**Online Only Material**

**eTable 1:** International Classification of Diseases, 10th Revision Codes of the Included Diagnoses

**eTable 2:** List of First-line Therapy for Each Diagnosis

**eTable 3:** Categorization of self-reported races reassigned to races listed in the United States Census.

**eTable 4:** Categorization of insurances reported

**eTable 5:** Categorization of self-reported language

**eTable 6:** The number of centers, states and geographically unique urgent care sites for each organization participating in the study.

**eTable 7:** Results of Multivariable Logistic Regression Analysesusing sensitivity analyses with A) Reference group for race being the mean and B) Excluding patients with reported penicillin allergy.

**eFigure 1:** Map of the centers included in our national collaborative

**eFigure 2:** Association between predicted probabilities of receiving first-line therapy and number of encounters per center.

**eTable 1:** International Classification of Diseases, 10th Revision Codes of the Included Diagnoses

|  |  |  |  |
| --- | --- | --- | --- |
| **Community Acquired pneumonia** | Tier 1 | J13 | Pneumonia due to Streptococcus pneumoniae |
| J14 | Pneumonia due to Hemophilus influenzae |
| J15.4 | Pneumonia due to other streptococci |
| J15.7 | Pneumonia due to Mycoplasma pneumoniae |
| J15.8 | Pneumonia due to other specified bacteria |
| J15.9 | Unspecified bacterial pneumonia |
| J16.8 | Pneumonia due to other specified infectious organisms |
| J17 | Pneumonia in diseases classified elsewhere |
| J18.0 | Bronchopneumonia, unspecified organism |
| J18.1 | Lobar pneumonia, unspecified organism |
| J18.8 | Other pneumonia, unspecified organism |
| J18.9 | Pneumonia, unspecified organism |
| **Streptococcal Pharyngitis** | Tier 1 | J02.0 | Streptococcal pharyngitis |
| J03.00 | Acute streptococcal tonsillitis, unspecified |
| J03.01 | Acute recurrent streptococcal tonsillitis |
| **Acute otitis media** | Tier 2 | H66.001 | Acute suppr otitis media w/o spon rupt ear drum, right ear |
| H66.002 | Acute suppr otitis media w/o spon rupt ear drum, left ear |
| H66.003 | Acute suppr otitis media w/o spon rupt ear drum, bilateral |
| H66.004 | Ac suppr otitis media w/o spon rupt ear drum, recur, r ear |
| H66.005 | Ac suppr otitis media w/o spon rupt ear drum, recur, l ear |
| H66.006 | Acute suppr otitis media w/o spon rupt ear drum, recur, bi |
| H66.007 | Ac suppr otitis media w/o spon rupt ear drum, recur, unsp ear |
| H66.009 | Acute suppr otitis media w/o spon rupt ear drum, unsp ear |
| H66.011 | Acute suppr otitis media w spon rupt ear drum, right ear |
| H66.012 | Acute suppr otitis media w spon rupt ear drum, left ear |
| H66.013 | Acute suppr otitis media w spon rupt ear drum, bilateral |
| H66.014 | Acute suppr otitis media w spon rupt ear drum, recur, r ear |
| H66.015 | Acute suppr otitis media w spon rupt ear drum, recur, l ear |
| H66.016 | Acute suppr otitis media w spon rupt ear drum, recurrent, bi |
| H66.017 | Ac suppr otitis media w spon rupt ear drum, recur, unsp ear |
| H66.019 | Acute suppr otitis media w spon rupt ear drum, unsp ear |
| H66.40 | Suppurative otitis media, unspecified, unspecified ear |
| H66.41 | Suppurative otitis media, unspecified, right ear |
| H66.42 | Suppurative otitis media, unspecified, left ear |
| H66.43 | Suppurative otitis media, unspecified, bilateral |
| **Unspecified Otitis Media** | Tier 2 | H66.90 | Otitis media, unspecified, unspecified ear |
| H66.91 | Otitis media, unspecified, right ear |
| H66.92 | Otitis media, unspecified, left ear |
| H66.93 | Otitis media, unspecified, bilateral |
| H67.3 | Otitis media in diseases classified elsewhere, bilateral |
|  |  |
|  |  |
| **Sinusitis** | Tier 2 | J01.00 | Acute maxillary sinusitis, unspecified |
| J01.01 | Acute recurrent maxillary sinusitis |
| J01.10 | Acute frontal sinusitis, unspecified |
| J01.11 | Acute recurrent frontal sinusitis |
| J01.20 | Acute ethmoidal sinusitis, unspecified |
| J01.30 | Acute sphenoidal sinusitis, unspecified |
