COVID EXPERIENCE IN THE UK: AN UPDATE

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On behalf of COVID-19 NHP/CRG Group

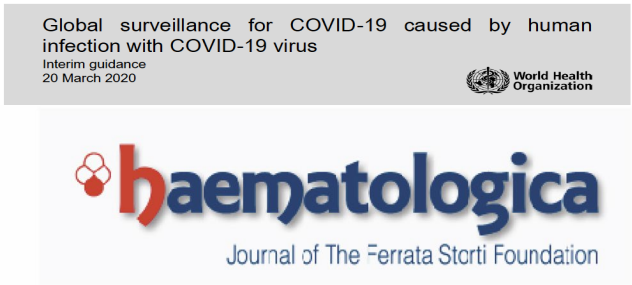
Real-time national survey of COVID-19 in haemoglobinopathy and rare anaemia patients

Aim

- Provide real-time data on COVID-19 in haemoglobinopathies and rare anaemias to guide patient management
- Inform public health policy on the risk to this patient group

Methodology

- Core dataset
- WHO surveillance criteria for confirmed and clinically suspected cases adopted as case definition
- Anonymised data submitted weekly by the 14 HCCs from 8 April 2020
- Results aggregated and presented regularly to NHP
- Data shared nationally and internationally



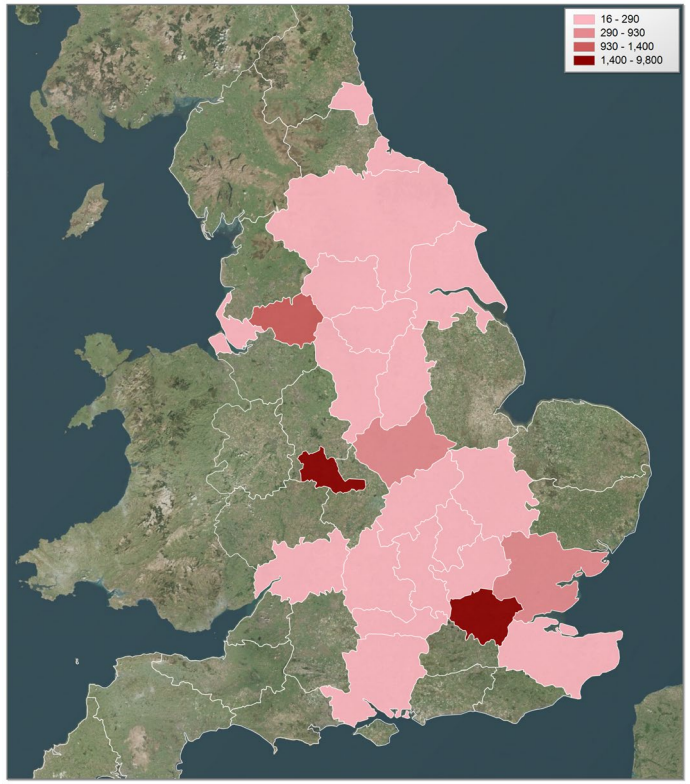
https://doi.org/10.3324/haematol.2020.259440

COVID-19 in haemoglobinopathy and rare anaemias

- UK experience of COVID-19 in inherited red cell disorders
- Are morbidity and mortality due to COVID-19 increased?
- What are risk factors for severe COVID-19?
- Comparison of patient characteristics and outcomes during the pandemic

HCC	Cases reported
South East London and South East	240
East London and Essex	105
West London	95
North Central London and East Anglia	71
North West	51
East Midlands	38
West Midlands	27
North East and Yorkshire	15
Wessex and Thames Valley	20
South West	3
Wales	2

Geographical distribution of patients in the National Haemoglobinopathy Registry (NHR) August 2020 (n=15,001)



http://nhr.mdsas.com

Temporal evolution of COVID-19 cases (n=670)

8 April 2020 – 21 April 2021

Pandemic milestones

First UK case 31 January 2020

National lockdown 23 March

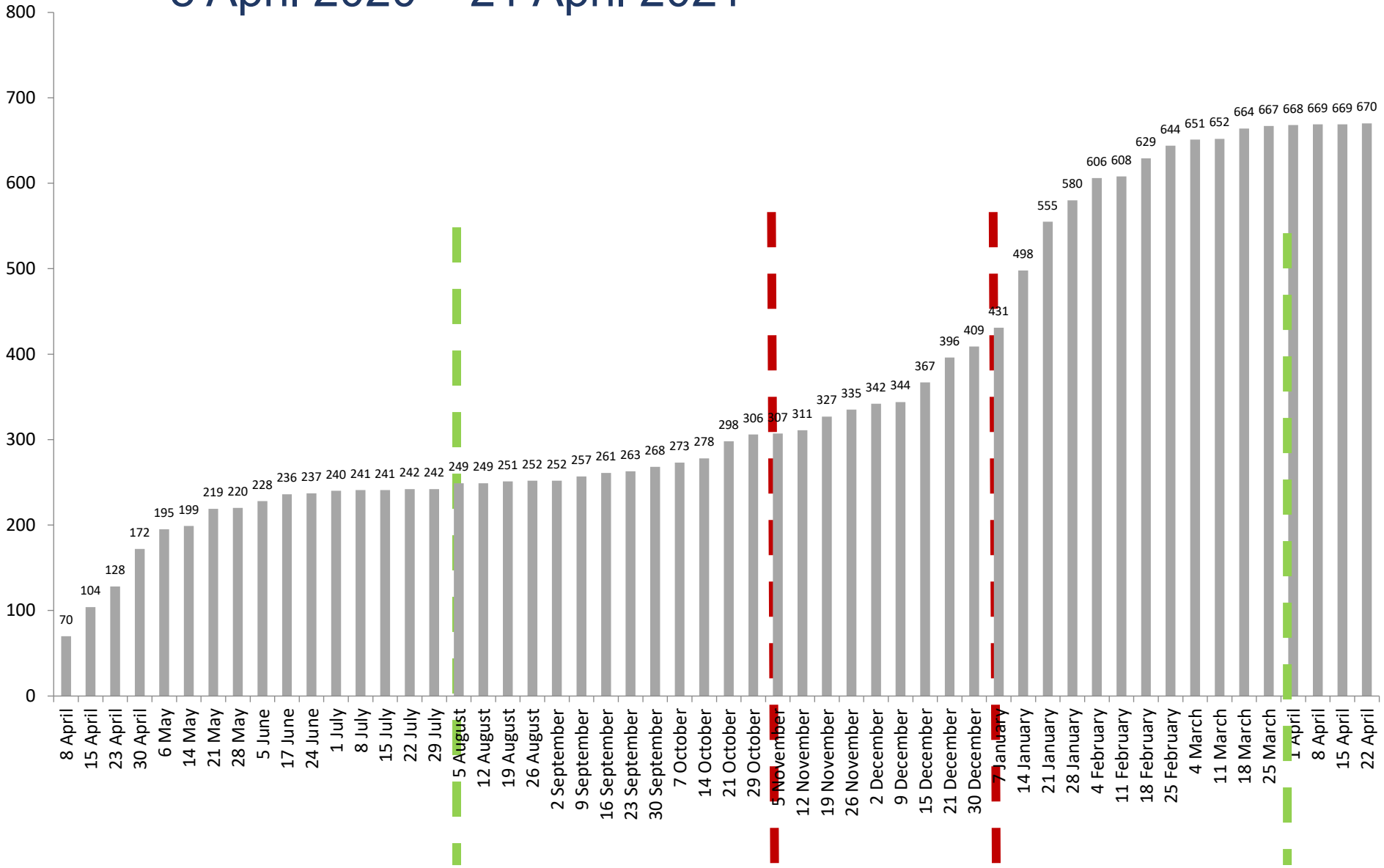
Shielding advised for patients with sickle cell disease and some thalassaemia or rare inherited anaemias. Additions to NHS SPL

