

**Table S1** 27 qPCR respiratory pathogens (Nasopharyngeal swab)

Virus	Bacteria	Other
H1N1 Subtype of Influenza A Virus	Atypical pathogens	Chlamydophila Pneumoniae
H3N2 Seasonal Subtype of Influenza A Virus	Pyogenic Streptococcus	Mycoplasma Pneumoniae
H3 Subtype of Influenza A Virus	Moraxella catarrhalis	
H5 Subtype of Influenza A Virus	Pertussis Bacterium	
H7 Subtype of Influenza A Virus	Pneumoniae Streptococcus	
Rhinovirus	Legionella pneumophila	
Human Bocavirus		
Enterovirus		
Parainfluenza Virus Type 1		
Parainfluenza Virus Type 2		
Parainfluenza Virus Type 3		
Parainfluenza Virus Type 4		
Human Coronavirus		
Respiratory Syncytial Virus		
Influenza A virus subtype		
Haemophilus influenzae		
Human Metapneumovirus		
Adenovirus		
Influenza B virus subtype		

**Table S2** 107 respiratory pathogens targeted metagenomic sequencing (Nasopharyngeal swab)

Virus	Bacteria	Atypical pathogens
Human adenoviruses	Cryptobacillus haemolyticus	Mycoplasma pneumoniae
Human adenovirus group A	Corynebacterium diphtheriae	Chlamydia pneumoniae
Human adenovirus group B	Staphylococcus aureus	Chlamydia psittaci
Human adenovirus group C	Streptococcus agalactis	Chlamydia trachomatis
Human adenovirus group D	Streptococcus galactosus	Mycoplasma hominis
Human adenovirus group E	Streptococcus intermedius	Mycoplasma genitalium
Human adenovirus type 1	Streptococcus pneumoniae	Ureaplasma Urealyticum
Human adenovirus type 2	Streptococcus pyogenes	Ureaplasma parvum
Human adenovirus 3	Listeria monocytogenes	
human adenovirus 4	Streptococcus pharyngitis	
Human adenovirus 5	Corynebacterium ulcers	
Human adenovirus 7	Acinetobacter baumannii	
Human adenovirus 8	Bordetella pertussis	
Human adenovirus 12	Clostridium	
Human adenovirus 18	Haemophilus influenzae type A	
Human adenovirus 21	Haemophilus influenzae type B	
Human adenovirus 24	Klebsiella pneumoniae	
Human adenovirus 27	Legionella pneumophila	
Human adenovirus 28	Moraxella catarrhalis	
Human adenovirus 30	Neisseria gonorrhoeae	
Human adenovirus 31	Neisseria meningitidis	
Human adenovirus 34	Pseudomonas aeruginosa	
Human adenovirus 38	Serratia marcescens	
Human adenovirus 55	Stenotrophomonas maltophilia	
Human herpesvirus 1	Yersinia enterocolitica	
Human herpesvirus 2		
Human herpesvirus 3		
Human herpesvirus 4		
Human herpesvirus 5		
Human herpesvirus 6		

**Table S2** (continued)

**Table S2** (continued)

Virus	Bacteria	Atypical pathogens
Human herpesvirus 7		
Human Boca virus type 1		
Human parvovirus B19		
Enterovirus		
Enterovirus A		
Enterovirus B		
Enterovirus C		
Enterovirus D		
Enterovirus A71		
Enterovirus D68		
Coxsackievirus A5		
Coxsackievirus A6		
Coxsackie virus A10		
Coxsackie virus A16		
Echovirus 18		
Human coronavirus 229E		
Human coronavirus HKU1		
Human coronavirus NL63		
Human coronavirus OC43		
Human metapneumovirus		
Human respiratory syncytial virus A		
Human respiratory syncytial virus B		
SARS-Cov-2 and Two genotypes of novel coronavirus (Alpha, Omicron)		
Human parainfluenza virus 1		
Human parainfluenza virus 2		
Human parainfluenza virus 3		
Human parainfluenza virus 4		
Influenza A virus		
Influenza A virus H1N1		
Influenza A virus H3N2		
Influenza A virus H5N1		
Influenza A virus H7N9		
Influenza A virus H1N12009		
Influenza B virus		
Influenza C virus		
Measles virus		
Mumps virus		
Rhinovirus		
Rhinovirus A		
Rhinovirus B		
Rhinovirus C		
Rubella virus		
Mycoplasma pneumoniae macrolide resistance gene / locus: 23SrRNA: A2063G, 23SrRNA: A2064G, 23SrRNA: A2067G, 23SrRNA:C2617G.		

