

**Low levels of RSV testing among adults hospitalized for Lower Respiratory Tract Infection in the United States**

**Supplementary material**

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## Supplementary Material

### Appendix A List of diagnosis and billing codes

#### A.1 Table S1: LRTI Diagnosis Codes

Value		Description
J09	J09	INFLUNZA D/T ID INFLUNZA VIRUS
	J09.X	FLU D/T IDENT NOVEL FLU A VIRUS
	J09.X1	FLU D/T ID NOVEL FLU A VIRUS W PN
	J09.X2	FLU D/T IDENT NVL FLU A VIRUS W/RES
	J09.X3	FLU D/T IDENT NVL FLU A VIRUS W/GI
	J09.X9	FLU D/T IDENT NVL FLU A VIRUS WOTH
J10	J10	INFLUENZA D/T OTHR IDENT FLU VIRUS
	J10.0	INFLU D/T OTH IDENT FLU W/PNEUMONIA
	J10.00	FLU D/T OTH ID FLU VIRUS W UNSP TYPE PN
	J10.01	INFLU D/T OTH IDENT FLU W/SAM OT PN
	J10.08	FLU D/T OTH ID FLU VIRUS W OTH SPEC PN
	J10.1	INFLUENZA D/T OTHR FLU VIRUS W/RESP
	J10.2	FLU D/T OTH ID FLU VIRUS W GI MANIFEST
	J10.8	INFLUENZA D/T OTHR FLU WOTHR MANI
	J10.81	FLU D/T OTH IDNTF FLU VI W/ENCEPHAP
	J10.82	FLU D/T OTH ID FLU VIRUS W MYOCARDITIS
	J10.83	FLU D/T OTH ID FLU VIRUS W OTITIS MEDIA
	J10.89	FLU D/T OTH ID FLU VIRUS W OTH MANIFEST
J11	J11	INFLUENZA D/T UNIDENT FLU VIRUS
	J11.0	INFLU D/T UNIDENT FLU WTH PNEUMONIA
	J11.00	FLU D/T UNID FLU VIRUS W UNSP TYPE PN
	J11.08	FLU D/T UNID FLU VIRUS W SPEC PN
	J11.1	INFLU D/T UNIDNT FLU VRS WOTH RESP

	J11.2	FLU D/T UNID FLU VIRUS W GI MANIFEST
	J11.8	INFLU D/T UNIDNT FLU VRS WOTH MANF
	J11.81	FLU D/T UNID FLU VIRUS W ENCEPHALOPATHY
	J11.82	FLU D/T UNID FLU VIRUS W MYOCARDITIS
	J11.83	FLU D/T UNID FLU VIRUS W OTITIS MEDIA
	J11.89	FLU D/T UNID FLU VIRUS W OTH MANIFEST
<b>J12</b>	J12	VIRAL PNEUMONIA, NEC
	J12.0	ADENOVIRAL PN
	J12.1	RESP SYNCYTIAL VIRUS PN
	J12.2	PARAINFLUENZA VIRUS PN
	J12.3	HUMAN METAPNEUMOVIRUS PN
	J12.8	OTH VIRAL PNEUMONIA
	J12.81	PN D/T SARS-ASSOC CORONAVIRUS
	J12.82	PN D/T CORONAVIRUS DISEASE 2019
	J12.89	OTH VIRAL PN
	J12.9	VIRAL PN UNSP
<b>J13</b>	J13	PN D/T STREPTOCOCCUS PNE
<b>J14</b>	J14	PN D/T HEMOPHILUS INFLUENZAE
<b>J15</b>	J15	BACTERIAL PNEUMONIA NEC
	J15.0	PN D/T KLEBSIELLA PNE
	J15.1	PN D/T PSEUDOMONAS
	J15.2	PNEUMONIA DUE TO STAPHYLOCOCCUS
	J15.20	PN D/T STAPH UNSP
	J15.21	PNEUMONIA D/T STAPH AUREUS
	J15.211	PN D/T METHCIL SUSCEPT STAPH AURS
	J15.212	PN D/T METHCIL RESISTANT STAPH AURS
	J15.29	PN D/T OTH STAPH
	J15.3	PN D/T STREPTOCOCCUS GRP B