| J01.40 | Acute pansinusitis, unspecified |
| J01.80 | Other acute sinusitis |
| J01.81 | Other acute recurrent sinusitis |
| J01.90 | Acute sinusitis, unspecified |
| J32.0 | Chronic maxillary sinusitis |
| J32.1 | Chronic frontal sinusitis |
| J32.2 | Chronic ethmoidal sinusitis |
| J32.3 | Chronic sphenoidal sinusitis |
| J32.4 | Chronic pansinusitis |
| J32.8 | Other chronic sinusitis |
| J32.9 | Chronic sinusitis, unspecified |
| **Acute Pharyngitis** | Tier 2 | J02.8 | Acute pharyngitis due to other specified organisms |
| J02.9 | Acute pharyngitis, unspecified |
| J03.80 | Acute tonsillitis due to other specified organisms |
| J03.90 | Acute tonsillitis, unspecified |
| J03.91 | Acute recurrent tonsillitis, unspecified |
| **Otitis media with effusion** | Tier 3 | H65.00 | Acute serous otitis media, unspecified ear |
| H65.01 | Acute serous otitis media, right ear |
| H65.02 | Acute serous otitis media, left ear |
| H65.03 | Acute serous otitis media, bilateral |
| H65.04 | Acute serous otitis media, recurrent, right ear |
| H65.05 | Acute serous otitis media, recurrent, left ear |
| H65.06 | Acute serous otitis media, recurrent, bilateral |
| H65.191 | Other acute nonsuppurative otitis media, right ear |
| H65.192 | Other acute nonsuppurative otitis media, left ear |
| H65.193 | Other acute nonsuppurative otitis media, bilateral |
| H65.194 | Oth acute nonsuppurative otitis media, recurrent, right ear |
| H65.195 | Other acute nonsuppurative otitis media, recurrent, left ear |
| H65.196 | Oth acute nonsuppurative otitis media, recurrent, bilateral |
| H65.197 | Other acute nonsuppurative otitis media recurrent, unsp ear |
| H65.199 | Other acute nonsuppurative otitis media, unspecified ear |
| H65.90 | Unspecified nonsuppurative otitis media, unspecified ear |
| H65.91 | Unspecified nonsuppurative otitis media, right ear |
| H65.92 | Unspecified nonsuppurative otitis media, left ear |
| H65.93 | Unspecified nonsuppurative otitis media, bilateral |
| **Acute viral respiratory infections** | Tier 3 | J00 | Acute nasopharyngitis [common cold] |
| J04.0 | Acute laryngitis |
| J06.0 | Acute laryngopharyngitis |
| J06.0 | Acute laryngopharyngitis |
| J06.9 | Acute upper respiratory infection, unspecified |
| J20.6 | Acute bronchitis due to rhinovirus |
| J31.0 | Purulent rhinitis |
| J31.1 | Frequent common colds |
| J38.7 | Infection of larynx |
| J04.2 | Acute laryngotracheitis |
| J05.0 | Acute obstructive laryngitis [croup] |
| J09.X1 | Influenza due to ident novel influenza A virus w pneumonia |
| J09.X2 | Flu due to ident novel influenza A virus w oth resp manifest |
| J09.X3 | Influenza due to ident novel influenza A virus w GI manifest |
| J09.X9 | Flu due to ident novel influenza A virus w oth manifest |
| J10.00 | Flu due to oth ident flu virus w unsp type of pneumonia |
| J10.01 | Flu due to oth ident flu virus w same oth ident flu virus pn |
| J10.08 | Influenza due to oth ident influenza virus w oth pneumonia |
| J10.1 | Flu due to oth ident influenza virus w oth resp manifest |
| J10.2 | Influenza due to oth ident influenza virus w GI manifest |
| J10.83 | Influenza due to oth ident influenza virus w otitis media |
| J10.89 | Influenza due to oth ident influenza virus w oth manifest |
| J11.00 | Flu due to unidentified flu virus w unsp type of pneumonia |
| J11.08 | Flu due to unidentified flu virus w specified pneumonia |
| J11.1 | Flu due to unidentified influenza virus w oth resp manifest |
| J11.2 | Influenza due to unidentified influenza virus w GI manifest |
| J11.82 | Influenza due to unidentified influenza virus w myocarditis |
| J11.83 | Influenza due to unidentified influenza virus w otitis media |
| J11.89 | Influenza due to unidentified influenza virus w oth manifest |
| J21.0 | Acute bronchiolitis due to respiratory syncytial virus |
| J21.1 | Acute bronchiolitis due to human metapneumovirus |
| J21.8 | Acute bronchiolitis due to other specified organisms |
| J21.9 | Acute bronchiolitis, unspecified |

