Objectives Non-attendance of scheduled hospital appointments represents a major issue affecting service effectiveness, efficiency and quality of care costing the NHS over £1billion annually. This impact is even more detrimental at a time where the NHS is experiencing record high waiting times in the peri- COVID-19 pandemic era.

Rather than a reactive model of discharging patients for nonattending their appointments, we propose a proactive model identifying patients at risk of not showing up and provide them with right support at the right time. This approach is especially important for vulnerable population including young people (YP) due to the complex interplay between developmental, socio-economic factors can impact significantly on their medical care.

The increasing use of electronic health record systems (EHRS) and data availability creates opportunities to develop risk scores for specific patient populations.

In this study, we aim to develop a machine learning approach to develop a complex, multi-dimensional predictive model to identify YP at risk of clinic nonattendance.

Methods University College London Hospital (UCLH) switched to a new EHRS in April 2019 . We extracted data on outpatient Adolescent and Young Adult Rheumatology (AYAR) between 2019 -2022.

Our primary outcome was nonattendance of a scheduled appointment.

Our Predictor variables were defined after literature review, consultation with clinical and operational teams. We extracted data on 67 predictors of nonattendance. These variables are broadly divided into demographics (e.g, Age, Sex, ethnicity) and index of multiple deprivation (IMD) extracted from office of national statistics (ONS) database. We also included service utilisation history (e.g., previous history of clinic non-attendance.), appointment information (month, day, time, clinic codes), and patient engagement (e.g., active in MyChart [online patient portal]).

Using data from 11602 outpatient appointments in (AYAR) clinics at UCLH, we built and assessed the performance of a predictive model as to whether a YP would not attend a scheduled outpatient appointment. We used logistic regression analysis to fit and assess the Model built. We evaluated its fit based on discrimination and calibration.

Results We identified a total of 1517 clinic non-attendance out of total of 11602 (13.1%) appointment.

Female/male ratio was 2.03 in non attendance group as compared to 2.33 in total clinic population.

In terms of age group, 10% (606/5547) of clinics booked for YP aged 14–18 were not attended as compared to 15% (651/4282) in those aged [19–24].

Feature engineering analysis revealed that the most significant factors were IMD followed by distance, previous history of Non-attendance, age group and appointment hour.

Conclusions Aiming to identify YP at risk of Non-attendance, we used a step-by-step approach to build a model that can be applied using EHR and IMD data at the point of care. High proportion of YP nonattending their appointments were from deprived areas.

Accurate stratification of non-attendance risk can provide us with unique opportunity for preventative interventions, supporting to most vulnerable YP and improve the use of resources within the wider system

1872 WHAT DO WE KNOW ABOUT THE LONG TERM CARDIOVASCULAR HEALTH OF CHILDREN AND YOUNG PEOPLE WITH ANOREXIA NERVOSA?

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Objectives Anorexia Nervosa (AN) is a leading cause of underweight in children and young people (CYP) in high income countries. Acute cardiovascular complications are well recognised sequelae of underweight in AN, yet less is known about longer term cardiovascular disease (CVD) risk - for example acute MI and stroke later in life. It is now well established that CVD processes leading to disease and death in adulthood begin during childhood. There are a range if important and biological plausible reasons as to why CYP with AN may be at greater risk of CVD later in life. Pulse wave velocity (PWV) is a non-invasive proxy for arterial stiffness (greater PWV indicating greater stiffness) which is well established as a predictive for future adverse cardiovascular disease events in early life.

Methods In this presentation, the potential biological mechanisms and existing evidence for risk of later CVD for CYP in AN will be discussed. Interim, new data from a pilot longitudinal study of PWV in underweight young adolescents with AN admitted to an eating disorder unit in the United Kingdom will be presented. We measured carotid-fem PWV in all new admissions to a single eating disorder unit from December 2020 who met inclusion criteria: 1)Diagnosis of AN;2) Aged 12–18 years;3) underweight (<85% of average BMI for age and sex). PWV was measured using Vicorder by a single operator at admission and weekly for 12 weeks. Ethics approval was provided by a London ethics committee. Standardised PWV Z-score for age (PWVz) was derived from published data.

Results Previous existing data for changes in arterial changes in AN will be presented and biological models. From our study, 16 participants have been recruited so far. Median age 16.3. Baseline median PWV was 7.47 (IQR 7.07–7.94) m/s. Mean PWV z-score was 4. Baseline PWV was not associated with baseline BMI or . In multi-level, mixed effects models PWV decreased over time in weeks (coefficient -0.05,95%CI -0.07 to -0.02). BMI increased in all cases over time (coefficient 0.22,95%CI 0.21 to 0.23. PWV was negatively associated with BMI (coefficient -0.2, 95% CI -0.28 to -0.11).

Conclusions There is emerging evidence of increased CVD risk in later life for CYP with AN. Our data are the first time longitudinal measures of arterial stiffness in CYP with AN have been measured and analysed in a group of CYP with severe AN and underweight, and association to time and weight gain. The preliminary data is suggestive of the positive benefit of weight gain in AN for arterial stiffness, and potentially improving long term life time CVD risk which is an important new focus compared to usual acute cardiac risk consideration. This presentation will discuss the long term implications of CVD risk for CYP with AN through their life and potential biological models for this.