

# A Population Health Approach to Paediatric Respiratory A&E Attendances in County Durham and Darlington

**Dr Harriet Young** Paediatric ST4, Population Health Fellow North East England. **Beth Tear** Principal Information Analyst, NECS. **Prof Edward Kunonga** Director of Population Health Management, NHS North East and North Cumbria Integrated Care Board.

## Background

- Respiratory illnesses are the most common cause of acute hospital admission in paediatrics (1)
- Increasing numbers of paediatric admissions with respiratory illnesses were seen prior to the Covid-19 pandemic (2)
- Post-pandemic there have been unseasonal respiratory epidemics within the paediatric population (e.g. Group A Streptococcus in 2022)
- Increasing baseline use of acute services makes surge capacity increasingly challenging
- County Durham and Darlington is an area with higher deprivation and child poverty, and lower life expectancies than the national average (3)

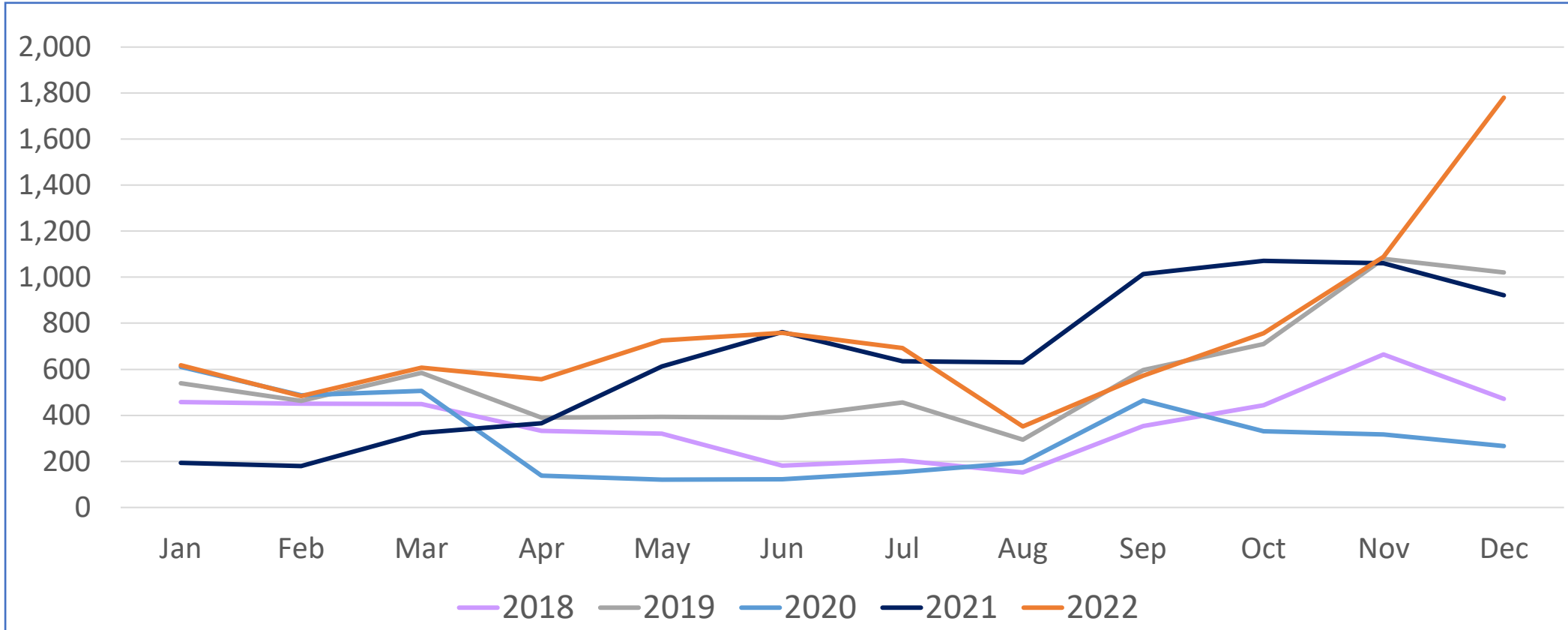
## Aims

1. Understand the patterns of paediatric A&E attendances for respiratory conditions across County Durham and Darlington Foundation Trust (CDDFT) catchment area between 2018 and 2022.
2. Understand the effect of the wider determinants of health and inequality on population health needs and health seeking behaviours.
3. Make recommendations for further work with a focus on upstream holistic preventative approaches and optimising delivery of health services to meet the population health needs.