Shielding paused 1 August

Second lockdown 5 November

Third lockdown 6 January 2021

Shielding lifted 31 March



Wave demarcation

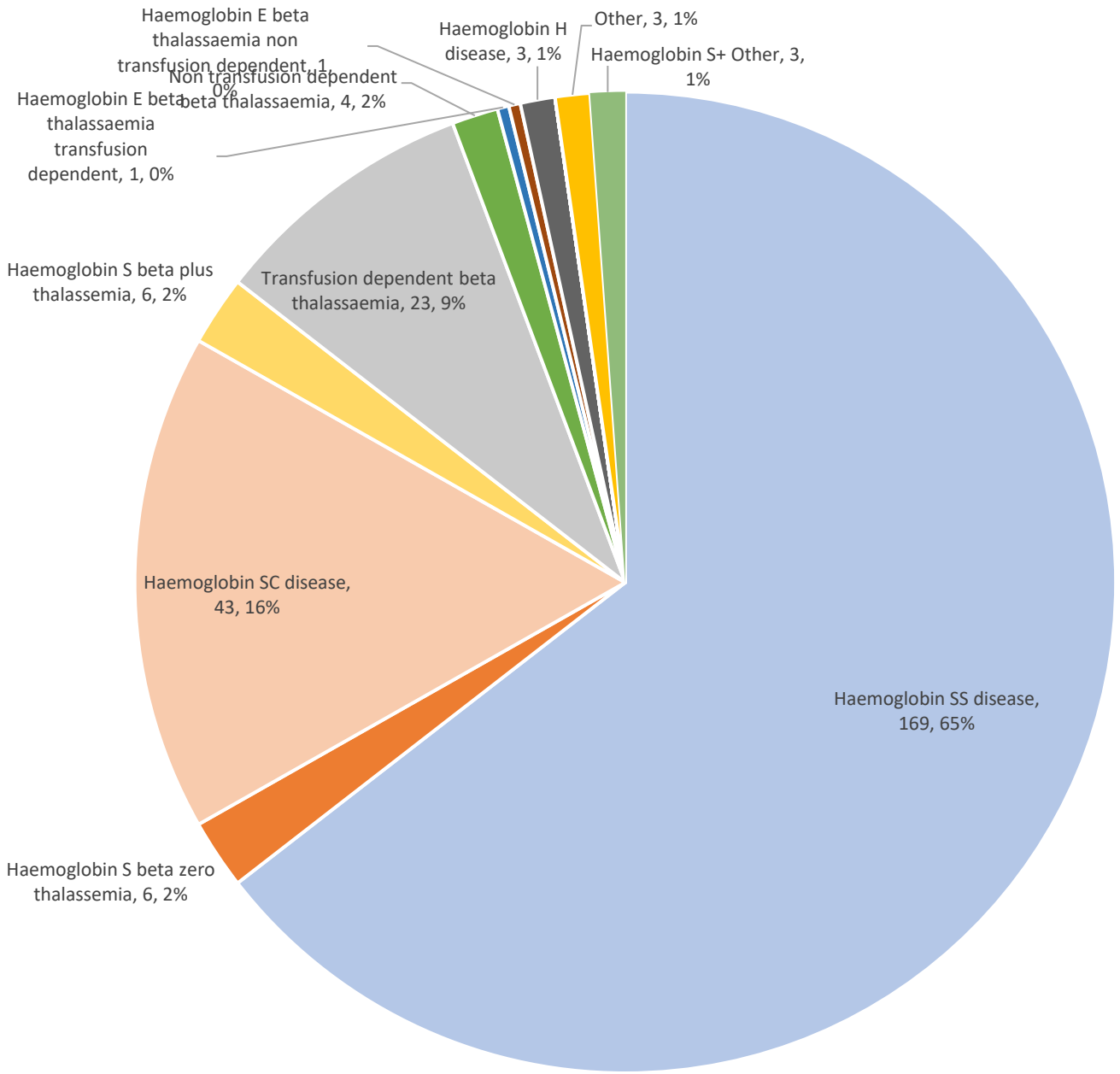
1st wave - 1st February to 30th August 2020

2nd wave - from 1st September 2020

Patient characteristics 1st wave (N= 262)

