

Covid-19: Investigation of reinfections in Swindon

South West Public Health Conference

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Background

Data on Covid-19 polymerase chain reaction (PCR) positive cases collected throughout the pandemic provide useful insights into transmission patterns

Why study reinfections?

- help understand transmission patterns
- help assess risks posed to the public and trigger public health interventions

Defining a reinfection

- Without sequencing, it's not possible to determine if a repeat positive is a *continuation* of the initial infection or a *new* infection.
- To confidently *suggest* a reinfection without additional information, two positive results are required to be at least **90 days apart**.^{1,2}

Pre-Omicron: research suggests reinfections rates between 0.2% and 1% of all cases², although limited evidence exists to understand community-based reinfections.

Aims and Methods

Aim:

- To understand covid-19 reinfections within Swindon

Databases:

- UKHSA (formerly PHE) Covid-19 Situational Awareness Explorer
 - DPH level Access - Contact Tracing Cases

Time period:

- 28th May 2020 – 25th November 2021

Variables:

- Unique ID: Forename, surname, date of birth
- Occupational Type to determine employment setting
- Gender: male, female
- Ethnicity has not been included in the analysis: 80% 'British' or missing data

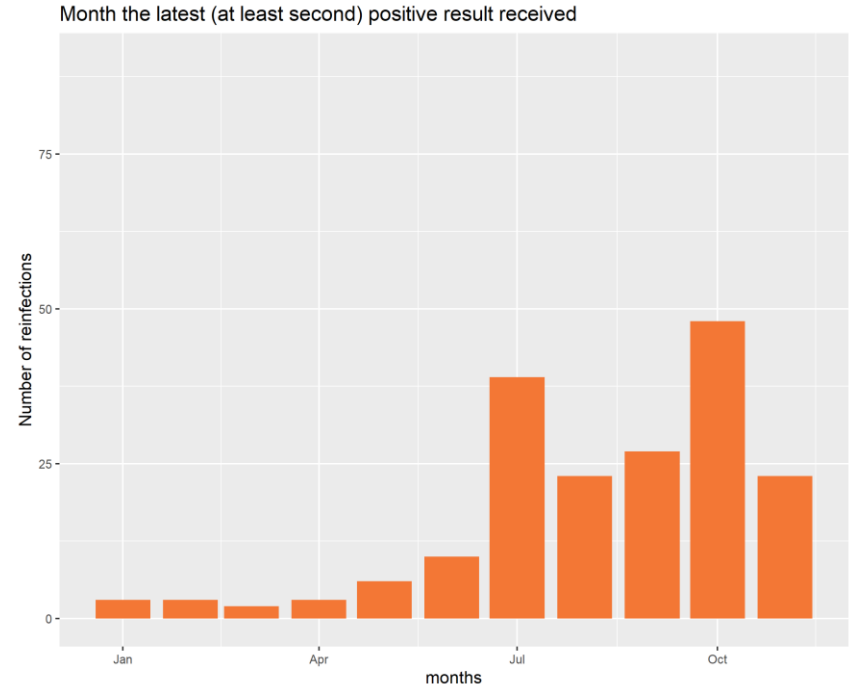
Main Findings

31,672 positive cases in Swindon

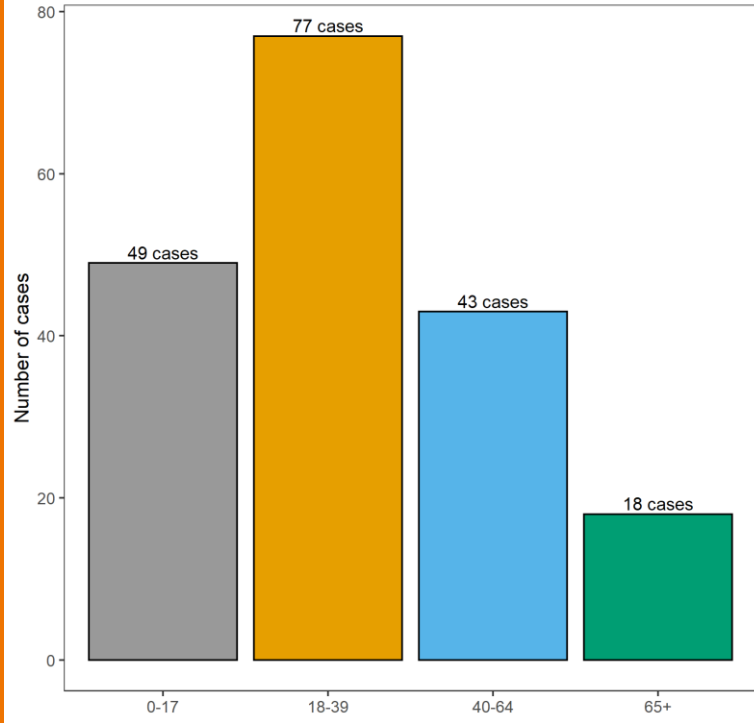
- 1,401 cases with at least 2 positive PCR tests identified
- **186** individuals with a repeat positive results more than 90 days apart --> reinfections
- **0.59%** reinfection rate
- Summer 2021
- median duration between infections was 234 days (IQR: 181-288)