**Table S3** 198 respiratory pathogens targeted metagenomic sequencing (BALF)

Virus	Bacteria	Fungi	Atypical pathogens
Pasteurella multocida	Streptococcus pneumoniae	Candida albicans	Mycoplasma pneumoniae
Human adenovirus:	Streptococcus pyogenes	Candida Tropicalis	Ureaplasma parvum
Human adenovirus type 1	Streptococcus agalactiae	Candida pseudoplanarum	Chlamydia psittaci
Human adenovirus type 2	Streptococcus anginosus group:	Candida subplantarum	Chlamydia pneumoniae
Human adenovirus type 3	Streptococcus intermedius	Candida glabrata	Chlamydia trachomatis
Human adenovirus type 4	Non-tuberculous mycobacteria:	Pichia kudriazwi	
Human adenovirus type 5	Bird mycobacteria composite group	Pichia givenii	
Human adenovirus type 6	Mycobacteria	Trichosporon asaii	
Human adenovirus type 7	Intracellular mycobacteria	Mycoplasma pneumoniae	
Human adenovirus type 11	Tortoise-mycobacterium abscess composite group	Ureaplasma parvum	
Human adenovirus type 14	Mycobacteria	Chlamydia psittaci	
Human adenovirus type 21	Asia mycobacterium abscess	Cryptococcus neoformans	
Human adenovirus type 34	Hidden mycobacteria	Cryptococcus Gerter	
Human adenovirus type 35	Gordon mycobacteria	Histoplasmosis immembrana	
Human adenovirus type 55	Kansas mycobacteria	Pneumocystis yersoni	
Human adenovirus type 57	Mar the mycobacteria	Aspergillus fumigatus	
Human adenovirus group B	Scrofula mycobacteria	Aflatus complex group	
Human adenovirus group C	Molisch mycobacteria	Aspergillus Niger complex group	
Human adenopathy Group D	Ape mycobacteria	Aspergillus terreus complex group	
Human parvovirus B19	Sur plus mycobacteria		
JC polyomavirus	Mycobacterium xenopi		
WU polyomavirus	Mycobacterium fortuitum		
BK polyomavirus	Mycobacterium smegmatis		
Human metapneumovirus	Klebsiella pneumoniae		
Rhinovirus:	Klebsiella oxytoca		
Rhinovirus type A	Klebsiella aerogenes		
Rhinovirus type B	Klebsiella variicola		
Rhinovirus type COK	Pseudomonas aeruginosa		
Enterovirus:	Escherichia coli		
Enterovirus A	Enterobacter cloacae complex		
Coxsackievirus A2	Acinetobacter baumannii		
Coxsackievirus A5	Acinetobacter junii		
Coxsackievirus A6	Acinetobacter ulsini		
Coxsackievirus A10	Mycobacterium tuberculosis complex Group		
Coxsackievirus A16	Staphylococcus aureus		
Enterovirus A71	Trophema whipplei		
Enterovirus B	Arcanobacterium pyogenes		
Coxsackievirus B3	Serratia marcescens		
Enterovirus C	Proteus mirabilis		
Enterovirus D	Stenotrophomonas maltophilia		
Enterovirus Type D68	Haemophilus influenzae		
Echovirus E18	Elizabethkingia anopheles		
Echovirus E30	Elizabethkingia meningosepsis		
Measles virus	Moraxella catarrhalis		
Rubella virus	Bordetella pertussis		
Mumps virus	Bordetella holmide		
Talaromyces marneffeii	Bordetella paratyphi		
Total sporanox	Corynebacterium diphtheriae		
Irregular hair mould	Nocardia species:		
Scedosporium:	Nocardia farcinica		
Scedosporium apiosum	Nocardia SAN Giorgio		
Scedosporium boydii	Nocardia brasiliensis		

**Table 3** (continued)

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Virus	Bacteria	Fungi	Atypical pathogens
Genus of transverse pedunculus:	Nocardia abscess		
Transverse pedunculus umbrellae	Nocardia asteroides		
transverse pedunculus branching	Nocardia sag		
Rhizobium species:	Nocardia otitis		
Rhizobium deletinii	Nocardia terpene		
Rhizobium microsporum	Nocardia Africa		
Rhizobium oryzae	Nocardia neoformans		
Rhizomorrhiza:	Micromonas minimus		
Rhizomorrhiza parvum	Rhodococcus equi		
Sickle bacteria genera	Fusobacterium necrotizing		
Boehner cox	Fusobacterium nucleatum		
The urea solution urea original body	Bacteroides fragilis		
Human bocavirus 1	Brucella		
Human bocavirus 2	Burkholderia cepacia complex:		
Human bocavirus 3	Burkholderia cepacia		
Human bocavirus 4	Burkholderia neocepacia		
Human herpesvirus 6:	Burkholderia contaminating		
Human herpesvirus 6A	Burkholderia polyphagus		
Human herpesvirus 6B	Burkholderia pseudomallei		
Influenza A virus:	Burkholderia pseudomallei		
Influenza A virus H1N1	Legionella:		
Influenza A virus H1N1(2009)	Legionella pneumophila		
Influenza A virus H3N2	Legionella Bozeman		
Influenza A virus H5N1	Legionella longbeachaei		
Influenza A virus H7N9	Legionella Mickdade		
Influenza B virus:	Neisseria meningitidis		
Victoria lineage influenza B virus			
Yamagata lineage influenza B virus			
Influenza C virus			
Human respiratory virus type 1			
Human mumps virus type 2			
Human respiratory virus type 3			
Herpes simplex virus type 1			
Herpes simplex virus type 2			
Varicella zoster virus			
EB virus			
Cytomegalovirus			
Human herpesvirus 6			
Human respiratory syncytial virus type A			
Human respiratory syncytial virus type B			
Human coronavirus 229E			
Human coronavirus HKU1			
Human coronavirus NL63			
Human coronavirus OC43			
Human mumps virus type 4			

Detection range of drug resistance genes: carbapenem CRE: A carbapenem: blaSME, blaIMI, blaGES, blaNDM; B metallo  $\beta$  lactamase, blaIMP, blaVIM, blaSPM, blaGIM; D carbapenem: blaOXA-48 methicillin resistant Staphylococcus aureus MRSA: mecA; Mycoplasma pneumoniae macrolide resistant 23SrRNA:A2063G, A2064G, A2067G, C2617G.