**eTable 2:** List of First-line Therapy per Diagnosis

|  |  |
| --- | --- |
| **Diagnosis** | **First-line guideline concordant antibiotic\*** |
| Community acquired pneumonia | Amoxicillin |
| Streptococcal pharyngitis | Amoxicillin, penicillin |
| Sinusitis\*\* | Amoxicillin, amoxicillin-clavulanate |
| Acute pharyngitis | No antibiotics, amoxicillin, penicillin |
| Acute otitis media/unspecified otitis media | No antibiotics, amoxicillin, amoxicillin-clavulanate |
| Otitis media with effusion | No antibiotics |
| Acute viral respiratory infection | No antibiotics |

\* We excluded patients with community acquired pneumonia, sinusitis, and streptococcal pharyngitis who did not receive an antibiotic prescription due to the inability to ascertain in-house antibiotic administration vs. return visits for patients previously diagnosed with a tier 1 diagnosis vs. other reason. An audit of one center demonstrated that most patients with no current prescription for these diagnoses, had a recent antibiotic prescription in their file).

\*\*Although sinusitis is considered a tier 2 diagnosis for adults, pediatric guidelines continue to recommend antibiotics for this diagnosis, we therefore did not include patients without antibiotics, and did not consider “no antibiotics” as a FL therapy option.

**eTable 3:** Categorization of self-reported races reassigned to races listed in the United States Census.

|  |  |  |  |
| --- | --- | --- | --- |
| **Race Reported** | **US Census Category** | **Number** | **Percent** |
| Asian | Asian | 29,337 | 7.40% |
| American Indian or Alaskan Native | American Indian or Alaskan Native | 1,686 | 0.43% |
| Black or African American | Black or African American | 45,284 | 11.43% |
| Native Hawaiian or Pacific Islander | Native Hawaiian or Pacific Islander | 1,229 | 0.31% |
| White | White | 204,598 | 51.62% |
| Unknown or Declined to Specify | Unknown/Refused | 66,842 | 16.86% |
| Abenaki | Other | 3 | 0.00% |
| Afghanistani | Other | 1 | 0.00% |
| African | Other | 2 | 0.00% |
| Arab | Other | 3 | 0.00% |
| Asian Indian | Other | 5 | 0.00% |
| Chinese | Other | 1 | 0.00% |
| Dominican | Other | 1 | 0.00% |
| English | Other | 1 | 0.00% |
| Gila River Pima Maricopa | Other | 1 | 0.00% |
| Hispanic, Latinx or Spanish Origin | Other | 5,210 | 1.31% |
| Irish | Other | 1 | 0.00% |
| Israeli | Other | 1 | 0.00% |
| Mexican American Indian | Other | 1 | 0.00% |
| Middle Eastern or North African | Other | 1 | 0.00% |
| Multiracial | Other | 5,952 | 1.50% |
| Other | Other | 36,174 | 9.13% |
| Pakistani | Other | 2 | 0.00% |
| Spanish American Indian | Other | 3 | 0.00% |
| Vietnamese | Other | 1 | 0.00% |