Phenotype

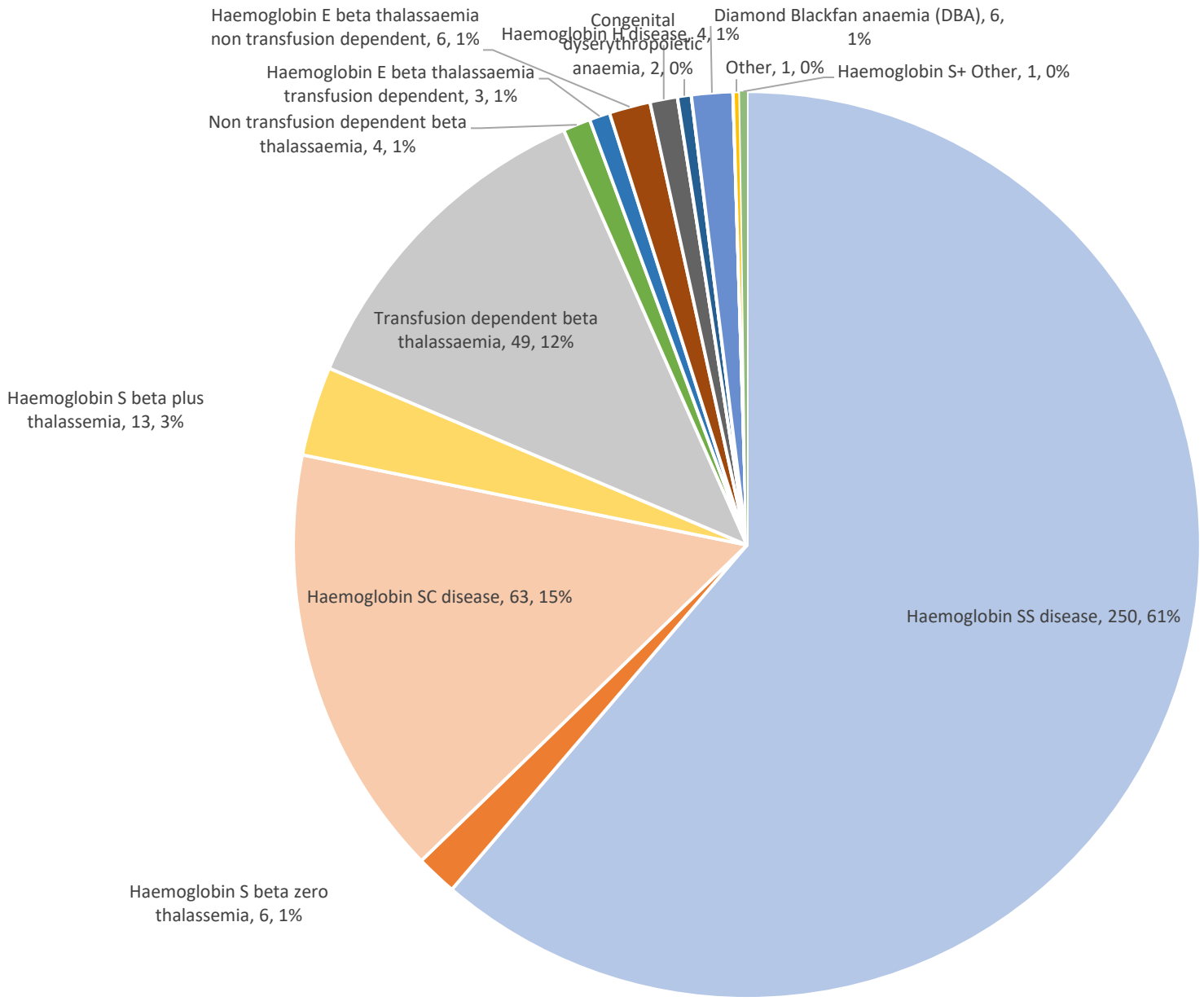
Sickle cell disorders (SCD) 86%
Thalassaemia 13%
Rare Anaemia 1%



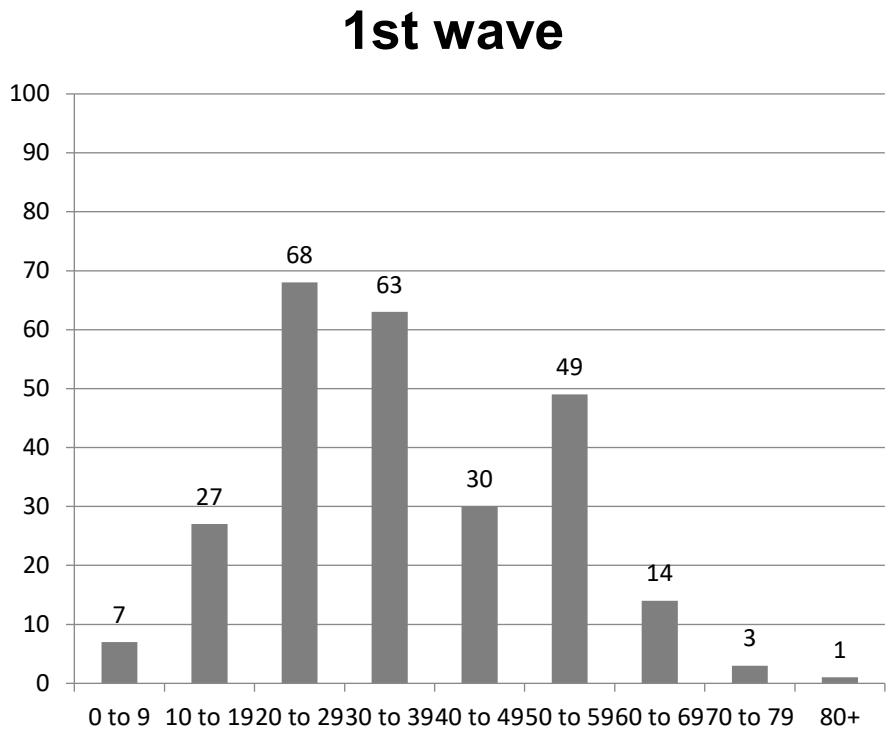
Patient characteristics 2nd wave (N=408)

