**Supplementary materials**

For *Talaromyces marneffei*, the final PubMed search used (***Talaromyces***[Title/Abstract] OR **marneffei**[Title/Abstract]) combined; for *Coccidioides* spp.*,* the final PubMed search used (**coccidioides**[Title/Abstract])combined; for *Paracoccidioides* spp., the final PubMed search used (**paracoccidioides**[Title/Abstract] combined, using AND term, with criteria terms including (mortality[MeSH Terms]) OR (morbidity[MeSH Terms]) OR (hospitalisation[MeSH Terms]) OR (disability[All Fields])) OR (drug resistance, fungal[MeSH Terms]) OR (prevention and control[MeSH Subheading]) OR (disease transmission, infectious[MeSH Terms]) OR (diagnostic[Title/Abstract]) OR (antifungal agents[MeSH Terms]) OR (epidemiology[MeSH Terms]) OR (surveillance [Title/Abstract]).

For *Talaromyces marneffei*, the final Web of Science search used: [TI=(**talaromyces**) OR AB=(**talaromyces**) OR TI=(**marneffei**) OR AB=(**marneffei**)] , combined, for *Coccidioides* spp. the final Web of Science search used was [TI=(**coccidioides**) OR AB=(**coccidioides**)]; and for *Paracoccidioides* spp., the final Web of Science search used was [TI=(**paracoccidioides**) OR AB=(**paracoccidioides**), combined, using AND term, with criteria terms each as topic search, including (mortality) OR (case fatality) OR (morbidity) OR (hospitali\*ation) OR (disability) OR (drug resistance) OR (prevention and control) OR (disease transmission) OR (diagnostic) OR (antifungal agents) OR (epidemiology) OR (surveillance). Symbol \* allows a truncation search for variations of the term (e.g. hospitalisation or hospitalization).

All searches were limited to 1 Jan 2011 to 23 Feb 2021.

