SUPPLEMENTARY APPENDIX

S.1: Full demographic details of cohort

	Number (*n*=70)	**Percentage**
Age	3 months – 16 years	n/a
Gender		
Female	21	30%
Male	49	70%
Socioeconomic status		
Quintile 1 [most deprived]	15	21.4%
Quintile 2	24	34.3%
Quintile 3	18	25.7%
Quintile 4	8	11.4%
Quintile 5 [least deprived]	5	7.1%
Case definition		
Met RCPCH case definition	57	81.4%
Met CDC case definition	44	62.9%
Met WHO case definition	38	54.3%
MDT-diagnosed atypical PIMS-TS	13	18.6%
Severity		
Length of stay	2-22 days	
Required ventilator	10	14.3%
Required inotropes	32	45.7%
Death	1	1%
Ethnicity [whole cohort]		

White	**18**	25.7%
White - British	11	
White - Irish	0	
White - Any other White background	7	
Mixed	**4**	5.7%
Mixed - White and Black Caribbean	0	
Mixed - White and Black African	1	
Mixed - White and Asian	2	
Mixed - Any other Mixed Background	1	
Asian/Asian British	**7**	10.0%
Asian - Indian	3	
Asian - Pakistani	1	
Asian - Bangladeshi	1	
Chinese	0	
Asian - Any other Asian background	2	
Black/African/Caribbean/Black British	38	54.3%
Black - Caribbean	2	
Black - African	27	
Black - Any other Black background	9	
Other - Any other ethnic group	**3**	4.3%
Other - Any other ethnic group	3	
Body Mass Index		
>25	11	15.7%

<25	59	84.3%

Appendix S.2: Inflammatory characteristics of patients who met (group A) and did not meet (group B) the RCPCH PIMS- TS case definition

	PIMSTS meeting RCPCH criteria	MDT diagnosis PIMS-TS not meeting criteria
Total number of patients	57	13
Mean peak ferritin (range) (ug/L)*	955 (109-4909)	926 (77- 4220)
Mean peak CRP (range) (mg/L)**	202 (48-425)	197 (48-556)
Peak coronary Z score >2.0 (total number)	36.8% (21)	38.4% (5)
Proportion of Black ethnicity (total number)	52.6% (30)	61.5% (8)
Proportion of White ethnicity (total number)	26.3% (15)	23.1% (3)
Proportion of Asian ethnicity (total number)	12.3% (7)	-
Proportion of Mixed ethnicity (total number)	5.3% (3)	7.7 % (1)
Proportion of Other ethnicity (total number)	3.5% (2)	7.7 % (1)
Most commonly represented IMD group	2	2

*Normal ferritin value <0.05 ug/L
**Normal CRP value <5ml/L

Appendix S.3 Full regression models of outcome variables

Length of hospital stay (log transformed)

	Complete model			Model excluding ethnicity		
	Estimate	95% CI	*p*-value	Estimate	95% CI	*p*-value
Asian	0.944	0.643, 1.39	0.765			
Black	1.38	1.04, 1.82	0.0252			
Mixed	0.706	0.442, 1.13	0.142			
Other	1.46	0.853, 2.5	0.164			
IMD quintile	0.913	0.827, 1.01	0.0727	0.854	0.777,	0.00141

					0.939	
BMI	0.964	0.939, 0.989	0.00588	0.975	0.95, 1	0.0592
Age (months)	1	1, 1	0.0368	1	1, 1	0.0625
Gender (male)	1.05	0.833, 1.33	0.656	1.04	0.812, 1.33	0.747
Likelihood Ratio Test			0.01118			