Overview of residents with reinfections

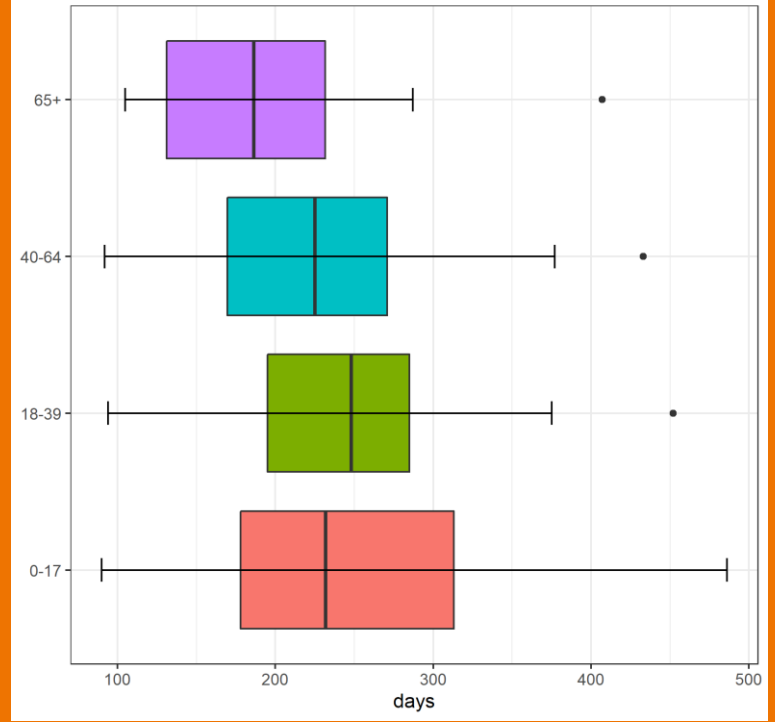
- 64% in working age adults
- Less than 10% in over 65 years



Reinfections (>90 days) by Age groups



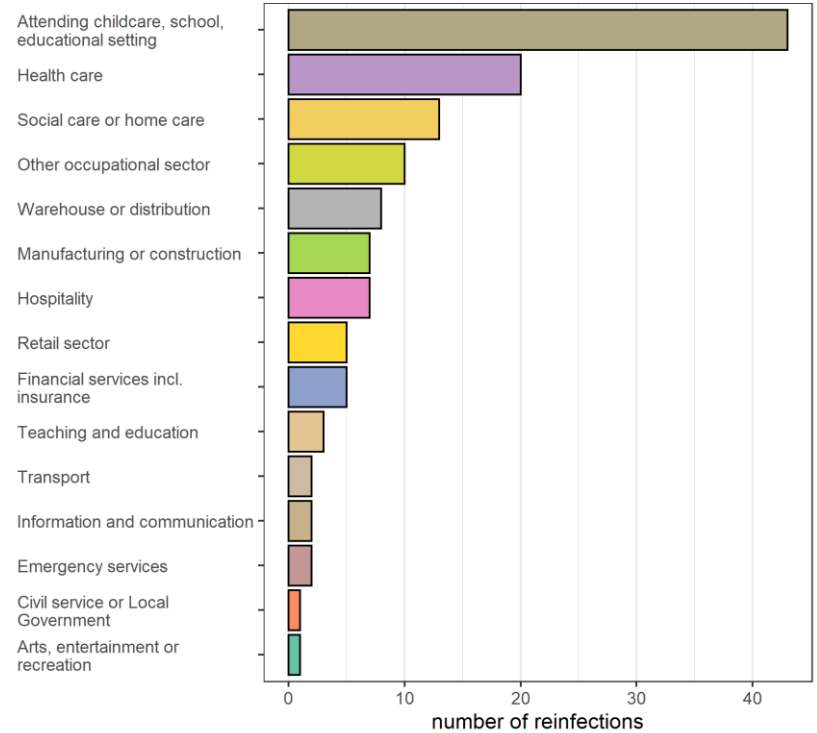
Days between reinfection (>90) by age group



COVID19 infections by gender



Reported Occupational Type Reinfections >90days apart



Discussion

Residents at higher risk of reinfection in Swindon:

- Females
- Working aged adults
- Health and Social Care workers

Links with the literature:

- Risk factors highlighted in literature ^{3,4}
 - Older age
 - Care homes
 - Comorbidities
 - Females^{5,6}

Time between reinfection:

- Evidence of immunological memory to SARS-CoV-2 at 6-8 months post recovery and are at a lower risk of reinfection⁷

Limitations:

- 90 day definition
- Comorbidities
- Vaccination status
- Unique identifier

Changes with Omicron

UKHSA: Reinfection rate increased to 10% since mid-November

ONS: Reinfections 16x higher in December than the previous 7 months

In Swindon: Total cases up until 23rd Feb = 60,786

- Reinfections = 1,922
- Current reinfection rate = 3.2%
- Patterns seen previously are maintained:
 - Sex differences maintained: 59% of reinfected cases, compared to 53% of all cases (significance maintained)
 - Age profile maintained: 69% working aged adults, 28% under 18s
 - Occupation: Attending educational setting 28%, Health and Social Care 11%, Warehouse/ Distribution and Manufacturing/ Construction increased cases

Conclusions

Pre-omicron variant, risk of reinfection low

Omicron variant has increased risk of reinfection, but the characteristics of those at increased risk are maintained:

- Within Swindon those at higher risk of reinfection
 - Females
 - Working age adults
 - Health and Social care workers
 - Education based settings

Reinfection prevention should focus on those that work in health and social care and within educational settings, especially those working with vulnerable populations

References

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Thank you

www.swindon.gov.uk