**eTable 4:** Categorization of insurances reported

|  |  |  |  |
| --- | --- | --- | --- |
| **Insurance Reported** | **Category** | **Number** | **Percent** |
| Commercial Non-HMO | Commercial | 6 | 0.00% |
| Commercial Unspecified | Commercial | 221,175 | 55.80% |
| Commercial HMO | Commercial | 100 | 0.03% |
| Medicaid Advantage/Capitated | Medicaid/Medicare | 85,022 | 21.45% |
| Medicaid/Medicare | Medicaid/Medicare | 61,597 | 15.54% |
| Military & Tricare | Military | 4,262 | 1.08% |
| Self-Pay | Self-Pay | 8,736 | 2.20% |
| Auto/TPL & WC/TPA & Workers Comp/Liability | Other | 2 | 0.00% |
| Other | Other | 4,534 | 1.14% |
| Other Gov’t | Other | 209 | 0.05% |
| Unknown | Unknown | 10,697 | 2.70% |

**eTable 5:** Categorization of self-reported language

|  |  |  |  |
| --- | --- | --- | --- |
| **Language Reported** | **Category** | **Number** | **Percent** |
| English | English | 155,868 | 39.33% |
| Spanish | Spanish | 10,001 | 2.52% |
| Other Languages (N=110) | Other | 8,2823 | 2.09% |
| Unknown | Unknown | 222,188 | 56.06% |

Other languages: Abkhazian, Afar, Akan, Albanian, Algerian Arabic, American Sign Language, Amharic, Arabic, Aramaic, Armenian, Bambara, Bengali, Berber, Brazilian Portuguese, Bulgarian, Burmese, Cambodian, Cantonese, Creole, Chamorro, Chibcha, Chinese, Chuukese, Croatian, Dari, Elamite, Fanti, Farsi, Finno-Ugrian, French, Fulani, Georgian, German, Greek, Gujarati, Hausa, Hebrew, Hindi, Hungarian, Igbo, Indic, Indonesian, Iraqi Arabic, Italian, Japanese, Kabyle, Kannada, Kazakh, Khmer, Kikuyu, Kinyarwanda, Kirundi, Korean, Kosraean, Kru, Kunama, Kurdish, Lao, Lingala, Luo, Macedonian, Maithili, Mandar, Mandarin, Mandingo, Marathi, Marshallese, Mongolian, Nepali, Oromo, Other, Palauan, Panjabi, Pashto, Persian, Philippine, Polish, Portuguese, Punjabi, Pushto, Quechua, Romanian, Rundi, Russian, Sami, Samoan, Sinhalese, Somali, Soninke, Swahili, Sylheti, Tagalog, Tamil, Telugu, Thai, Tigre, Tigrinya, Toishanese, Tongan, Turkish, Turkmen, Twi, Ukrainian, Urdu, Uzbek, Vietnamese, Wolof, Yoruba, Zomi

**eTable 6:** The number of centers, states and geographically unique urgent care sites for each organization participating in the study.

|  |  |  |  |
| --- | --- | --- | --- |
| Organization | Number of Centers | Number of States | Number of Sites |
| A | 1 | 1 State | 1 |
| B | 2 | 1 State | 2 |
| C | 1 | 1 State | 1 |
| D | 19 | 15 States and D.C. | 79 |
| E | 1 | 1 State | 1 |
| F | 1 | 1 State | 1 |
| G | 2 | 1 State | 2 |
| H | 2 | 1 State | 2 |
| I | 1 | 2 States | 3 |

**eTable 7A:** Results of Multivariable Logistic Regression Analyses using sensitivity analyses with the reference group for race being the mean