PICU admission

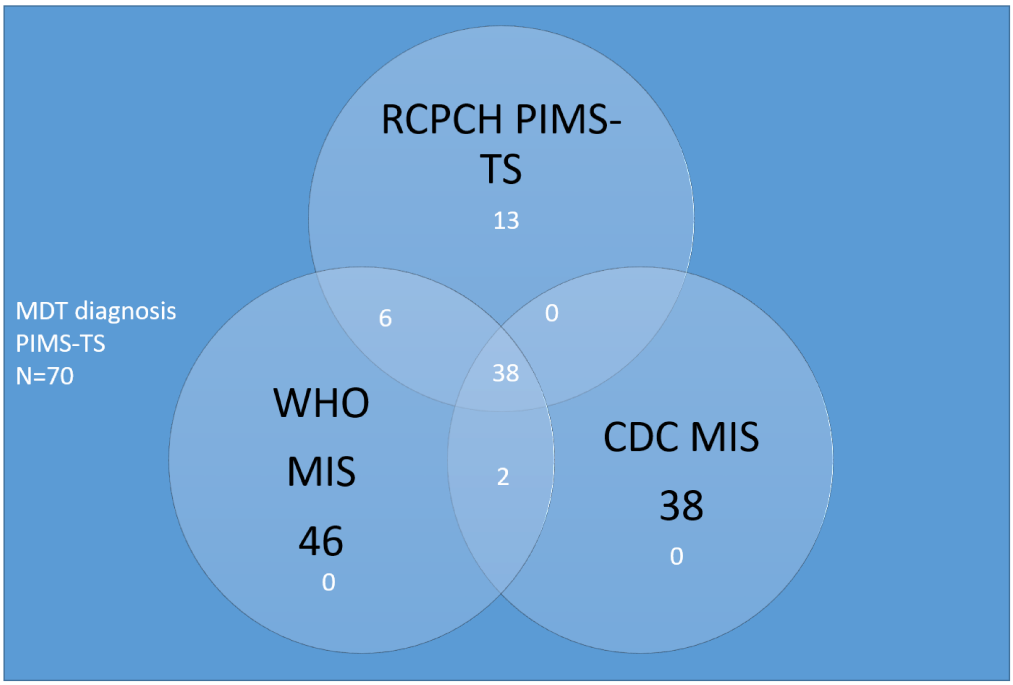
	Complete model			Model excluding ethnicity		
	Estimate	95% CI	*p*-value	Estimate	95% CI	*p*-value
Asian	0.953	0.148, 6.5	0.959			
Black	1.95	0.482, 7.93	0.343			
Mixed/Other	1.08	0.172, 7.24	0.931			
IMD quintile	0.809	0.488, 1.32	0.399	0.727	0.455, 1.13	0.163
BMI	0.956	0.833, 1.1	0.522	0.981	0.865, 1.12	0.769
Age (months)	1.01	0.995, 1.02	0.273	1.01	0.994, 1.02	0.333
Gender (male)	0.559	0.148, 1.88	0.363	0.552	0.15, 1.81	0.342
Likelihood Ratio Test			0.7679			

Invasive ventilation

	Complete model			Model excluding ethnicity		
	Estimate	95% CI	*p*-value	Estimate	95% CI	*p*-value
Ethnicity (Black)	10.3	1.4, 224	0.0502			
IMD quintile	0.61	0.223, 1.45	0.293	0.426	0.174, 0.865	0.0339
BMI	0.833	0.661, 0.999	0.0753	0.873	0.702, 1.04	0.169
Age (months)	1.01	0.993, 1.03	0.303	1.01	0.992, 1.02	0.418
Gender (male)	1.04	0.198, 6.28	0.964	0.81	0.165, 4.58	0.798
Likelihood Ratio Test			0.04722			

Inotropes						
	Complete model			Model excluding ethnicity		
	Estimate	95% CI	*p*-value	Estimate	95% CI	*p*-value
Asian	2.27	0.303, 17.1	0.415			
Black	2.98	0.741, 13.9	0.136			
Mixed/Other	4.71	0.683, 37.4	0.12			
IMD quintile	0.67	0.385, 1.11	0.134	0.602	0.364, 0.941	0.034
BMI	0.973	0.853, 1.11	0.673	0.987	0.873, 1.11	0.837
Age (months)	1.01	0.995, 1.02	0.258	1.01	0.995, 1.02	0.284
Gender (male)	0.65	0.188, 2.14	0.483	0.718	0.221, 2.26	0.573
Likelihood Ratio Test			0.3319			

Figure S.4 Classification of patients according to CDC vs WHO vs RCPCH diagnostic criteria



57 met the RCPCH case definition. 46 met WHO criteria, and 38 met CDC criteria (Figure 1). The RCPCH definition is the most sensitive including the highest number of our cohort.

S.5 Sensitivity analysis of crude Odds Ratios for PIMS-TS by IMD Quintile and Ethnicity, with and without those meeting RCPCH PIMS-TS classification