**Table S1. Risk of Bias Assessment by Domain.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Author** | **Year** | **Overall risk** | **Domains assessed** | | | | | |
| **Selection of participants** | **Confounding variable** | **Measurement of exposure** | **Blinding of outcome assessments** | **Incomplete outcome data** | **Selective outcome reporting** |
| ***Talaromyces marneffei*** | | | | | | | | |
| Chayakulkeeree *et al*.75 | 2017 | Unclear | Unclear | Unclear | Unclear | NA | NA | NA |
| Chen *et al*.47 | 2017 | Low | Low | Low | Low | NA | Low | NA |
| Dong *et al.*89 | 2019 | Unclear | Low | Unclear | Low | NA | Low | NA |
| Fan *et al.*51 | 2017 | Unclear | Unclear | Low | Unclear | NA | Low | NA |
| Guo *et al.*52 | 2019 | Unclear | Low | Unclear | Low | NA | Low | NA |
| Jiang *et al*.48 | 2019 | Low | Low | Low | Low | NA | Low | NA |
| Jiang *et al*.10 | 2019 | Low | Low | Low | Low | NA | Low | NA |
| Lao *et al*.90 | 2019 | Low | Low | Low | Low | NA | Low | NA |
| Lau *et al*.62 | 2017 | Unclear | Unclear | Unclear | Low | NA | NA | NA |
| Le *et al.*68 | 2019 | Low | Low | Low | Low | NA | NA | NA |
| Le *et al.*49 | 2017 | Low | Low | Low | Low | Low | Low | Low |
| Lei *et al.*63 | 2018 | Unclear | Unclear | Unclear | Low | NA | NA | NA |
| Li *et al.76* | 2021 | Low | Low | Low | Low | NA | NA | NA |
| Ouyang *et al.*64 | 2017 | Unclear | Low | Unclear | Low | NA | NA | NA |
| Pang *et al.*91 | 2018 | Low | Low | Low | Low | NA | NA | NA |
| Qi *et al.*92 | 2016 | Low | Low | Low | Low | NA | NA | NA |
| Qiu *et al*.93 | 2019 | Low | Low | Low | Low | NA | Low | NA |
| Qiu *et al.*94 | 2015 | Low | Low | Low | Low | NA | Low | NA |
| Roohani *et al.*95 | 2018 | Unclear | Unclear | Unclear | Low | NA | NA | NA |
| Sun *et al*.88 | 2021 | Low | Low | Low | Low | NA | NA | NA |
| Sun *et al.*96 | 2020 | Low | Low | Low | Low | NA | NA | NA |
| Wang *et al.*69 | 2015 | Low | Low | Low | Low | NA | Low | NA |
| Xiao *et al.*97 | 2013 | Low | Low | Low | Low | NA | NA | NA |
| Ying *et al.50* | 2020 | Low | Low | Low | Low | NA | Low | NA |
| Zhang *et al.*65 | 2021 | Unclear | Unclear | Unclear | Low | NA | NA | NA |
|  |  |  |  |  |  |  |  |  |
| ***Coccidioides* species** | | | | | | | | |
| Benedict *et al.*77 | 2019 | Low | Low | Low | Low | NA | NA | NA |
| Blair *et al*.98 | 2014 | Unclear | Low | Unclear | Unclear | NA | NA | NA |
| Charalambous *et al.*60 | 2018 | Low | Low | Low | Low | NA | NA | NA |
| Choi *et al.*70 | 2019 | Low | Low | Low | Low | NA | Low | NA |
| Gaona-Flores *et al.*99 | 2016 | Low | Low | Low | Low | NA | NA | NA |
| Keckich *et al*.84 | 2011 | Unclear | Low | Unclear | Unclear | NA | NA | NA |
| Laws *et al.*71 | 2018 | Low | Low | Low | Low | NA | NA | NA |
| Lee *et al.*54 | 2017 | Unclear | Low | Unclear | Low | NA | Low | NA |
| Luo *et al.*55 | 2017 | Low | Low | Low | Low | NA | NA | NA |
| Mendoza *et al.*57 | 2015 | Unclear | Low | Low | Unclear | NA | Low | NA |
| Naeem *et al.56* | 2019 | Low | Low | Low | Low | NA | Low | Low |
| Phonphok *et al.*78 | 2018 | Unclear | Low | Unclear | Low | NA | Low | NA |
| Sondermeyer *et al*.61 | 2013 | Low | Low | Low | Low | NA | NA | NA |
| Thompson *et al.*66 | 2017 | Unclear | Unclear | Unclear | Low | NA | NA | NA |
| Webb *et al*.53 | 2018 | Low | Low | Low | Low | NA | NA | NA |
| Wiederhold *et al.*67 | 2018 | Unclear | Unclear | Unclear | Low | NA | NA | NA |
| Wilken *et al.*59 | 2015 | Unclear | Low | Low | Unclear | MA | Low | NA |
| ***Paracoccidioides* species** | | | | | | | | |
| de Almeida *et al.*58 | 2017 | Unclear | Unclear | Unclear | Low | NA | NA | NA |
| de Macedo *et al*.37 | 2017 | Low | Low | Low | Low | NA | NA | NA |
| do Valle *et al*.74 | 2017 | Unclear | Low | Unclear | Low | NA | NA | NA |
| Magalhães *et al.*73 | 2014 | Unclear | Low | Low | Unclear | NA | NA | NA |
| Marques *et al*.72 | 2013 | Unclear | Unclear | Low | Unclear | NA | NA | NA |
| Vieira *et al.31* | 2014 | High | Low | Unclear | High | NA | NA | NA |