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Odds of First-line Therapy** | |  |  |  |  |  |
|  |  | **Unadjusted** | |  | **Adjusted** | |
|  |  | **OR (95% CI)** | **P-value** |  | **OR (95% CI)** | **P-value** |
| *Patient age* | |  |  |  |  |  |
|  | <24 months | -ref- | --- |  | -ref- | --- |
|  | 24-59 months | 0.82 (0.79, 0.84) | <0.001 |  | 0.82 (0.79, 0.84) | <0.001 |
|  | 5-12 years | 0.76 (0.74, 0.79) | <0.001 |  | 0.76 (0.74, 0.78) | <0.001 |
|  | >12 years | 0.93 (0.89, 0.98) | 0.003 |  | 0.93 (0.89, 0.98) | 0.004 |
| *Race/ethnicity* | |  |  |  |  |  |
|  | American Indian or Alaska Native-NH | 1.06 (0.84, 1.34) | 0.605 |  | 1.06 (0.84, 1.34) | 0.609 |
|  | Asian-NH | 1.11 (1.04, 1.17) | <0.001 |  | 1.13 (1.06, 1.20) | <0.001 |
|  | Black-NH | 1.21 (1.14, 1.28) | <0.001 |  | 1.18 (1.12, 1.25) | <0.001 |
|  | Hispanic | 1.11 (1.05, 1.16) | <0.001 |  | 1.06 (1.01, 1.11) | 0.027 |
|  | Native Hawaiian or Pacific Islander-NH | 0.93 (0.76, 1.13) | 0.449 |  | 0.93 (0.76, 1.14) | 0.473 |
|  | White-NH | 0.74 (0.71, 0.78) | <0.001 |  | 0.77 (0.74, 0.81) | <0.001 |
|  | aOther-NH | 0.93 (0.87, 1.00) | 0.057 |  | 0.94 (0.88, 1.01) | 0.084 |
|  | Unknown race and ethnicity | 0.99 (0.94, 1.04) | 0.708 |  | 0.99 (0.95, 1.04) | 0.769 |
| *Preferred language* | |  |  |  |  |  |
|  | English | -ref- | --- |  | -ref- | --- |
|  | Spanish | 1.39 (1.29, 1.50) | <0.001 |  | 1.21 (1.12, 1.30) | <0.001 |
|  | bOther | 1.29 (1.20, 1.38) | <0.001 |  | 1.05 (0.97, 1.12) | 0.218 |
|  | Unknown/Refused | 1.18 (1.06, 1.32) | 0.004 |  | 1.17 (1.05, 1.31) | 0.006 |
| *Insurance* | |  |  |  |  |  |
|  | Commercial | -ref- | --- |  | -ref- | --- |
|  | Medicaid/ Medicare | 1.32 (1.29, 1.35) | <0.001 |  | 1.21 (1.18, 1.24) | <0.001 |
|  | Military | 0.96 (0.88, 1.05) | 0.424 |  | 0.97 (0.89, 1.07) | 0.567 |
|  | Self-pay | 1.25 (1.16, 1.34) | <0.001 |  | 1.18 (1.10, 1.27) | <0.001 |
|  | cOther | 1.02 (0.93, 1.13) | 0.630 |  | 1.02 (0.92, 1.13) | 0.679 |
|  | Unknown/ Refused | 1.32 (1.19, 1.47) | <0.001 |  | 1.21 (1.09, 1.35) | <0.001 |

aOther races reported: Abenaki, Afghanistani, Arab, Armenian, Asian Indian, Chinese, Dominican, English, Gila River Pima Maricopa, Irish, Israeli, Mexican American Indian, Middle Eastern or North African, Multiracial, Other, Pakistani, Spanish American Indian, Vietnamese

bOther languages: Abkhazian, Afar, Akan, Albanian, Algerian Arabic, American Sign Language, Amharic, Arabic, Aramaic, Armenian, Bambara, Bengali, Berber, Brazilian Portuguese, Bulgarian, Burmese, Cambodian, Cantonese, Creole, Chamorro, Chibcha, Chinese, Chuukese, Croatian, Dari, Elamite, Fanti, Farsi, Finno-Ugrian, French, Fulani, Georgian, German, Greek, Gujarati, Hausa, Hebrew, Hindi, Hungarian, Igbo, Indic, Indonesian, Iraqi Arabic, Italian, Japanese, Kabyle, Kannada, Kazakh, Khmer, Kikuyu, Kinyarwanda, Kirundi, Korean, Kosraean, Kru, Kunama, Kurdish, Lao, Lingala, Luo, Macedonian, Maithili, Mandar, Mandarin, Mandingo, Marathi, Marshallese, Mongolian, Nepali, Oromo, Other, Palauan, Panjabi, Pashto, Persian, Philippine, Polish, Portuguese, Punjabi, Pushto, Quechua, Romanian, Rundi, Russian, Sami, Samoan, Sinhalese, Somali, Soninke, Swahili, Sylheti, Tagalog, Tamil, Telugu, Thai, Tigre, Tigrinya, Toishanese, Tongan, Turkish, Turkmen, Twi, Ukrainian, Urdu, Uzbek, Vietnamese, Wolof, Yoruba, Zomi

cOther insurances reported: Auto/Third-Party Liability, Other, Other Government, Workers Compensation, Unknown