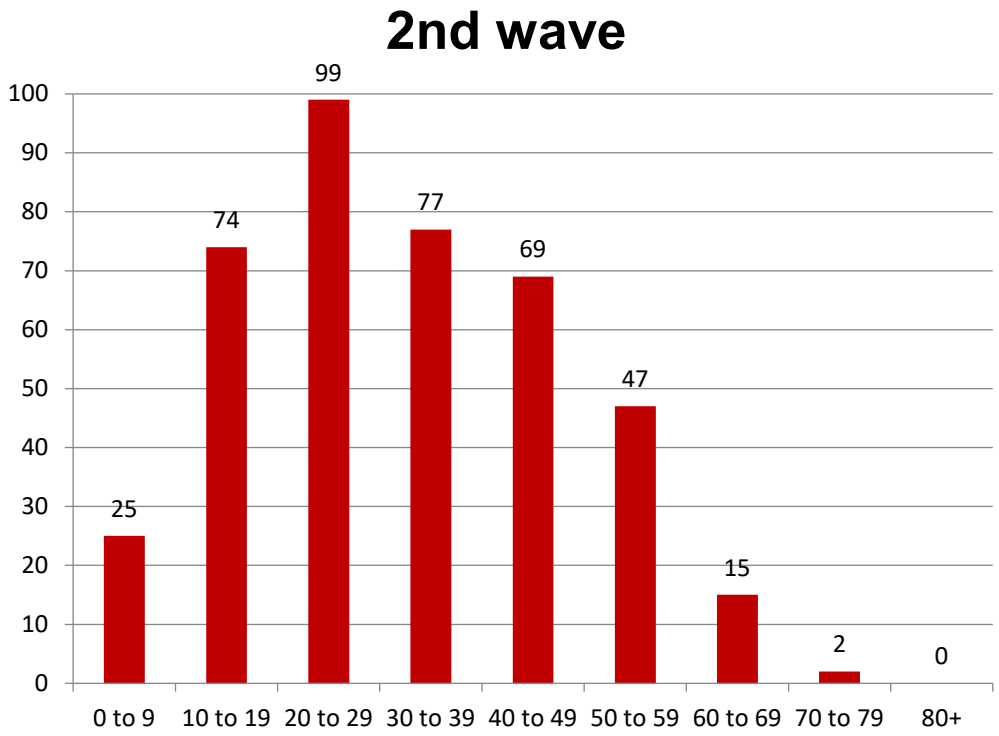
Phenotype

Sickle cell disorders (SCD) 82%
Thalassaemia 16%
Rare Anaemia 2%

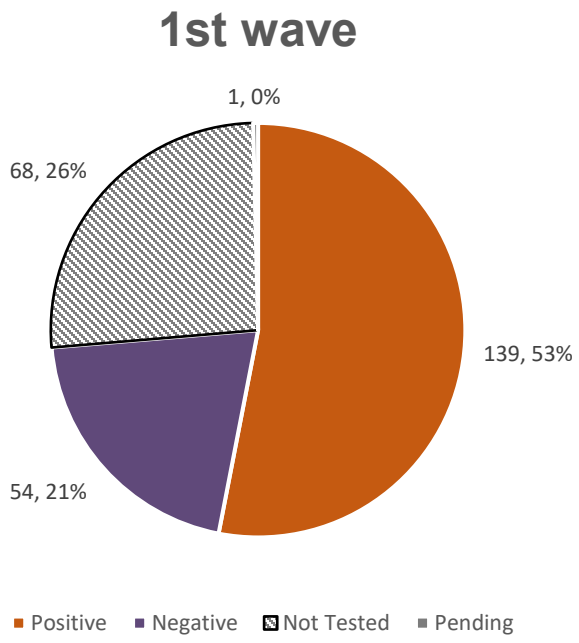


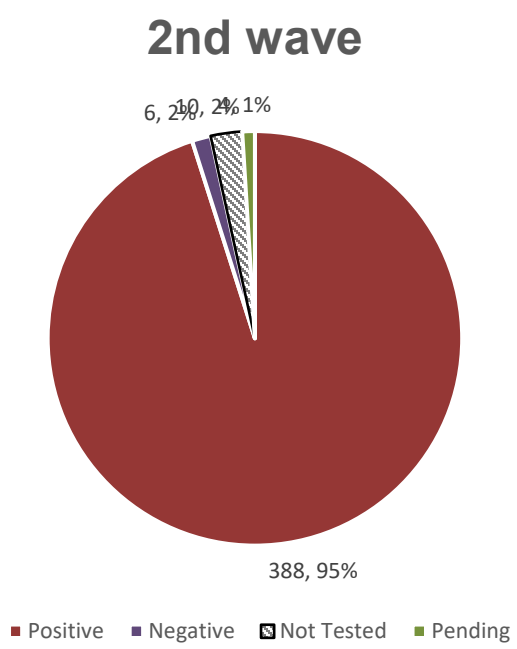
Age distribution



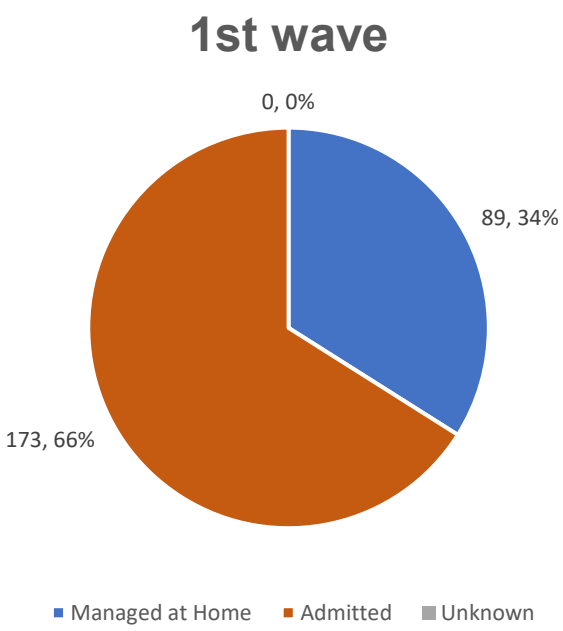


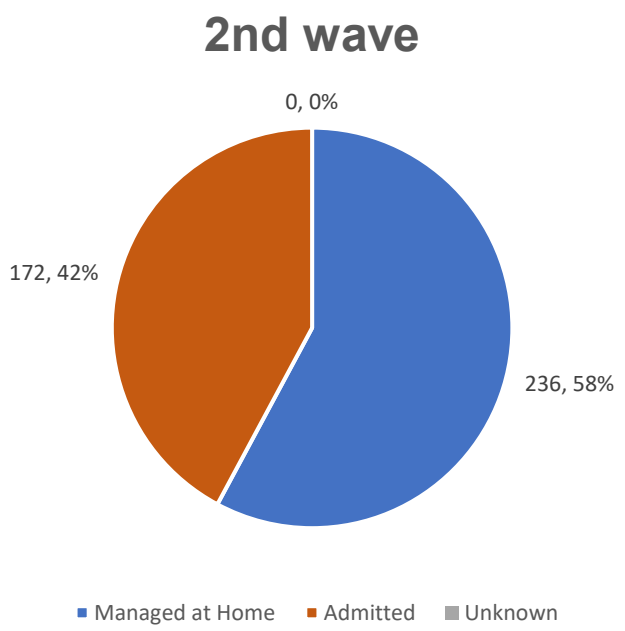
SARS CoV-2 RT-PCR



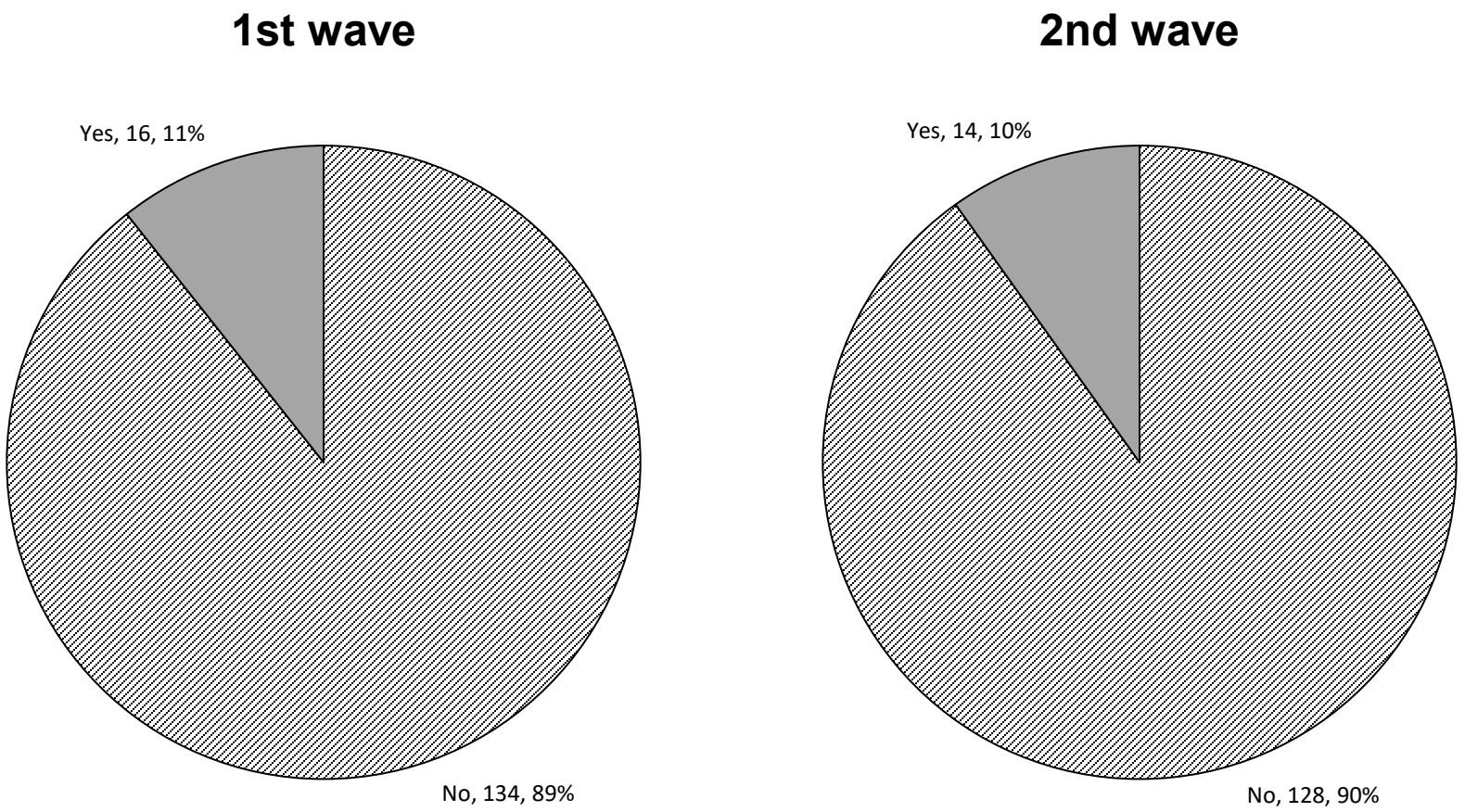


Total requiring admission