NA: not applicable

**Table S2. Inpatient care associated with invasive fungal disease due to Talaromyces marneffei and Coccidioides species.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Author** | **Year** | **Study design** | **Study period** | **Country** | **Level of care** | **Population description** | **Number of patients**  **(N)** | **Length of inpatient stay (Days)** |
| **Talaromyces marneffei** | | | | | | | | |
| Fan *et al.*51 | 2017 | RCS  SC | 2011-2015 | China | Tertiary | HIV negative children with  *Talaromyces marneffei* infection | 10 | 1-67 |
| Ying *et al.50* | 2020 | RCS  SC | 2011-2017 | China | Tertiary | Adults with HIV-associated talaromycosis | Total:  7575  With talaromycosis:  1214  With complete data:  1079 | Median:  27  IQR:  17-36 |
| ***Coccidioides* species** | | | | | | | | |
| Charalambous *et al*.60 | 2018 | RCS  MC | 2000-2012 | USA | NS | Patients with fungal meningitis\* | Total:  1927  With CoM:  315 | Baseline:  Annual mean (SD):  6.8 (15.7)  1year post-diagnosis:  Annual mean (SD):  6.2 (12.3)  Cumulative:  28.9  5 years post-diagnosis:  Annual mean (SD):  3.9 (9.6)  Cumulative:  48.1 |
| Luo *et al.55* | 2017 | RCS  MC | 2005-2012 | USA | Various | Adults and children hospitalized with coccidioidomycosis# | Total: 30,870  Adults:  29,584  Children:  1,286 | 2005-2006:  6-7  2011-2012:  4-5  Cumulative LOS:  2006:  49,856  2012:  27,895  Decrease of 44% |
| Naeem *et al.*56 | 2019 | RCS  SC | 2007-2016 | USA | Tertiary | Patients ≤21 years old with extrapulmonary coccidioidomycosis | 78 | Hospitalized:  66/78 (84%)  Median (IQR):  30 (51-129) |
| Sondermeyer *et al.*61 | 2013 | RCS  MC | 2000-2011 | USA | Tertiary | Coccidioidomycosis-associated hospitalizations$ | Total over time:  25,217  2000:  1,074  2011:  3,197 | Median:  6  Total per person LOS:  >7 (52%) |
| Webb *et al.*53 | 2018 | RCS  MC | 2006-2015 | USA | Various | Patients with possible, probable or proven IFD^ | Total:  3154 patients (3374 episodes)    Coccidioidomycosis:  790 (93% of 849 dimorphic fungi) | Admitted to hospital:  47.6%  Median (IQR):  7 (4-13) |
| Wilken *et al.*59 | 2015 | Outbreak analysis | 2012-2014 | USA | CDPH | Construction workers from 2 solar farms in California | Total:  3572  Coccidioidomycosis:  44 | Hospitalized:  9 (20%)  Median (range): 3 (2-17) |

N: number, RCS: retrospective cohort study, SC: single center, HIV: human immunodeficiency, IQR: interquartile ratio, MC: multicenter, USA: United States of America, NS: not stated, CoM: *Coccidioides* meningitis, SD: standard deviation, LOS: length of stay, IFD: invasive fungal disease, CDPH: California Department of Public Health

\*Identified from the Truven Health Analytics MarketScan inpatient and outpatient research database

#Identified from a national database

$Identified from the California Patient Discharge Data Set

^Classified according to the European Organization for the Treatment and Research of Cancer/Mycoses Study Group criteria for the diagnosis of invasive fungal disease100