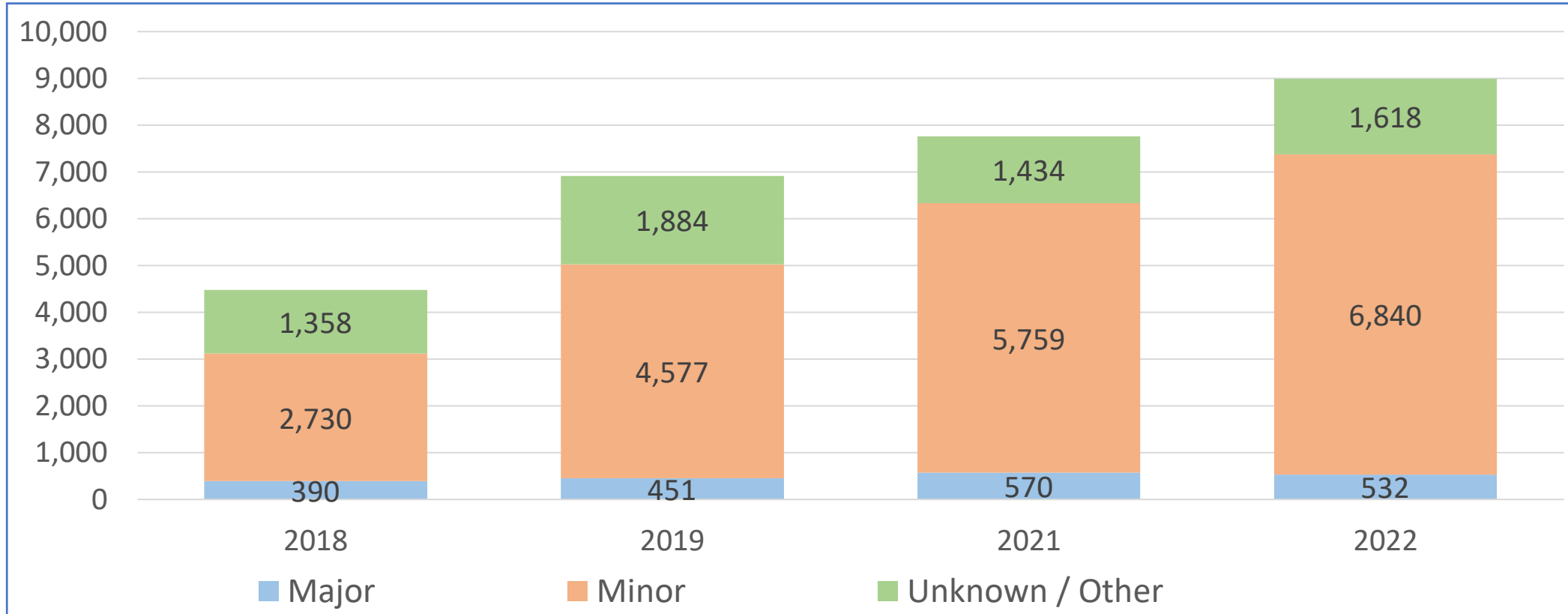
## Methods

- Data sources analysed for pseudonymised patient level data:
  - SUS-A&E; SUS-Inpatients (emergency admissions); Emergency Care Data Set; RAIDR PC Tables; Primary care data from North East GP practices.
- Data analysed for 0-17 year olds attending A&E with respiratory illness from Jan 2018 – Dec 2022
- CDDFT data was crosslinked with primary care and LSOA data
- Results exclude 2020 due to the effects of the Covid-19 pandemic