Using RCPCH Inclusion Criteria (*n*=51; also excludes those over age 16 and from outside STRS region)										**All Evelina PIMS-TS Cohort, excluding those over age 16 and from outside STRS region (*n*=63)**			
IMD Quintile/Ethnicity	*n*, Cohort	%, Cohort	*n*, Population	%, Population	Rate per 100,000	OR Estimate	95% CI		*p*-value	OR Estimate	95% CI		*p*-value
1 (most deprived)	13	25%	185365	14%	7.0	4.5	1.6	12.6	0.004	5.2	1.9	14.3	0.001
2	16	31%	300958	22%	5.3	3.4	1.3	9.3	0.017	4.7	1.8	12.4	0.002
3	11	22%	276896	20%	4.0	2.5	0.9	7.3	0.083	3.5	1.3	9.6	0.016
4	6	12%	277762	20%	2.2	1.4	0.4	4.5	0.589	1.4	0.4	4.5	0.589
5 (least deprived)	5	10%	320936	24%	1.6	1				1			
White	13	25%	942267	73%	1.4	1				1			
Black	27	53%	140045	11%	19.3	14.0	7.2	27.1	<0.0001	15.7	8.6	28.7	<0.0001
Asian	6	12%	94094	7%	6.4	4.6	1.8	12.2	0.002	4	1.6	10.3	0.004
Mixed	3	6%	100718	8%	3.0	2.2	0.6	7.6	0.230	2.5	0.8	7.5	0.104
Other	2	4%	16851	1%	11.9	8.6	1.9	38.1	0.005	11.2	3.2	38.6	0.000

Treatment of IMD Quintile variable

Regression models were fit in two ways: treating the IMD quintile independent variable as a linear, numeric covariate, and treating IMD quintile as an ordinal variable. It is theoretically preferable to treat IMD as an ordinal variable, however the sample size meant this did not always give meaningful results, as described below.

Length of Stay

For the length of stay outcome, we report in Table 5 the results where IMD was treated as a linear, numeric covariate. The supplementary table below shows the results when IMD was treated as an ordered categorical variable, which are comparable.

Ventilation

For the invasive ventilation outcome, we report in Table 6 the results where IMD was treated as a linear, numeric covariate. When IMD quintile was treated as an ordinal variable, the confidence intervals on the estimates for the IMD terms were so wide as to render the estimates meaningless. This led us to fit a model excluding the IMD quintile variable, and we present this in the supplementary version of Table 6 below.

The model excluding IMD shows a larger estimate for Black ethnicity; this is attenuated when IMD is included in the model. A likelihood ratio test comparing these two models does not show a significant improvement on inclusion of IMD (p=0.298). Still, the small sample size and the distribution of the outcome (9/10 ventilated patients were in the Black ethnicity group), severely limit conclusions and inferences from these analyses, which should be repeated on a larger multi-centre sample.

Supplementary version of Table 5. Estimated regression coefficients for length of stay (log transformed), with IMD treated as an ordered categorical variable

	Complete model including ethnicity				**Model excluding ethnicity**		
	Estimate	Confidence Interval (95%)	*p*-value		Estimate	Confidence Interval (95%)	*p*-value
Asian	0.964	0.658, 1.41	0.85				
Black	1.32	0.993, 1.75	0.0557				
Mixed	0.744	0.465, 1.19	0.215				
Other	1.56	0.911, 2.68	0.103				
IMD - Linear	0.788	0.568, 1.09	0.149		0.672	0.492, 0.917	0.0131
IMD - Quadratic	1.22	0.923, 1.6	0.161		1.28	0.962, 1.69	0.09
IMD - Cubic	1.27	0.973, 1.67	0.0771		1.37	1.04, 1.78	0.0232
IMD - ^4	1.16	0.919, 1.45	0.211		1.16	0.916, 1.46	0.216
BMI	0.966	0.942, 0.992	0.0109		0.975	0.95, 1	0.0547
Age (months)	1	1, 1	0.0324		1	1, 1	0.0405
Gender (male)	1.02	0.807, 1.29	0.855		1.01	0.795, 1.29	0.912

Likelihood ratio test when including ethnicity vs not including ethnicity p=0.02641 (58 vs 62 degrees of freedom).

	Complete model			**Model excluding ethnicity**		**Model excluding IMD**

	Estimate	95% CI	p-value		Estimate	95% CI	p-value		Estimate	95% CI	p-value
Ethnicity (Black)	10.3	1.4, 224	0.0502						17.1	2.63, 345	0.0124
IMD quintile	0.61	0.223, 1.45	0.293		0.426	0.174, 0.865	0.0339				
BMI	0.833	0.661, 0.999	0.0753		0.873	0.702, 1.04	0.169		0.828	0.66, 0.991	0.0622
Age (months)	1.01	0.993, 1.03	0.303		1.01	0.992, 1.02	0.418		1.01	0.993, 1.03	0.287
Gender (male)	1.04	0.198, 6.28	0.964		0.81	0.165, 4.58	0.798		1.03	0.205, 6.03	0.969

Supplementary version of Table 6. Estimated regression coefficients for invasive ventilation, IMD treated as a linear variable (as in Table 6 in the main text), compared with a model excluding IMD

Likelihood ratio test comparing complete model with model excluding ethnicity p=0.04722 (64 vs 65 degrees of freedom).

Likelihood ratio test comparing complete model with model excluding IMD p=0.298 (64 vs 65 degrees of freedom).