**Table S3. Studies reporting on antifungal susceptibilities for *Talaromyces marneffei* and *Coccidioides* species.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Author** | **Year** | **Study design** | **Study period** | **Country** | **Level of care** | **Population description** | **Fungal pathogen**  **(N)** | **Specimens**  **(N)** |
| ***Talaromyces marneffei*** | | | | | | | | |
| Lau *et al.*62 | 2017 | LBS  SC | NS | China | NS | Patients with talaromycosis | *Talaromyces marneffei:*  (*n* = 56)  Yeast form | Blood:  (*n* = 48),  Lymph node:  (*n* = 1),  BM:  (*n* = 2),  Skin biopsy:  (*n* = 1),  Sputum:  (*n* = 1),  Pleural:  (*n* = 1),  BAL:  (*n* =2) |
| Le *et al.*68 | 2019 | pK/pD sub-study of a MC RCT | 2012-2015 | Vietnam | Tertiary | Adults with HIV infection and  *Talaromyces marneffei* infection  (70% with positive blood cultures) | *Talaromyces marneffei:*  (*n* = 54) | Blood:  (*n* = 54) |
| Lei *et al.*63 | 2018 | LBS  MC | 2013-2016 | China | Tertiary |  | *Talaromyces marneffei:*  (*n* = 189)  Yeast form | Blood,  BM,  BAL |
| Ouyang *et al.*64 | 2017 | RCS  SC | 2010-2015 | China | Tertiary | Adults and children with disseminated *Talaromyces marneffei* infection and received IV voriconazole as initial antifungal therapy:  (n=17) | *Talaromyces marneffei:*  (*n* = 17) | Blood:  (*n* = 12),  BM:  (*n* = 2),  Skin lesions:  (*n* = 2),  BAL:  (*n* =1) |
| Zhang *et al*.65 | 2021 | LBS  MC | NS | China | Tertiary\* | NS | *Talaromyces marneffei:*  (*n* = 17) | Human samples:  Blood:  (*n* = 7),  Skin lesion:  (*n* = 6),  Sputum:  (*n* = 2),  BM:  (*n* = 1),  Stool:  (*n* = 1) |
| *Coccidioides*  species | | | | | | | | |
| Thompson *et al.*66 | 2017 | LBS  MC | 2001-2015 | USA# | NS | Clinical *Coccidioides* isolates | Total:  581 | NS |
| Wiederhold *et al.*67 | 2018 | Other$ | NS | USA | NS | Patients with CNS  coccidioidomycosis | All Coccidioides isolates:  (59)  *Coccidioides immitis*:  (21)  *Coccidioides posadasii*  (24) | NS |

N: number, LBS: laboratory-based study, SC: single center, NS: not stated, BM: bone marrow, BAL: bronchoalveolar lavage fluid, pK: pharmacokinetic, pD: pharmacodynamic, MC: multicenter, RCT: randomized controlled trial, HIV: human immunodeficiency virus, RCS: retrospective cohort study, USA: United States of America, CNS: central nervous system

\*Human samples were from patients attending tertiary referral centers. Also had environmental and animal isolates

#Mostly California, Arizona and Texas

$*In-vitro* susceptibilitytesting and *in-vivo* efficacy analysis (experimental mouse model of CNS coccidioidomycosis)