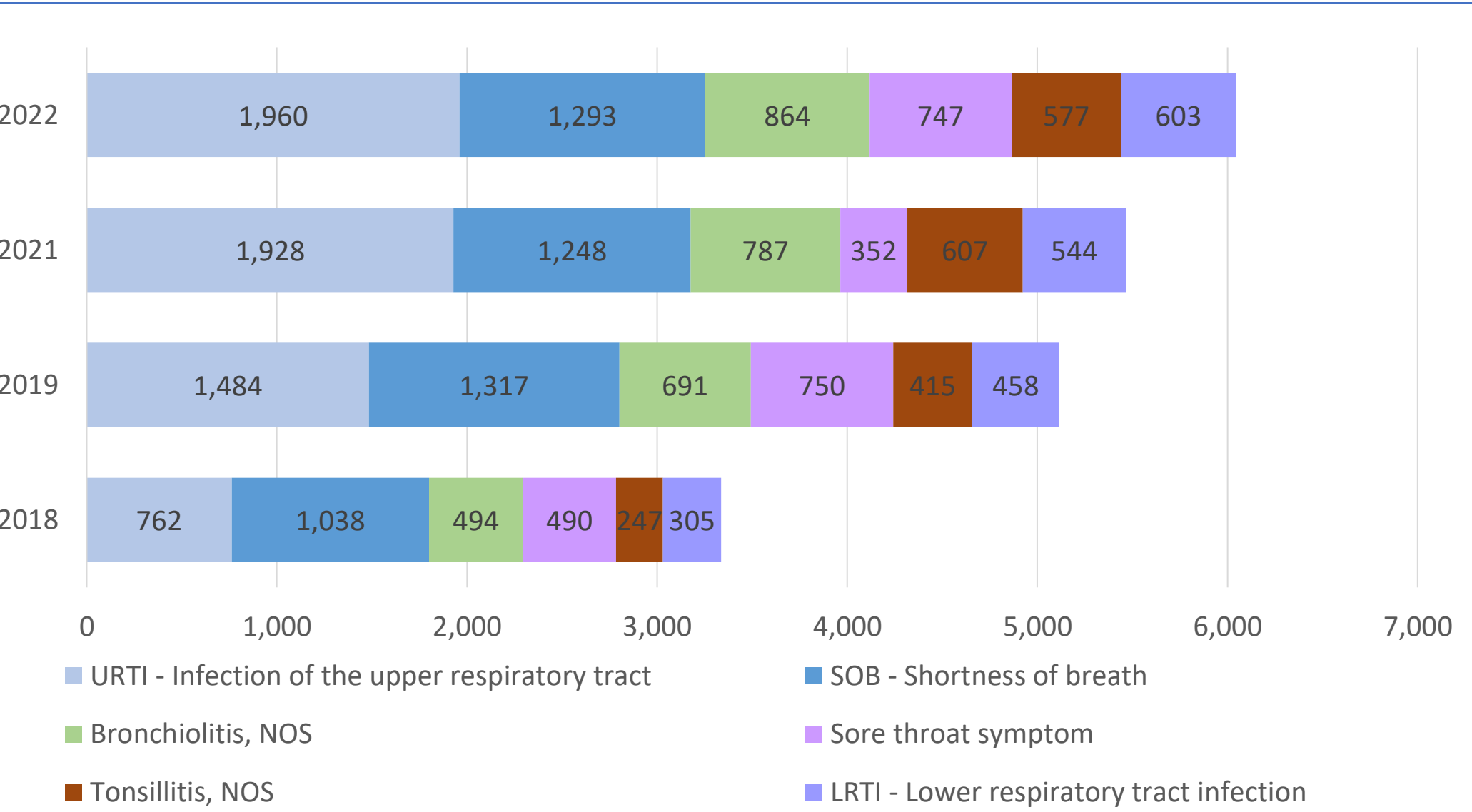
## Results



**Figure 1.** A&E Attendances across CDDFT with respiratory conditions in patients aged 0-17 years from 2018 to 2022.



**Figure 3.** Number of attendances separated by acuity for children ages 0-17 with respiratory conditions as rated by the Healthcare Resource Group.