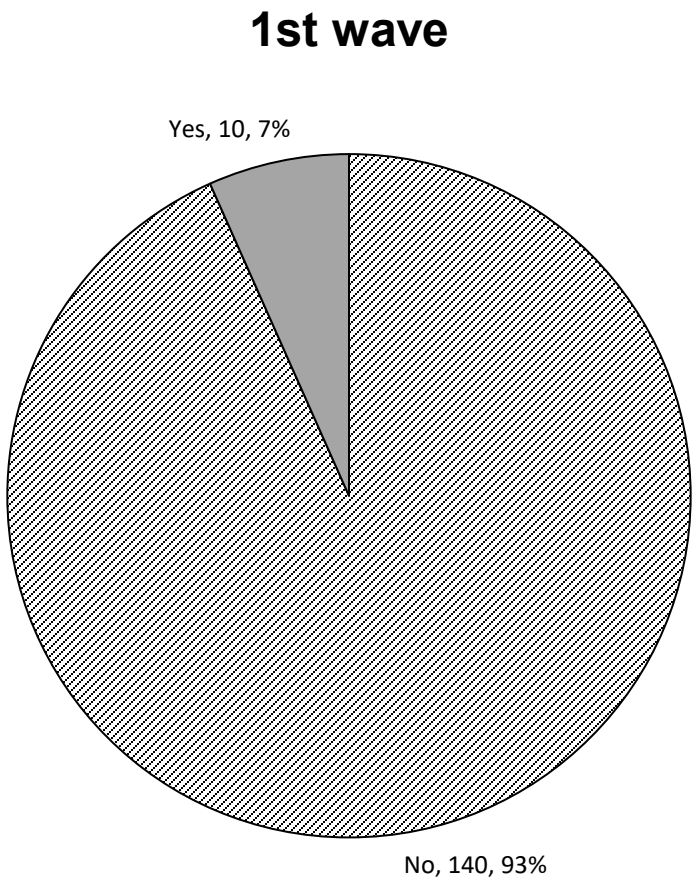


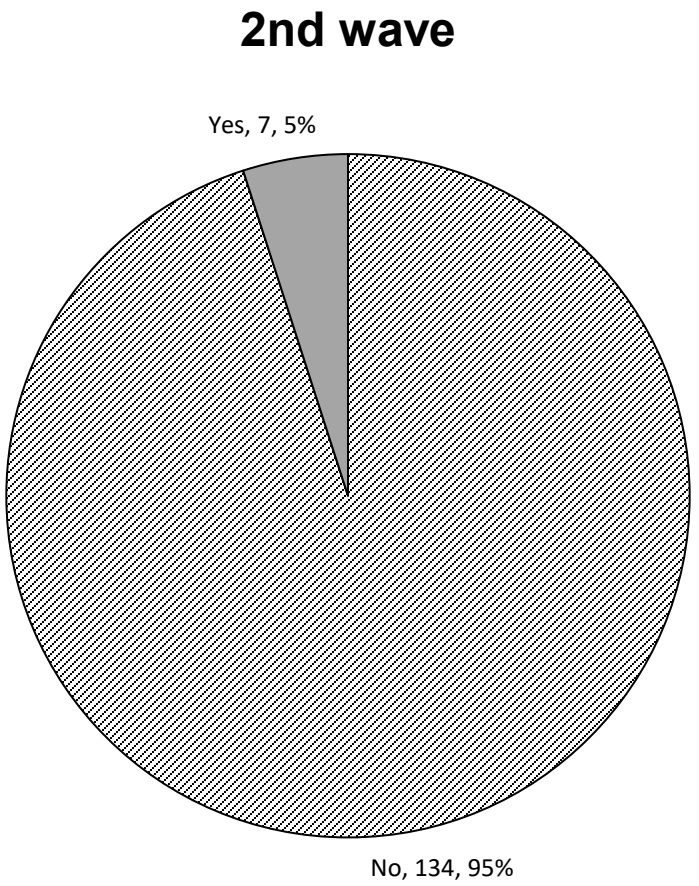


Critical care - Non-invasive ventilation

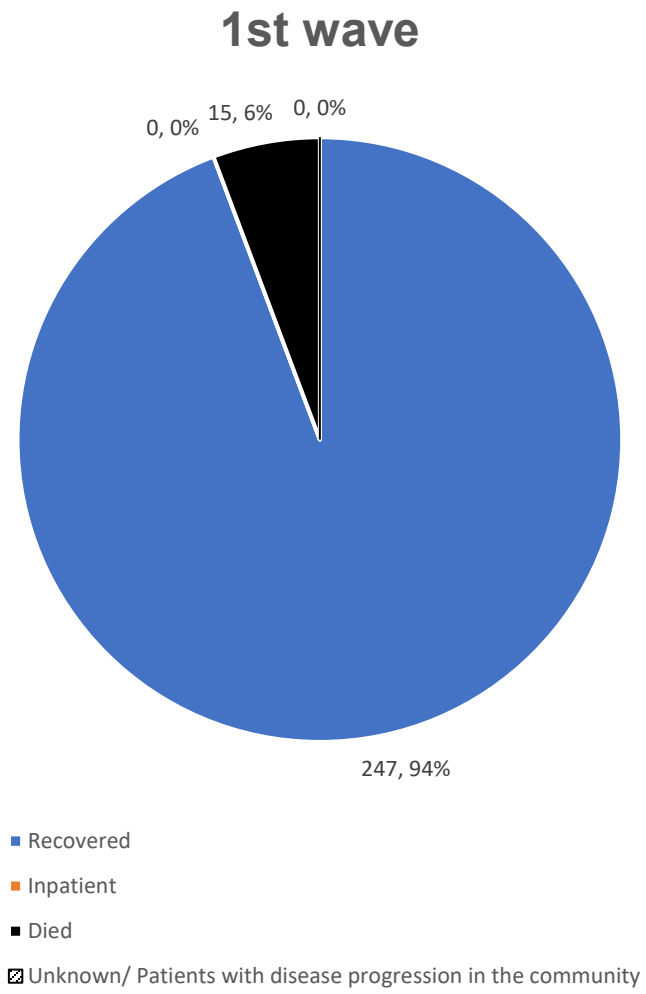


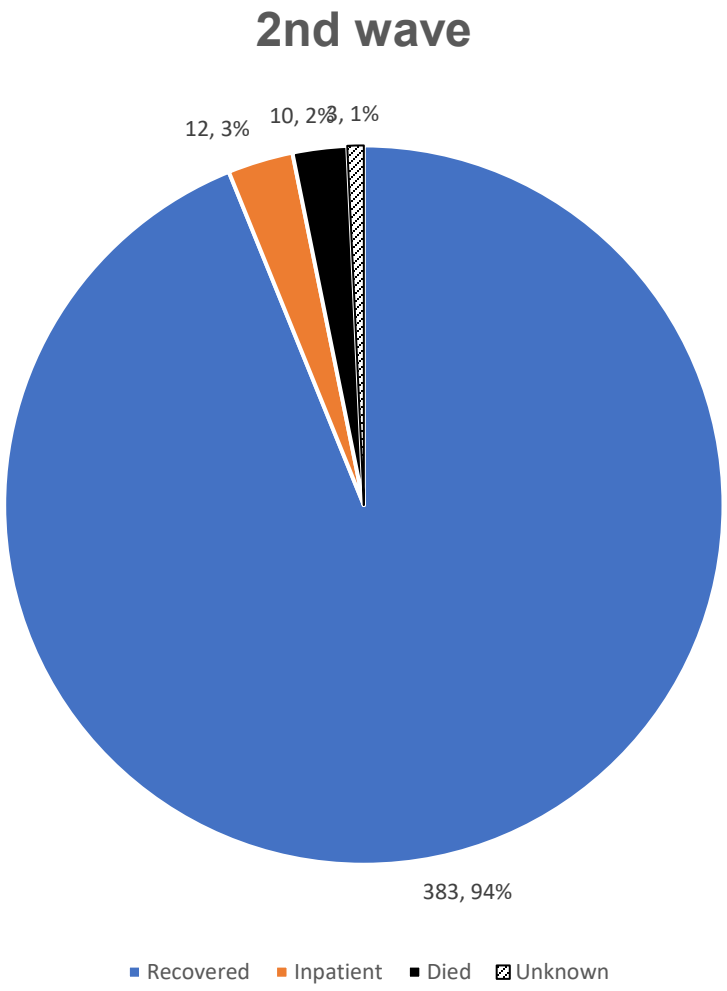
Critical care - mechanical ventilation





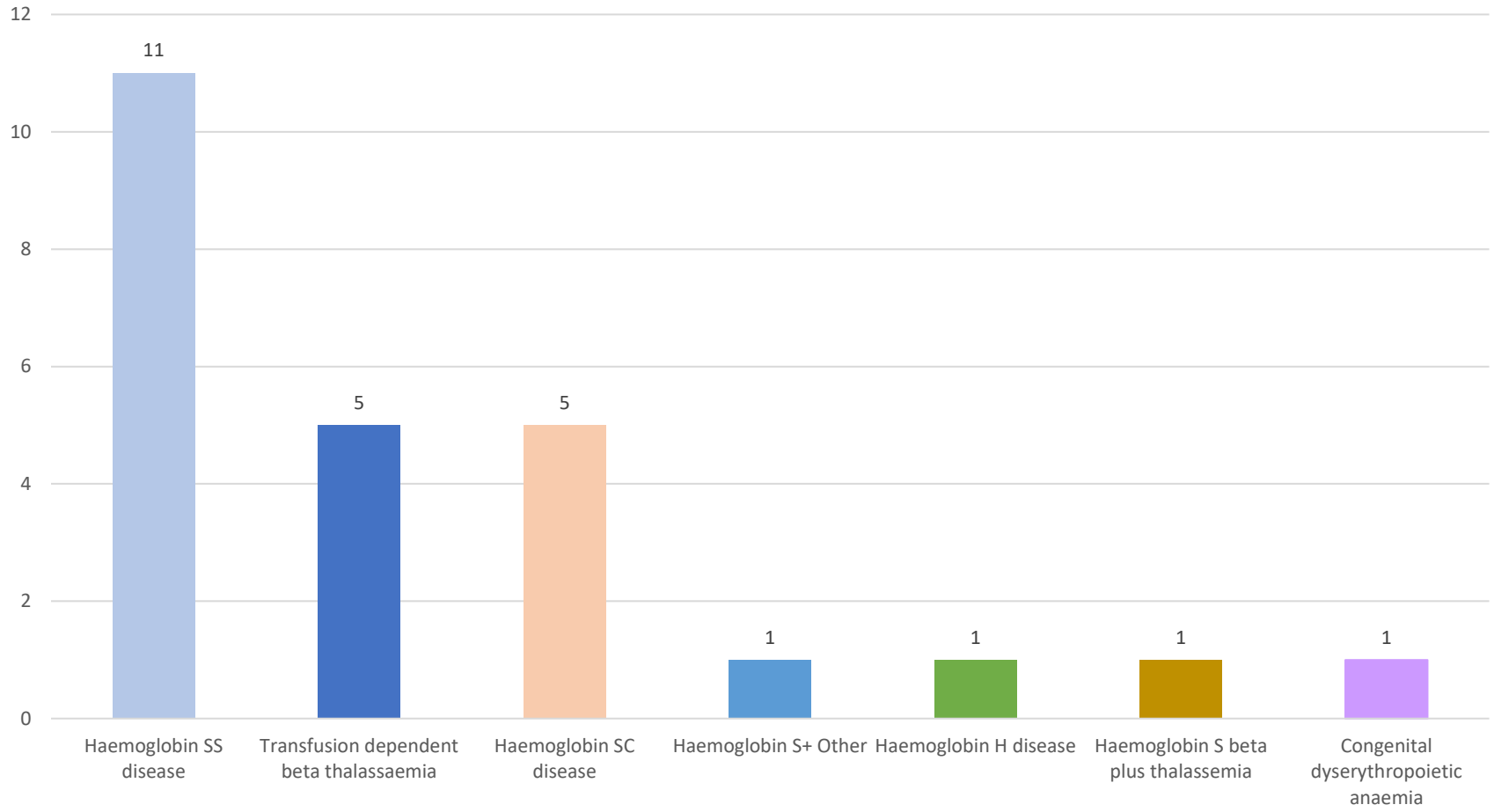
Patient outcome





No deaths < 19 years

Mortality


12
10
8
6
4
2
0
11
5
5
1
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Haemoglobin SS disease