	J15.4	PN D/T OTH STREPTOCOCCI
	J15.5	PN D/T ESCHERICHIA COLI
	J15.6	PN D/T OTH GRAM-NEGATIVE BACTERIA
	J15.7	PN D/T MYCOPLASMA PNE
	J15.8	PN D/T OTH SPEC BACTERIA
	J15.9	UNSP BACTERIAL PN
<b>J16</b>	J16	PNEUMONIA D/T OTH INFCT ORGANS NEC
	J16.0	CHLAMYIAL PN
	J16.8	PN D/T OTH SPEC INFCT ORGISMS
<b>J17</b>	J17	PN IN DZ CLS ELSWHR
<b>J18</b>	J18	PNEUMONIA, UNSP ORGANISM
	J18.0	BRONCHOPN UNSP ORGISM
	J18.1	LOBAR PN UNSP ORGISM
	J18.8	OTH PN UNSP ORGISM
	J18.9	PN UNSP ORGISM
<b>J20</b>	J20	ACUTE BRONCHITIS
	J20.0	AC BRONCHIT D/T MYCOPLASMA PNE
	J20.1	AC BRONCHIT D/T HEMOPHILUS INFLUENZAE
	J20.2	AC BRONCHIT D/T STREPTOCOCCUS
	J20.3	AC BRONCHIT D/T COXSACKIEVIRUS
	J20.4	AC BRONCHIT D/T PARAINFLUENZA VIRUS
	J20.5	AC BRONCHIT D/T RESP SYNCYTIAL VIRUS
	J20.6	AC BRONCHIT D/T RHINOVIRUS
	J20.7	AC BRONCHIT D/T ECHOVIRUS
	J20.8	AC BRONCHIT D/T OTH SPEC ORGISMS
	J20.9	AC BRONCHIT UNSP
<b>J21</b>	J21	ACUTE BRONCHIOLITIS

	J21.0	AC BRONCHIO D/T RESP SYNCYTIAL VIRUS
	J21.1	AC BRONCHIO D/T HUMAN METAPNEUMOVIRUS
	J21.8	AC BRONCHIO D/T OTH SPEC ORGISMS
	J21.9	AC BRONCHIO UNSP
<b>J22</b>	J22	UNSP AC LO RESP INFCT
<b>J44.0</b>	J44	OTHR CHR OBSTR PULMONARY DZ
	J44.0	CHRON OBSTR PULM DZ W/AC LO RESP
	J44.1	CHRON OBSTR PULM DZ W/EXACERBATION
	J44.9	CHR OBSTRUCTIVE PULM DZ UNSP
<b>J85.x</b>	J85	ABSCESS OF LUNG AND MEDIASTINUM
	J85.0	GANGR&NECR LUNG
	J85.1	ABCS LUNG W PN
	J85.2	ABCS LUNG WO PN
	J85.3	ABCS MEDIASTINUM
<b>J86.x</b>	J86	PYOTHRX
	J86.0	PYOTHRX W FISTULA
	J86.9	PYOTHRX WO FISTULA

**A.2 Table S2: RSV Premier Standard Chargemaster Billing Codes**

<b>RSV Test (billing only)</b>		
<b>Value</b>	<b>Description</b>	<b>Dept</b>
970971867560000	PF ANTIBODY RESPIRATORY SYNCYTIAL VIRUS (RSV)	<b>PROFESSIONAL FEES</b>
970971872500000	PF CULTURE VIRUS ID RESPIRATORY SYNCYTIAL VIRUS	<b>PROFESSIONAL FEES</b>
300306876340000	RESP VIR MULT REV TRANSCRIPT & AMP PROBE RSV AMP	<b>LABORATORY</b>
300306872070001	SMEAR RSV DIRECT STAIN	<b>LABORATORY</b>
300306878070000	IMMUNOASSAY OPTICAL RESPIRATORY SYNCYTIAL VIRUS	<b>LABORATORY</b>
300306872520001	CULTURE VIR ID RESPIRATORY SYNCYTIAL VIRUS	<b>LABORATORY</b>
980980874200000	PF ANTIGEN EIA QL RESPIRATORY SYNCYTIAL VIRUS	<b>PROFESSIONAL FEES</b>
980980878070000	PF IMMUNOASSAY OPTICAL RESPIRATORY SYNCYTIAL VIRUS	<b>PROFESSIONAL FEES</b>
980980876340000	PF RESP VIR MULT REV TRANSCR & AMP PROBE RSV AMP	<b>PROFESSIONAL FEES</b>
980980872800000	PF ANTIGEN DFA RESPIRATORY SYNCYTIAL VIRUS	<b>PROFESSIONAL FEES</b>
300306872500002	CULTURE VIRUS ID RESPIRATORY SYNCYTIAL VIRUS	<b>LABORATORY</b>
300302867560000	ANTIBODY RESPIRATORY SYNCYTIAL VIRUS (RSV)	<b>LABORATORY</b>
300306872800000	ANTIGEN DFA RESPIRATORY SYNCYTIAL VIRUS	<b>LABORATORY</b>
300302861710002	COMPLEMENT FIXATION RSV	<b>LABORATORY</b>
300302863170002	IMMUNOASSAY QN RSV	<b>LABORATORY</b>
300306874200000	ANTIGEN EIA QL RESPIRATORY SYNCYTIAL VIRUS	<b>LABORATORY</b>
300319024100000	INF DIS RNA 4 TARGETS COVID19 INF A&B RSV EA PATH	<b>LABORATORY</b>
300319876370000	INF AGNT DET DNA/RNA AMP PROBE COVID19&INF A&B RSV	<b>LABORATORY</b>
300306876330000	RESP VIR MULT REV TRANSCRIPT & AMP PROBE 12-25 TAR	<b>LABORATORY</b>
300306876310000	RESP VIR MULT REV TRANSCRIPT & AMP PROBE 3-5 TARGT	<b>LABORATORY</b>
300319022500000	INF DIS PATHOGEN-SPEC 21 TARGETS AMP PROBE COVID19	<b>LABORATORY</b>
300319010000000	RESPIR PTHGN MULT REV TRANS&AMP PRB TECH 21 TRGT	<b>LABORATORY</b>

