

1 **Supplementary materials**

2 **Supplementary Table 1. Baseline characteristics of enrolled patients in the entire cohort.**

	Total (n=1197)
Age, year, median (IQR)	72 (63-79)
Age ≥ 70 , n (%)	710 (59.3)
Female, n (%)	548 (45.7)
Background hematologic disease, n (%)	
Lymphoid neoplasms	792 (66.2)
Malignant lymphoma	534 (44.6)
BCL	465 (38.9)
TCL	45 (3.7)
HL	24 (2.0)
Plasma cell dyscrasia	229 (19.1)
MM	146 (12.2)
sMM/MGUS	83 (6.9)
Acute lymphoblastic leukemia	29 (2.4)
Myeloid neoplasms	298 (24.9)
AML/MDS	134 (11.2)
MPN	106 (8.8)
CML	58 (4.8)
Benign hematologic disorders	107 (8.9)
AA	32 (2.7)
Others	75 (6.2)
Treatment, n (%)	
Ongoing treatment	483 (40.3)
Anti-CD20 antibody within two years	234 (19.5)
Bendamustine within two years	51 (4.2)
HSCT within two years	27 (2.2)
Vaccination dose, n (%)	
$\geq$ three	1085 (90.6)
Two	78 (6.5)
Missing	34 (2.9)
Preexposure prophylaxis with tixagevimab–cilgavimab, n (%)	80 (6.7)

Abbreviations: IQR, interquartile range; BCL, B-cell lymphoma; TCL, T-cell lymphoma; HL, Hodgkin lymphoma; MM, multiple myeloma; sMM, smoldering multiple myeloma; MGUS, monoclonal gammopathy of undetermined significance; AML, acute myeloid leukemia; MDS, myelodysplastic syndrome; MPN, myeloproliferative neoplasms; CML, chronic myeloid leukemia; AA, aplastic anemia; HSCT, hematopoietic stem cell transplantation.

Supplementary Figure 1: Radiological and pathological findings of patients who developed fatal late-onset interstitial pneumonia. The upper panels show the radiological changes in chest computed tomography between onset and before death. Localized ground-grass opacities progressed bilaterally to an extended area accompanied by strong traction bronchiectasis. The lower panels show the autopsy findings of the lungs, with extensive organizing pneumonia and pulmonary fibrosis combined with severe diffuse alveolar damage. Abbreviations: H&E, hematoxylin and eosin staining; M&T, Masson's trichrome staining.

