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COVID-19 admissions calculators - revisited

Salemi et al. point out that emerging evidence indicates that many children with COVID-19 are asymptomatic and this may be 80%, possibly higher, with therefore $\leq 20\%$ who are symptomatic [1]. Dong et al. based their data on positive cases [2]. This may admittedly be a biased group and circulating, asymptomatic cases may greatly dilute the paper's findings, especially since asymptomatic carriage in the paediatric age group may be even higher [3,4].

For this reason, a correction factor of 15% and 5% symptomatic for overall and for paediatric respectively has been incorporated and the data for the worked example, Malta, revised in the following two tables. For all ages, including the paediatric population, the symptomatic proportion will vary, but the degree of variation is uncertain at the time of writing.

However, there is a large degree of potential error in all calculations at this point in time simply because we do not know enough about this virus. We will only know the truth in time, when large populations are randomly sampled and antibody statuses checked. Like Salemi et al., we hope that these calculations and estimates will provide (insofar as possible with extant knowledge) “reliable information to government officials, policy makers, and the pediatric medical community on the likelihood of capacity challenges.”

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Population	492,000	Malta total population
Infected %	20	Population infection rate
Symptomatic %	10	Estimated percentage symptomatic
Numbers infected and symptomatic	9,840	Total number infected
Hosp % of symptomatic infected	14	Percentage infected that are severe
Nos in hospital	1,378	Severe cases requiring hospitalisation
Over no of weeks	14	Spread over this number of weeks
Per week	98	Hospital admissions per week
ITU % of symptomatic infected	5	Percentage infected that are critically ill
Nos in ICU	492	Severe cases requiring intensive care
Over no of weeks	14	Spread over this number of weeks
Per week	35	ICU admissions per week
% mortality of symptomatic infected	3	Percentage deaths
Nos dead	295	Total deaths

Text in bold red can be changed for

Different population sizes

Percentage infected - varies with level/s of suppression applied to population

Time period of infection

Text in blue can be changed if the following rates change

Percentage severe (requiring hospitalisation)

Percentage requiring intensive care

Percentage mortality

Correction factor to account for asymptomatic cases - enter symptomatic percentage here

Based on World Health Organisation. Coronavirus disease 2019. WHO Report 41. 01 March 2020

Grech V. COVID-19 admissions calculators: general population and paediatric cohort. Early Human Development 2020.

Age	Malta n	Correction	Severe/Critical %	Infection rate			
		5		20	40	60	80
1	5,000	5	10.6	5	11	16	21
1 to 5	25,000	5	7.3	18	37	55	73
6 to 16	25,000	5	4.2	11	21	32	42
11 to 16	25,000	5	4.1	10	21	31	41
Totals	80,000			44	89	133	177

Text in red can be changed for population in question

Text in blue can be changed if better estimates of severity are available

Text in green can be changed to reflect different infection rates

Text in purple is correction factor to account for asymptomatic cases

Based on Dong Y, Mo X, Hu Y, et al. Epidemiological characteristics of 2143 pediatric patients with 2019 coronavirus disease in China. Pediatrics. 2020; doi: 10.1542/peds.2020-0702

Grech V. COVID-19 admissions calculators: general population and paediatric cohort. Early Human Development 2020.

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Grech Victor,

E-mail address: victor.e.grech@gov.mt.