**Table S4. Preventative measures for *Talaromyces marneffei*, and *Coccidioides* species.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Author** | **Year** | **Study design** | **Study period** | **Country** | **Level of care** | **Population description** | **Number of patients (N)** | **Preventative measures** |
| ***Talaromyces marneffei*** | | | | | | | | |
| Guo *et al.*52 | 2019 | RCS  SC | 2013-2018 | China | Tertiary | HIV negative children with  disseminated talaromycosis | 11 | Recommended:  Increasing awareness and the development of guidelines  Misdiagnosed due to non-specific clinical features:  9/11 (82%) |
| Jiang *et al.*10 | 2019 | RCS  SC | 2012-2105 | China | Tertiary | Adults and children with HIV/AIDS and  *Talaromyces marneffei* infection | 1093 | Co-trimoxazole prophylaxis:  aHR 0.50 (95% CI 0.35-0.73; P < 0.001)  c/w no prophylaxis |
| Pang *et al*.91 | 2018 | RCS  SC | 2014**-**2015 | China | Tertiary | Adults with HIV and opportunistic infections | Total:  954  With talaromycosis:  5 (0.3%) | Monitoring for talaromycocis in HIV infected patients should occur regardless of whether on ART or not\*. |
| **Coccidioides species** | | | | | | | | |
| Choi *et al.*70 | 2019 | RCS  SC | 2010-2016 | USA | Tertiary | Adults and children taking a TNF-α inhibitor | Total;  1951  Screened:  925/1951 (47.4%)  Not screened:  1025/1951 (52.5%) | Screening of patients taking TNF-α inhibitors for asymptomatic CM in endemic areas |
| Keckich *et al.*84 | 2011 | RCS  SC | 1999-2009 | USA | Tertiary | SOT recipients with pre-transplant CM | Total:  100  Reactivation post-transplant:  5 | Antifungal prophylaxis for SOT recipients in endemic areas:  BT rate of 5% |
| Laws *et al.*71 | 2018 | PCS  SC | 2016-2017 | USA | Community | Workers at a solar power farm, Monterey County, California | Total:  2410  Workers  With CM:  9 | CDPH issues prevention recommendations:   * Dust control * Respiratory protection * Education * Processes for tracking and reporting infections |
| Mendoza *et al.*57 | 2015 | RCS  SC | 2003-2013 | USA | Tertiary | Allogeneic HSCT recipients with active coccidioidomycosis | Total:  426  With CM:  11 (2.6%) | Antifungal prophylaxis:  9/11 (82%) who developed CM were not on antifungal prophylaxis  Important for those with a history of CM prior to HSCT |
| Phonphok *et al*.78 | 2018 | SPS  SC | 2007-2016 | USA | Tertiary | Adult kidney transplant recipients who had Coccidioides screening | Total:  2109  Positive serology:  86 | Screening of all candidates for kidney transplantation who are from established and highly endemic areas:  IgG sero-positivity 3.7% vs. 1.3%; p<0.01  in those from suspected endemic areas |
| Wilken *et al.*59 | 2015 | OA | 2012-2014 | USA | CDPH | Construction workers from 2 solar farms in California | Total:  3572  CM:  44 | CDPH issues prevention recommendations:   * Work-place dust control * Criteria for stopping work under certain weather conditions * Respiratory protection * HEPA filters in trucks and earth moving equipment * Clothes coverings * Improve processes for reporting infections |

N: number, RCS: retrospective cohort study, SC: single center, HIV: human immunodeficiency virus, AIDS: acquired immunodeficiency virus, aHR: adjusted hazard ratio, CI: confidence interval, c/w: compared with, ART: antiretroviral therapy, TNF-α: tumor necrosis factor-alpha, CM: coccidioidomycosis, USA: United States of America, SOT: solid organ transplant, BT: break-through, PCS: prospective cohort study, CDPH: California Department of Public Health, HSCT: hematopoietic stem cell transplantation, SPS: sero-prevalence survey, OA: outbreak analysis, HEPA: high-efficiency particulate absorbing

**\***This study found more cases of talaromycosis in those on antiretroviral therapy than in those not on antiretroviral therapy