**eTable 7B:** Results of Multivariable Logistic Regression Analyses using sensitivity analyses excluding patients with reported penicillin allergy

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Odds of First-line Therapy** | **Adjusted** | |
|  |  | **OR (95% CI)** | **P-value** |
| *Patient age* | |  |  |
|  | <24 months | -ref- | --- |
|  | 24-59 months | 0.86 (0.83, 0.88) | <0.001 |
|  | 5-12 years | 0.86 (0.84, 0.89) | <0.001 |
|  | >12 years | 1.16 (1.10, 1.22) | <0.001 |
| *Race/ethnicity* | |  |  |
|  | Hispanic | 1.34 (1.30, 1.39) | <0.001 |
|  | White-NH | -ref- | --- |
|  | Black-NH | 1.48 (1.42, 1.55) | <0.001 |
|  | Asian-NH | 1.38 (1.31, 1.45) | <0.001 |
|  | American Indian or Alaska Native- NH | 1.33 (1.00, 1.77) | 0.052 |
|  | Native Hawaiian or Pacific Islander -NH | 1.11 (0.87, 1.41) | 0.415 |
|  | Other-NHa | 1.15 (1.07, 1.24) | <0.001 |
|  | Unknown race/ethnicity | 1.25 (1.21, 1.29) | <0.001 |
| *Insurance* | |  |  |
|  | Commercial | -ref- | --- |
|  | Medicaid/ Medicare | 1.21 (1.18, 1.24) | <0.001 |
|  | Military | 1.03 (0.92, 1.15) | 0.672 |
|  | Self-pay | 1.20 (1.11, 1.31) | <0.001 |
|  | Otherb | 1.05 (0.94, 1.17) | 0.403 |
|  | Unknown/refused | 1.02 (0.86, 1.20) | 0.853 |
| *Preferred language* | |  |  |
|  | English | -ref- | --- |
|  | Spanish | 1.15 (1.05, 1.26) | 0.002 |
|  | Otherc | 1.03 (0.95, 1.10) | 0.496 |
|  | Unknown/refused | 1.17 (1.04, 1.32) | 0.008 |

aOther races reported: Abenaki, Afghanistani, Arab, Armenian, Asian Indian, Chinese, Dominican, English, Gila River Pima Maricopa, Irish, Israeli, Mexican American Indian, Middle Eastern or North African, Multiracial, Other, Pakistani, Spanish American Indian, Vietnamese

bOther languages: Abkhazian, Afar, Akan, Albanian, Algerian Arabic, American Sign Language, Amharic, Arabic, Aramaic, Armenian, Bambara, Bengali, Berber, Brazilian Portuguese, Bulgarian, Burmese, Cambodian, Cantonese, Creole, Chamorro, Chibcha, Chinese, Chuukese, Croatian, Dari, Elamite, Fanti, Farsi, Finno-Ugrian, French, Fulani, Georgian, German, Greek, Gujarati, Hausa, Hebrew, Hindi, Hungarian, Igbo, Indic, Indonesian, Iraqi Arabic, Italian, Japanese, Kabyle, Kannada, Kazakh, Khmer, Kikuyu, Kinyarwanda, Kirundi, Korean, Kosraean, Kru, Kunama, Kurdish, Lao, Lingala, Luo, Macedonian, Maithili, Mandar, Mandarin, Mandingo, Marathi, Marshallese, Mongolian, Nepali, Oromo, Other, Palauan, Panjabi, Pashto, Persian, Philippine, Polish, Portuguese, Punjabi, Pushto, Quechua, Romanian, Rundi, Russian, Sami, Samoan, Sinhalese, Somali, Soninke, Swahili, Sylheti, Tagalog, Tamil, Telugu, Thai, Tigre, Tigrinya, Toishanese, Tongan, Turkish, Turkmen, Twi, Ukrainian, Urdu, Uzbek, Vietnamese, Wolof, Yoruba, Zomi

cOther insurances reported: Auto/Third-Party Liability, Other, Other Government, Workers Compensation, Unknown

**eFigure 1:** Map of the centers included in our national collaborative

****

**eFigure 2:** Association between predicted probabilities of receiving first-line therapy and number of encounters per center

