

# Prevalence of HIV in patients hospitalized for COVID-19 and associated outcomes: a systematic review and meta-analysis

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## Introduction

It is hypothesized that the immunosuppressing nature of HIV makes persons living with HIV (PLWH) more susceptible to adverse COVID-19 related outcomes. With almost 40 million PLWH across the globe, it is imperative to estimate the burden of COVID-19 and its clinical outcomes in this population.

## Methods

PubMed, Scopus, OVID, Web of Science, Cochrane Library, and grey literature.

14 studies eligible for inclusion (N PLWH=592)

- Estimate the prevalence of HIV in patients hospitalized for COVID-19
- Estimate the mortality rate of COVID-19 in PLWH
- Pooled effect estimates derived with random-effects model

## Results

### Prevalence of HIV in COVID-19

Author (Year of Publication, City)	HIV+ (n)	COVID-19+ (N)	Events per 100 observations	Events	95%-CI	Weight
Richardson et al,2020,New York City	43	5700	0.75	0.75	[0.56; 1.02]	12.5%
Chen et al,2020,Wuhan	2	203	0.99	0.99	[0.25; 3.85]	8.5%
Karmen-Tuohy et al,2020,New York City	21	2617	0.80	0.80	[0.52; 1.23]	12.2%
Bhatraju et al,2020,Seattle	1	24	4.17	4.17	[0.58; 24.35]	6.3%
Cummings et al,2020,New York City	8	257	3.11	3.11	[1.56; 6.10]	11.4%
Prieto-Alhambra et al,2020,Catalonia	311	121263	0.26	0.26	[0.23; 0.29]	12.8%
Argenziano et al,2020,New York City	21	1000	2.10	2.10	[1.37; 3.20]	12.2%
Marcello et al,2020,New York City	159	13442	1.18	1.18	[1.01; 1.38]	12.8%
Crotty et al,2020,Dallas	7	289	2.42	2.42	[1.16; 4.99]	11.2%
<b>Random effects model</b>				<b>1.22</b>	<b>[0.61; 2.43]</b>	<b>100.0%</b>

Heterogeneity:  $I^2 = 98\%$ ,  $\tau^2 = 1.0075$ ,  $p < 0.01$

### Prevalence of HIV in the general population

Author (Year of Publication, City)	HIV+ (n)	COVID-19+ (N)	Events per 100 observations	Events	95%-CI	Weight
Richardson et al,2020,New York City	108000	8000000	1.35	1.35	[1.34; 1.36]	11.1%
Chen et al,2020,Wuhan	6000	9000000	0.07	0.07	[0.07; 0.07]	11.1%
Karmen-Tuohy et al,2020,New York City	108000	8000000	1.35	1.35	[1.34; 1.36]	11.1%
Bhatraju et al,2020,Seattle	8616	4000000	0.22	0.22	[0.21; 0.22]	11.1%
Cummings et al,2020,New York City	108000	8000000	1.35	1.35	[1.34; 1.36]	11.1%
Prieto-Alhambra et al,2020,Catalonia	34729	7000000	0.50	0.50	[0.49; 0.50]	11.1%
Argenziano et al,2020,New York City	108000	8000000	1.35	1.35	[1.34; 1.36]	11.1%
Marcello et al,2020,New York City	108000	8000000	1.35	1.35	[1.34; 1.36]	11.1%
Crotty et al,2020,Dallas	16825	2500000	0.67	0.67	[0.66; 0.68]	11.1%
<b>combined prevalence</b>				<b>0.65</b>	<b>[0.48; 0.89]</b>	<b>100.0%</b>

Heterogeneity:  $I^2 = 100\%$ ,  $\tau^2 = 0.2328$ ,  $p = 0$

### COVID-19 Mortality Rate in PLWH

Author (Year of Publication, City)	Died	COVID-19 with HIV	Events per 100 observations	Events	95%-CI	Weight
HŠrter et al,2020,Ulm**	3	33	9.09	9.09	[ 2.96; 24.68]	17.1%
Blanco et al,2020,Barcelona	0	5	0.00	0.00	[ 0.50; 62.18]	7.7%
Gervason et al,2020,Milano	2	47	4.26	4.26	[ 1.07; 15.48]	15.5%
Karmen-Tuohy et al,2020,New York City	6	21	28.57	28.57	[13.43; 50.76]	18.8%
Marcello et al,2020,New York City	20	159	12.58	12.58	[ 8.26; 18.69]	21.7%
Vizcarra et al,2020,Madrid	0	51	0.00	0.00	[ 0.06; 13.59]	8.1%
ÉSuanwongse& Shabarek,2020,New York City	7	8	87.50	87.50	[46.27; 98.27]	11.2%
<b>combined mortality rate</b>				<b>14.09</b>	<b>[ 5.78; 30.50]</b>	<b>100.0%</b>

Heterogeneity:  $I^2 = 75\%$ ,  $\tau^2 = 1.1064$ ,  $p < 0.01$

## Discussion

Our findings suggest that the prevalence of HIV in patients hospitalized for COVID-19 appears higher than in the general population, suggesting a possible higher susceptibility of COVID-19 in PLWH