**Figure 2.** Breakdown of most frequent respiratory conditions coded for in children attending CDDFT A&E.

Year	1	2	3	4	5	6	7	8	9	10	Total
2018	45	35	37	30	31	30	30	27	24	29	34
2019	68	53	54	50	51	46	44	45	36	47	52
2021	59	58	58	58	56	59	50	43	43	47	55
2022	68	66	66	70	55	66	61	65	59	50	64

**Figure 4.** Attendance rates per 1000 population (LSOA age 0-17 as denominator) for IMD Decile.

- Increasing numbers of paediatric patients presented to A&E with acute respiratory illnesses, with the mean number of monthly patients increasing from 373 in 2018 to 749 in 2022. There is a loss of the pre-pandemic seasonal variation typically seen with high numbers of spring/summer A&E presentations (Figure 1).
- The proportion of <5-year-olds presenting to A&E has significantly increased from 70% (95% CI [68.6%, 71.3%]) in 2018 to 73% (95% CI [71.7%, 73.5%]) in 2022.
- The likelihood of presenting with Upper Respiratory Tract Infection has increased from 17% in 2018 (95% CI [15.9%, 18.1%]) to 22% in 2022 (95% CI [21.0%, 22.7%]) (Figure 2).
- From 2018-2022 the number of patients attending with minor acuity illnesses has increased by 150% (r = 0.96, p = 0.04) (Figure 3).
- There was an increase in the number of patients attending A&E after being advised by NHS 111 to contact primary care in 2022 (31%) compared with 2018 (18%).
- 3168 more children were seen and discharged from A&E with respiratory illnesses in 2022 than in 2018.
- Increasing A&E attendances were seen across all IMD deciles although the more deprived areas were disproportionately affected (Figure 4).
- Requirement for ambulance dispatch after an NHS 111 call was higher in the lowest 2 IMD deciles (11/1000) compared with the highest 2 IMD deciles (6/1000).
- Repeat A&E attenders are more likely to be living in the most deprived IMD deciles.

## Recommendations

Tackling Social Determinants	Community Awareness	Prevention	Better Data and Surveillance	Efficient Service Delivery	New Models of Care
Needs assessment for integrated approach to improving health literacy and review suitability of current health literature.	Enhanced rollout of Healthier Together website in community spaces used by families with young children.	Evaluation of impact of deprivation on new antenatal smoking pilot and breast feeding support scheme.	Local NHS 111 efficiency and service accessibility review.	Inclusion of the education sector in Integrated Care Partnership and System.	Pilot study into the benefits of Lay Community Health Workers.
Research investigating wider determinants of health on acute respiratory attendances.	Needs assessment for acceptability and feasibility of community parent health education sessions.	Collaboration in regional inpatient parent smoking cessation work.	Local GP use optimisation and coordinated behavioural change strategies.	Rollout of Making Every Contact Count training to acute healthcare staff.	Adjustment of Acute Respiratory Infection Hub to allow for a paediatric focused area.

(1) Fonseca W, Lukacs NW, Ptashinski C. Factors Affecting the Immunity to Respiratory Syncytial Virus: From Epigenetics to Microbiome. Front Immunol. 2018;9:226. (2) Child and Maternal Health - Data - OHID [Internet]. [cited 2023 May 1]. Available from: [https://fingertips.phe.org.uk/profile/child-health-profiles/data#page/4/gid/1938133230/pat/15/ati/6/are/E12000001/iid/92253/age/283/sex/4/cat/-1/ctp/-1/yr/1/cid/4/tbm/1/page-options/car-ao-0\\_car-do-1](https://fingertips.phe.org.uk/profile/child-health-profiles/data#page/4/gid/1938133230/pat/15/ati/6/are/E12000001/iid/92253/age/283/sex/4/cat/-1/ctp/-1/yr/1/cid/4/tbm/1/page-options/car-ao-0_car-do-1). (3) facts-of-life-report-final.pdf [Internet]. [cited 2023 May 1]. Available from: <https://northeastnorthcumbria.nhs.uk/media/fwmhvlxa/facts-of-life-report-final.pdf>