300306876320000	RESP VIR MULT REV TRANSCRIPT & AMP PROBE 6-11 TARG	<b>LABORATORY</b>
300319009900000	RESPIR PTHGN MULT REV TRANS& PRB TECH 20 TRGT	<b>LABORATORY</b>
300319020200000	INF DIS(DNA/RNA) 22 TARGET INC/COVID19 QL NASOPHAR	<b>LABORATORY</b>

## Appendix B Trends across time (including RSV seasons during the Covid pandemic)

We evaluated testing patterns through the 2020-21 season (inclusive) to determine whether the COVID pandemic period affected levels of RSV testing among older adult LRTI inpatients. We observed modest increase in the median percentage of RSV testing overall over time: 0.8%, 2.8%, 6.3%, 13.3%, and 9.1% for 2016/17, 2017/18, 2018/19, 2019/20, and 2020/21, respectively (Table S3). The increase observed in 2019-20 is consistent with the pattern of rising trends over time. This RSV season would only have been impacted by COVID during the final two months. Testing during the 2020-21 season decreased slightly from the prior year, except for a few outlying hospitals that showed higher levels of testing. We speculate that the frequency of RSV testing in the first full post-pandemic RSV season (2020/21) dropped due to the hospitals allocating their available resources to COVID testing and treatment over RSV testing. Although the pandemic-era RSV seasons are not the focus of this analysis, the trends we observe are consistent with our conclusion that overall RSV testing frequencies remain low.

### B.1 Table S3: Proportion of LRTI-related Hospitalizations with a Billed RSV Test, all years

		Number of hospitals	Mean ( $\pm$ SD)	Median (Range)
<b>Total</b>	Total Pre-Pandemic (2016-2019)	937	12.4 ( $\pm$ 15.8)	4.3 (0.0-69.0)
	Total during Pandemic (2019-2021)	832	18.6 ( $\pm$ 17.4)	14.0 (0.0-73.9)
<b>RSV Season</b>	10/1/2016-4/30/2017	855	8.7 ( $\pm$ 13.7)	0.8 (0.0-62.4)
	10/1/2017-4/30/2018	819	12.6 ( $\pm$ 16.9)	2.8 (0.0-72.6)
	10/1/2018-4/30/2019	847	15.8 ( $\pm$ 18.5)	6.3 (0.0-73.3)
	10/1/2019-4/30/2020	816	19.4 ( $\pm$ 18.8)	13.3 (0.0-78.4)
	10/1/2020-4/30/2021	759	17.6 ( $\pm$ 20.4)	9.1 (0.0-92.7)

\* Note: The chi-square test was performed at the individual patient's visit-level, whereas the rest of the statistical tests were performed at the hospital-level. This is due to the same hospitals contributing to each year, resulting in non-independence.

Abbreviations: LRTI = lower respiratory tract infection; RSV = respiratory syncytial virus; SD = standard deviation.