2 sessions of MI enhanced with personality risk-targeted coping skills training (MIC) or (iii) a 1-session AFI. Alcohol use and related problems, mental health symptoms, functioning and coping skills were assessed at baseline, 1, 3, 6 and 12 months.

Results: Participants (56% Female; M_age=20.3 years) were drinking on a mean of 1.4 days (SD=1.5) per week at baseline, and consuming 10.7 (SD=7.2) drinks per drinking occasion. Participants were followed up at 1, 3, 6 and 12 months (80% retention). All groups achieved significant reductions in the frequency and quantity of alcohol use and alcohol-related problems. Significantly larger reductions in the quantity of alcohol use were found in the MIC group compared to the MI and AFI groups at 1 and 12 months follow up.

Discussion and Conclusions: All three types of BI s brief interventions resulted in reductions in alcohol use and related harm in young people, but the risk-targeted MIC had the strongest effects.

Implications for Practice and Policy: Results of this project will exert a strong influence on clinical policy and practice aimed at increasing access to early intervention care for young alcohol users

Implications for Translational Research: Telephone-delivered BIs provide a youth-friendly way of rapidly increasing treatment access, that can be easily disseminated through health services nationally. An implementation trial using a web-supported version of MIC in AOD services is currently underway.
Symposium Discussion Section
The symposium brings together leading experts and early career researchers in the substance use and mental health fields. It will be of particular interest to researchers, clinicians and educators working with adolescent populations and those interested in an integrative approach to substance use and mental health problems.

Those attending the symposium will gain an understanding of the causes and comorbidities of substance use among adolescents along with developing an understanding of the cutting edge innovative approaches that are available to address this important issue.

A panel discussion will be facilitated by Professor Hides to answer audience questions and discuss several key themes:

1. How can research help inform our understanding of the comorbidities and causes of problematic substance use in adolescents?
2. What are the gaps in our knowledge?
3. How can we achieve effective translation of prevention and early intervention strategies for substance use and its comorbidities in adolescents?

Active participation by attendees will be encouraged.

Disclosure of Interest Statement:
MT and NN are two of the developers on the Climate Schools student program in Australia which is distributed on a cost recovery basis through CLIMATESCHOOLS PTY LTD. The other authors declare that they have no competing interests.