

# COVID-19 and cancer: do we really know what we think we know?

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<https://doi.org/10.1038/s41571-020-0394-y>

**Table 1.** Summary of publications/presentations describing COVID-19 infection among patients with cancer

Study/ Country/ status	Cancer patients (N)	% COVID- 19 patients with cancer	Case fatality rate	Treatment effects	Methodologic notes
Liang <i>et al.</i> <sup>1</sup>	18	1.13%	NR	<p>“Severe” outcomes in 7/18 (39%) cancer vs 124/1572 (8%) controls</p> <p>2/4 patients with treatment &lt; 1mo had ICU or death.</p>	<p>Definition of “cancer patient” very unclear</p> <p>Very small numbers – only two patients with chemotherapy in prior month previous, one of whom had a serious event.</p>
Zhang <i>et al.</i> <sup>2</sup>	28	NR	29% (8/28)	<p>“Severe outcomes” in 15/28 (54%) cancer</p> <p>6 had therapy &lt; 14 days. 5/6 of these had severe outcomes.</p> <p>22 had therapy &gt;14 days, 10/22 had severe outcomes.</p>	<p>Very small numbers.</p> <p>14 day cut off is arbitrary.</p> <p>Using 30 day cut-off, the direction of association was reversed.</p>
Dai <i>et al.</i> <sup>3</sup>	105	NR	11.4% (12/105)	<p>45/105 (34%) in cancer, OR 2.79 (95%CI 1.74-4.41)</p> <p>Death rate for cases with treatment within 40 days: 12% (2/17) chemotherapy; 33% (2/6) immunotherapy; 8% (1/13) radiation; 25% (2/8) surgery; 0% (0/4) targeted therapy</p>	<p>Uncertainty how deaths attributed.</p> <p>Unclear what % clinical vs PCR COVID-19 diagnosis.</p> <p>Increased OR for death among patients with cancer appears entirely driven by patients with metastatic disease.</p>

Yu <i>et al.</i> <sup>4</sup>	12		25% (3/12)	3 deaths - 1 during chemo-RT -2 years after chemo-RT (lung cancer) -untreated patient with poor PS and pancreas cancer	Very small numbers.  High percentage of PCR negative cases (only 4/12 = 33% SARS-Cov-2 positive)
Miyashita <i>et al.</i> <sup>5</sup>	334	6% (334/5688)	11.1% (37/334) cancer vs 9.7% (518/5324) non-cancer	Treatment effect not reported 3/53 patients under 50 died	Focus on very small numbers (3 patients) 6% rate represents cancer at any time
Trapani <i>et al.</i> <sup>6</sup>	150 (deaths)  9 (local)	16.5% of deaths (150/909)	N/A (all deaths)  0% (0/9)	1/4 cytotoxic patients with severe disease, 0/2 immunotherapy patients, 1/3 EGFR TKI	Death from COVID-19 vs death with COVID-19 is unclear. Small numbers/early followup (locally)
Barlesi <i>et al.</i> <sup>7</sup>	137	NR	15% (20/137)	Cytotoxic in last 3 mo HR 2.0 [0.96-4.22]	Good quality. Performance status driver of outcome.
Garrasino <i>et al.</i> <sup>8</sup>	200	NR	34.6% (66/191)	13/49 (no treatment); 8/28 (TKI treated); 22/46 (chemotherapy); 11/33 (immunotherapy); 5/19 (chemotherapy/immunotherapy); 7/16 (other). No significant difference	Unclear how deaths attributed/adjudicated.  Needs to report PCR positive cases vs clinical diagnosis cases.

1. Liang, W. *et al.* Cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. *Lancet Oncol*, **21**, 335–337 (2020).
2. Zhang, L. *et al.* Clinical characteristics of COVID-19-infected cancer patients: A retrospective case study in three hospitals within Wuhan, China. *Ann. Oncol.* <https://doi.org/10.1016/j.annonc.2020.03.296> (2020).
3. Dai, M. Y. *et al.* Patients with cancer appear more vulnerable to SARS-CoV-2: a multi-center study during the COVID-19 outbreak *Cancer Discov.* <https://doi.org/10.1158/2159-8290.CD-20-0422> (2020).
4. Yu, J. *et al.* SARS-CoV-2 transmission in patients with cancer at a tertiary care hospital in Wuhan, China. *JAMA Oncol.* <https://doi.org/10.1001/jamaoncol.2020.0980> (2020).
5. Miyashita, H. *et al.* Do patients with cancer have a poorer prognosis of COVID-19? an experience in New York city. *Ann. Oncol.* <https://doi.org/10.1016/j.annonc.2020.04.006> (2020).

6. Trapani, D., Marra, A. & Curigliano, G. The experience on coronavirus disease 2019 and cancer from an oncology hub institution in Milan, Lombardy Region. *Eur. J. Cancer* **132**, 199–206 (2020).
7. Barlesi, S. F. *et al.* Outcome of cancer patients infected with COVID-19, including toxicity of cancer treatments <https://www.abstractsonline.com/pp8/#!/9045/presentation/10935> (2020).
8. Garissino, M. TERA-VOLT (Thoracic canCERs international coVid 19 cOLLaboraTion): First results of a global collaboration to address the impact of COVID-19 in patients with thoracic malignancies. <https://www.abstractsonline.com/pp8/#!/9045/presentation/10927> (2020).