**Table S5. Annual incidence of *Talaromyces marneffei*, *Coccidioides* species and *Paracoccidioides* species.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Author** | **Year** | **Study design** | **Study period** | **Country** | **Level of care** | **Population description** | **Number of patients (N)** | **Incidence** |
| ***Talaromyces marneffei*** | | | | | | | | |
| Chayakulkeeree *et al*.75 | 2017 | PBS  MC | 2013 | Thailand | Various | Adults and children at risk of serious fungal infection | Total:  1,254,562 | 0.3/100,000 per year\* |
| Jiang *et al.*48 | 2019 | RCS  SC | 2005-2016 | China | Tertiary | Adults and children with HIV/AIDS and  *Talaromyces marneffei* infection | Total:  3359  With *Talaromyces marneffei* infection:  159 (4.73%) | Overall:  15.14/1,000 person-year  (95% CI 12.84-17.43)  On co-trimoxazole:  12.63/1,000 person-year  (95% CI 10.36-14.89)  Not on co-trimoxazole;  29.59/1,000 person-year  (95% CI 21.26-37.93)  *P* < 0.001 |
| Li *et al.*76 | 2021 | RCS  SC | 2013-2019 | China | Tertiary | Adults and children with pulmonary fungal infections | Total  Inpatients:  40504  Outpatients:  219414  Confirmed PFI:  Inpatient:  1368  Outpatient:  1313  *Talaromyces marneffei*:  42 (2.55%) | *Talaromyces marneffei*:  Range:  0.17/1000 patients to 1.97/1000  (2013-2019) |
| ***Coccidioides* species** | | | | | | | | |
| Benedict *et al.*77 | 2019 | PBS  MC | 2011-2017 | USA | Various | Adults and children with CM reported to the NNDSS | Total:  93, 371 | Annual incidence rate:  Between: 2011 and 2017:  Range:  Arizona:  85.8 to 260.5/100,000 population  California:  6.0 to 18.2/100,000 population  Nevada, New Mexico, and Utah:  1.9 to 3.5/100,000 population  Other states:  0.2 to 0.4/100,000 population |
| Laws *et al*.71 | 2018 | PCS  SC | 2016-2017 | USA | Community | Workers at a solar power farm, Monterey County, California | Total:  2410  Workers  With CM:  9 | Annual incidence in 2016:  Range for 6 counties in California:  5.2-251.7/100,000 persons  For nearby worksite (2 solar farms):  1095/100,000 persons |
| Webb *et al.*53 | 2018 | RCS  MC | 2006-2015 | USA | Various | Patients with possible, probable or proven IFI# | Total:  3154 patients (3374 episodes)    CM:  790 (93% of 849 dimorphic fungi) | Mean annual incidence for dimorphic fungi (93% *Coccidioides* species):  6.9/100,000 |
| ***Paracoccidioides species*** | | | | | | | | |
| do Valle *et al.*74 | 2017 | OA  SC | 2008-2014  (Pre)  vs.  2015-2016  (Post) | Brazil | Tertiary | Patients with PCM | NS | Pre-highway construction (2008-2014):  1.29 acute PCM cases/1 million persons/year  (95% CI 0.74-4.03)  Post construction (2015-2016):  8.25 acute PCM cases/1 million persons/year  (95% CI 4.18–16.3) |
| Vieira *et al.*31 | 2014 | RCS  SC | 1997-2012 | Brazil | Tertiary | Patients with PCM | 2163 | Average annual incidence:  94/1,000,000 people  municipalities in the State of Rondônia:  Pimenteiras do Oeste: 391/1,000,000 people    Espigão do Oeste: 374/1,000,000 people    Pimenta Bueno: 208/1,000,000 people  Primavera de Rondônia: 202/1,000,000 people  Porto Velho (Capital):  16/1,000,000 people |

N: number, PBS: population based study, MC: multicenter, RCS: retrospective cohort study, SC: single center, HIV: human immunodeficiency virus; AIDS: acquired immunodeficiency virus, CI: confidence interval, USA; United States of America, CM: coccidioidomycosis, NNDSS: National Notifiable Diseases Surveillance System, PCS: prospective cohort study, IFI: invasive fungal disease, OA: outbreak analysis, PCM: paracoccidioidomycosis, NS: not stated

\*Estimate

#Classified according to the European Organization for the Treatment and Research of Cancer/Mycoses Study Group criteria for the diagnosis of invasive fungal disease100

