**2018 ASM Abstract Submission form**

**All Raine Study researchers** are invited to submit an abstract to present their research findings at the Raine Study Annual Scientific Meeting [8 minute oral presentation followed by 2 mins of questions from the floor].

**Early career researchers and PhD students** are encouraged to present on behalf of their Special Interest Groups. The Raine Medical Research Foundation have kindly donated **two prizes of $750 each** **for the best presentations** by students and early career researchers.

Please complete this form and return to the Raine Study, attention: Aggie Bouckley

At raineadmin-SPH@uwa.edu.au **by Friday 19th October 2018**.

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| **Researcher Bio (2-3 sentences – will be included on the final program)** |
| Dr Koya Ayonrinde is a consultant gastroenterologist and hepatologist at Fiona Stanley Hospital. He completed his PhD on “the epidemiology and significance of nonalcoholic fatty liver disease in adolescents using the Raine Cohort. Koya is currently a Raine Medical Research Foundation Clinician Research Fellow for a study on “the epidemiology and significance of irritable bowel syndrome in adolescents”. |
| **Title:** *Title of presentation* |
| The Epidemiology and Significance of Nonalcoholic Fatty Liver Disease in Adolescents |
| **Speaker:** *Title, name, position, institution, address, telephone, email* |
| Dr Koya Ayonrinde, consultant gastroenterologist and hepatologist, Fiona Stanley Hospital, Murdoch, WA. (oyekoya.ayonrinde@health.wa.gov.au |
| **Special Interest Group:** |
| **Cardiometabolic SIG** |
| **Co-investigators:**  |
| Prof John Olynyk, Assoc Prof Leon Adams, Emeritus Prof Lawrie Beilin, Prof Trevor Mori, Prof Craig Pennell, Prof Wendy Oddy, Prof Roger Hart, Dr Dorota Doherty, Dr Julie Marsh, Prof Nick de Klerk, Dr Scott White, Prof Martha Hickey |
| **Abstract:** *Approximately 600 words* |
|  **Background:** Nonalcoholic fatty liver disease (NAFLD) is the most common chronic liver disorder in adults, adolescents and children in many populations. Whilst NAFLD is not a new disorder, the increasing prevalence of overweight and obesity in the general population has been associated with an increased prevalence of NAFLD. The epidemiology and natural history of NAFLD is varied by age, gender, ethnicity and geographical location. Whist there has been a paucity of good quality, longitudinal, population-based studies regarding the prevalence, risk factors, disease associations and long-term health outcomes in individuals with NAFLD at various ages, it is now understood that some individuals with NAFLD progress to cirrhosis with an inherent risk of hepatocellular carcinoma, liver failure and premature death. Cardiovascular disease and type II diabetes are more common sequelae of NAFLD. In particular, the epidemiology of NAFLD in population-based adolescents is not well defined as a result of different modes of NAFLD ascertainment and different environmental and genetic risk factors. **Aims:** To determine the prevalence, phenotype and risk factors of NAFLD in population-based adolescents in the Western Australian Pregnancy Cohort (Raine) Study.**Methods**: Between 2006 and 2009, assessment for NAFLD, using questionnaires and liver ultrasound was performed on 1170 adolescents aged 17 years, from the population-based Raine Cohort. Adolescents also had physical assessment and fasting blood tests. We sought associations between NAFLD in adolescents and parent pregnancy-related characteristics and serial anthropometric measurements in offspring recorded from birth through childhood and adolescence. Parent factors included pre-pregnancy and subsequent body mass index, pregnancy-related weight gain, smoking, socio-demographic factors and subsequent cardiometabolic risk factors. Offspring factors included birth weight, ponderal index, serial weight, body mass index (BMI), skinfold thickness, waist circumference, polycystic ovary syndrome, infant nutrition and adolescent dietary patterns. **Results**: NAFLD was diagnosed in 15.2% of adolescents (females > males). Adolescents with NAFLD had greater BMI, waist circumference, skinfold thickness, insulin resistance, serum triglycerides and serum leptin but lower HDL-cholesterol; and if male, higher systolic blood pressure and serum transaminases but lower serum adiponectin than adolescents without NAFLD (p<0.05 for all). Birth anthropometry, including birth weight, skinfold thickness and ponderal index, was not associated with NAFLD. However, adiposity differences (weight, BMI, skinfold thickness, mid-arm circumference and chest circumference) between 17-year-old adolescents with NAFLD and those without NAFLD, were apparent from age 3 years onwards, particularly in males. These adiposity trajectories were associated with both the diagnosis of NAFLD and the severity of hepatic steatosis at age 17 years (p<0∙05). The strength of the associations increased with age after 3 years for each adiposity measure (all p<0∙001). Females with polycystic ovary syndrome plus NAFLD had an adverse metabolic and NAFLD phenotype similar to males with NAFLD but worse than females without the combination, or males without NAFLD. Pre-pregnancy maternal obesity, excessive pregnancy weight gain, lower socio-economic status and smoking during pregnancy were associated with increased risk of NAFLD. However, breastfeeding for 6 months prior to commencing infant formula milk was associated with a lower prevalence of NAFLD.**Conclusions**: NAFLD is common in adolescents, particularly females. Risk associations for NAFLD have been identified from parent pre-pregnancy anthropometry and pregnancy weight gain, smoking during pregnancy, infant nutrition, trajectories of offspring adiposity gain through the life course, adolescent dietary pattern, adolescent obesity and polycystic ovary syndrome. Adolescents with NAFLD have an adverse cardiometabolic profile and potential risk of progressive liver disease and adverse cardiometabolic outcomes. |

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|  | By placing an ‘X’ in this box the lead investigator certifies that all investigators listed above have read and agree to the contents of this form. |

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| **Corresponding author:** | **Date:** |
| Dr Koya Ayonrinde | 28 October 2018 |