Transfusion dependent beta thalassaemia
Haemoglobin SC disease
Haemoglobin S+ Other
Haemoglobin H disease
Haemoglobin S beta plus thalassemia
Congenital dyserythropoietic anaemia

Thalassaemia and Rare Anaemias

Phenotype	n	Age (range)	M/F	Recovered	Died	Ongoing
TDT	72	5-67	47/25	67	5	0
NTDT	8	18-54	6/2	8	0	0
HbEβ-TD	4	17-29	2/2	4	0	0
HbH disease	7	35-92	4/3	6	1	0
HbEβ-NTD	7	12-38	1/6	7	0	0
Total	**98**	**5-92 (33.9)**	**60/38**	**92 (93.8%)**	**6 (6.2%)**	**0**
Unstable Hb	2	45-71	0/2	2	0	0
HPP	2	0-35	1/1	2	0	0
Diamond Blackfan Anaemia	6	2-37	1/5	6	0	0
Congenital dyserythropoietic anaemia	2	33-47	0/2	1	1	0
Total	**12**	**0-71**	**2/10**	**11 (91.7%)**	**1 (8.3%)**	**0**

TDT; Transfusion dependent thalassaemia
NTDT; Non-transfusion dependent Thalassaemia
HPP; Hereditary pyropoikilocytosis