**Table S6. Distribution and prevalence of** ***Talaromyces marneffei*, *Coccidioides* species and *Paracoccidioides* species.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Author** | **Year** | **Study design** | **Study period** | **Country** | **Level of care** | **Population description** | **Number of patients (N)** | **Distribution/prevalence** |
| ***Talaromyces marneffei*** | | | | | | | | |
| Chayakulkeeree *et al.*75 | 2017 | PBS  MC | 2013 | Thailand | Various | Adults and children at risk of serious fungal infection | Total:  1,254,562 | Endemic in Thailand. Most prevalent in the north.  Prevalence:  2.6% in new AIDS cases |
| Chen *et al*.47 | 2017 | RCS  SC | 2014-2015 | China | Tertiary | Adults with HIV and *Talaromyces marneffei* infection  (81.3% disseminated) | 48 | Prevalence:  Mean:  3.2% (95% CI 2.4-4.2%)  of yearly admissions among HIV-infected patients from eastern China |
| Guo *et al.*52 | 2019 | RCS  SC | 2013-2018 | China | Tertiary | HIV negative adults and children with  disseminated talaromycosis | Total:  147  Pediatric:  11 | Prevalence:  7.4% |
| Jiang *et al.*48 | 2019 | RCS  SC | 2012-2105 | China | Tertiary | Adults and children with HIV/AIDS and  *Talaromyces marneffei* infection | Total with HIV/AIDS:  6791  With HIV/AIDS and talaromycosis:  1093 | Prevalence:  1093/6791 (16.1%) |
| Lao *et al*.90 | 2917 | RCS  SC | 2007-2017 | China | Tertiary | Adults with CTD and IFD\* | Total:  6911  With IFD:  32  With talaromycosis:  2 | Prevalence:  2/32 (6.3%) |
| Li *et al.*76 | 2021 | RCS  SC | 2013-2019 | China | Tertiary | Adults and children with pulmonary fungal infections | Total  Inpatients:  40504  Outpatients:  219414  Confirmed PFI:  Inpatient:  1368  Outpatient:  1313  *Talaromyces marneffei*:  42 | Distribution:  Most from Southern China  Prevalence:  2.55% |
| Pang *et al.*91 | 2018 | RCS  SC | 2014**-**2015 | China | Tertiary | Adults with HIV and opportunistic infections | Total:  954  With talaromycosis:  5 | Prevalence:  0.3% |
| Qi *et al*.92 | 2016 | RSC  SC | 2009-2014 | China | Tertiary | HIV/AIDS patients with BSI | Total with HIV/AIDS:  2242  With BSI:  229  With *Talaromyces marneffei*:  43 | Prevalence:  18.8% |
| Roohani *et al.*95 | 2018 | PCS  SC | 2015-2016 | India | Tertiary | Immunocompromised and immunocompetent adults with respiratory fungal pathogens | Total:  150  ICH:  80  Respiratory fungal pathogens:  65  Mold pathogens:  32  *Talaromyces marneffei*:  1 | Prevalence:  1/32 (3.1%) |
| Sun *et al*.88 | 2021 | RCS  SC | 2015-2020 | China | Tertiary | Adults with HIV and *Talaromyces marneffei* BSI | 87 | Prevalence:  0.99% to 2.09%  (2015-2019)  Distribution:  SPHCC is a tertiary referral hospital in east China. Cases were scattered throughout the other provinces but, Zhejiang Province with 24 cases and Jiangxi Province with 13 cases had the largest numbers. |
| Sun *et a*l.96 | 2020 | PCS  SC | 2009-2019 | China | Tertiary | Adults and children with cervical lymphadenopathy | Total:  589  With HIV:  453  Without HIV:  136 | Talaromyces marneffei: 1.5%  In HIV infected patients only  Other OI:  NTM:  4.5%  Cryptococcosis:  1.5% |
| Wang *et al.*69 | 2015 | RLS  MC | 2004-2011 | China | Various | HIV patients with archived serum samples# | Total:  8131 samples from 7734 patients  Positive for disseminated talaromycosis^:  761 samples | Prevalence^:  Overall:  761/813 (9.36%)  Peak:  2010 (158/1256 [12.58%])  Start of surveillance period:  14/271 (5.17%)  End of surveillance period:  148/1794 (8.25%) |
| Xiao *et al*.97 | 2013 | RCS  SC | 2009-2012 | China | Tertiary | Adults with HIV and OI and/or malignancy | Total:  834  With Talaromyces marneffei:  12 | Prevalence:  1.4%  Distribution&:  Southern and Southwestern China.  No cases found in northwestern China |