Risk of severe COVID-19 in SCD

Association of variables with survival status in SCD patients with confirmed COVID-19 (n=422)

	Alive	Dead	P-Value
Patient gender			
Female	240 (96.4%)	9 (3.6%)	0.77
Male	166 (96.0%)	7 (4.0%)	
Patient age (y)			
<10	21 (100%)	0 (0%)	0.0001
10-19	67 (98.6%)	1 (1.4%)	
20-29	109 (98.2 %)	2 (1.8%)	
30-39	79 (97.5 %)	2 (2.5%)	
40-49	62 (100%)	0 (0%)	
50-59	49 (87.5%)	7 (12.5%)	
>60	19 (82.6%)	4 (17.3%)	
Disease Severity			
Mild	92 (93.9%)	6 (6.1%)	0.055
Severe	314 (97.2%)	9 (2.8%)	

Comparison of COVID-19 outcome in SCD and UK general population

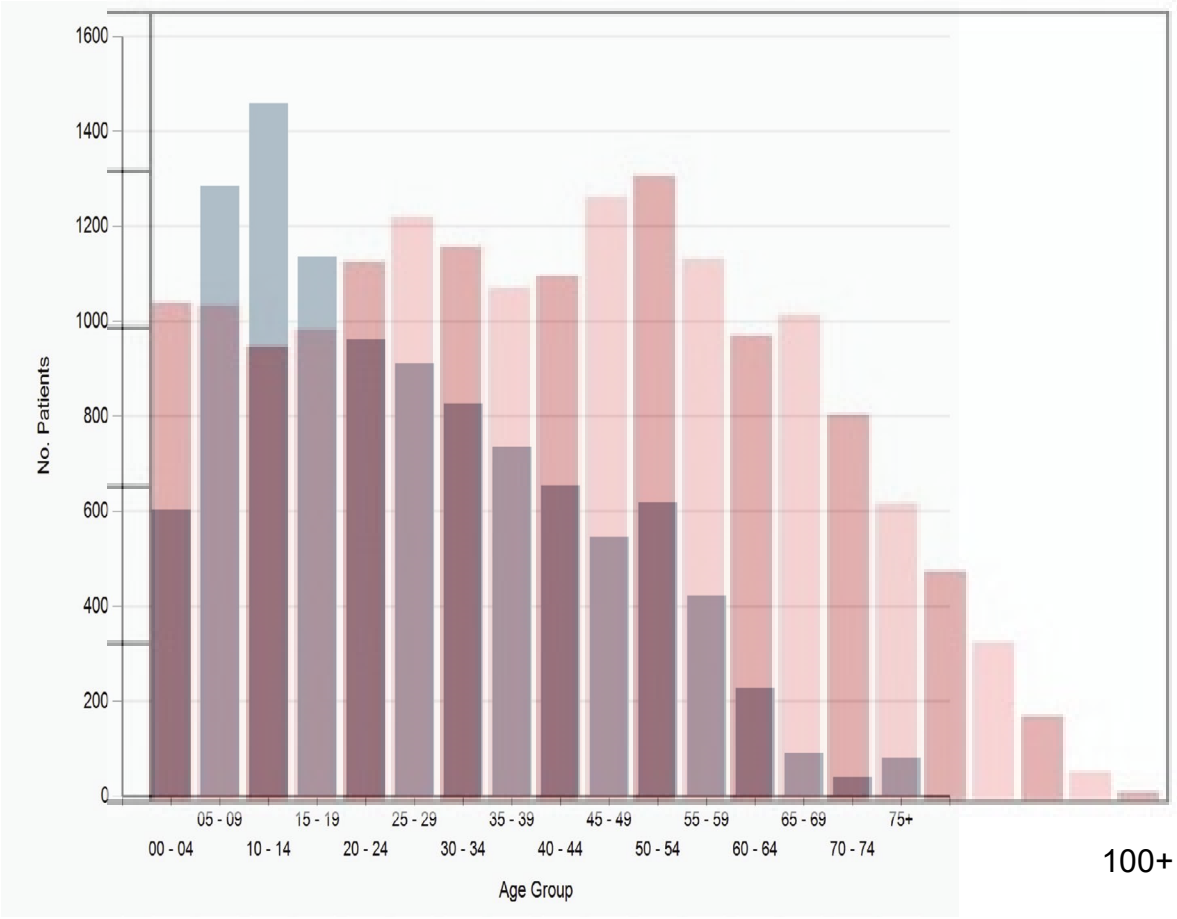
6 May 2020:

UK population:
- 206,715 cases of COVID-19
- 30,615 deaths (14.8%)
- Median age of patients admitted: 73 years
  Docherty *et al,* BMJ 2020;369:m1985

Patients with sickle cell disease
- 166 cases of COVID-19 (incl. suspected)
- 13 deaths (7.8%)
- Median age: 31 years

Adjusted for age based on data from NHR and OpenSAFELY study (17M people). Williamson *et al*, Nature 2020;584:430
- 18-49 years: OR 34.5 (CI 12.8-92.8, p <0. 0001)
- 50-79 years: OR 4.1 (CI 1.5-11.0, p=0.0047)

Age pyramid of SCD patients (NHR, 2018-2019)



Survival status of adult SCD patients admitted in 1st and 2nd waves (N=218)

	Alive	Dead	P-Value
1st Wave	87 (89.7%)	10 (10.3%)	0.074
2nd Wave	116 (95.9%)	5 (4.1%)	

Conclusions

- Organisation of specialised services for haemoglobinopathies and rare anaemias in England has facilitated rapid data collection in response to the COVID-19 pandemic which has informed guidance for clinicians and patients
- Despite recommendations on social distancing measures (SDM) including shielding a significant number of haemoglobinopathy patients have developed COVID-19
- Vulnerability to COVID-19 is increased in sickle cell disease (both severe and mild genotypes)
- Age is a significant risk factor
- The relatively mild course of COVID-19 in most children implies they are not ‘clinically extremely vulnerable’ and in the absence of significant complications specifically identified by their clinical team need not ‘shield’
- No clear difference in patient outcome is evident to date in the 1st and 2nd COVID-19 waves

Acknowledgements

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