| Ying *et al.*50 | 2020 | RCS  SC | 2011-2017 | China | Tertiary | HIV-associated talaromycosis | Total:  7575  With talaromycosis:  1214  With complete data:  1079 | Prevalence$:  Mean:  15.7% ±2.4%  Distribution:  Guangdong Province:  819/1079 (75.9%),  Hunan Province:  85/1079 (7.9%),  Guangxi Province:  63/1079 (5.9%),  Jiangxi Province:  35/1079 (3.2%),  Sichuan Province:  33/1079 (3.1%),  Hubei Province:  19 (.18%) |
| ***Coccidioides* species** |  |  |  |  |  |  |  |  |
| Benedict *et al.*77 | 2019 | PBS  MC | 2011-2017 | USA | Various | Adults and children with CM reported to the NNDSS | Total:  93, 371 | Prevalence:  Total:  93, 371 (2011-2017)  Arizona:  61,480 (64.5%)  California:  30,979 (32.5%)  Distribution:  26 US States† and District of Colombia |
| Charalambous *et al*.60 | 2018 | RCS  MC | 2000-2012 | USA | NS | Patients with fungal meningitis\* | Total:  1927  With CoM:  315 | Prevalence:  16.4%  Distribution in USA:  Western region:  64.4 %  Southern region:  15.2 %  North Central region: 10.2 %  Northeast region:  1.9 % |
| Phonphok *et al.*78 | 2018 | SPS  SC | 2007-2016 | USA | Tertiary | Adult kidney transplant recipients who had Coccidioides screening | Total:  2109  Positive serology:  86 | Overall prevalence:  *Coccidioides* IgG:  1.4%  *Coccidioides* IgM:  2.8%  Distribution:  No sero-positivity in patients from non-endemic areas  Highly endemic counties in California:  Kern  Areas with established endemicity in California:  Fresno,  Tulare,  Kings,  San Luis Obispo |
| Webb *et al*.53 | 2018 | RCS  MC | 2006-2015 | United States | Various | Patients with possible, probable or proven IFI\* | Total:  3154 patients (3374 episodes)    CM:  790 (93% of 849 dimorphic fungi) | Data extracted from Intermountain Healthcare EDW:  >1million cases/year; 2006-2015  Distribution:  Intermountain Healthcare:  22 hospitals and 180 clinics in Utah and southern Idaho |
| ***Paracoccidioides* species** | | | | | | | | |
| Magalhães *et al.*73 | 2014 | CSS | 2009 | Brazil | Rural area of Alfenas-MG | People who lived in Alfenas-MG | Total:  542 | Positive skin test:  46.67% (95% CI 42-52%)  Prevalence increased with increasing age:  11-29 years of age:  35.37%  vs.  30-49 years of age:  49.56%; *P* < 0.01  Highest for those >50 years of age:  52.66%; p<0.01 |
| Marques *et al.*72 | 2013 | SPS | NS | Brazil | Rural areas of Jaraguari County | People who lived in Jaraguari County | Total:  727 | Positive skin test  45.8 % (95 % CI 42.1–49.5)  Prevalence in the 8 rural settlements of Jaraguari  county:  Jaraguari Velho:  23.4%,  Primavera:  56.4%,  Bonfim:  63.5%,  BoaVista:  29.2%,  Sete:  32.6%,  Vale Verde:  70.3%,  Estrela:  61.3%,  Furnas do Dionı´sio:  37.6% |
| Vieria *et al.31* | 2014 | RCS  MC | 1997-2012 | Brazil | Tertiary | Patients with PCM | 2163 | Rondônia state:  12/14 municipalities (85.7%) with the highest rates were in the southeastern region of the state    Urban vs. rural areas:  53.6% (n=1,161)  vs.  46.4% (n=1002) |

N: number, PBS: population based study, MC: multi-center, AIDS: acquired immunodeficiency syndrome, RCS: retrospective cohort study, SC: single center, HIV: human immunodeficiency virus, CI: confidence interval, CTD: connective tissue disease, IFD: invasive fungal disease, PFI: pulmonary fungal infection, BSI: bloodstream infection, PCS: prospective cohort study, ICH: immunocompromised host, SPHCC: Shanghai Public Health Clinical Center, OI: opportunistic infection, NTM: non-tuberculous mycobacterium, RLS: retrospective laboratory study, USA: United States of America, CM: coccidioidomycosis, NNDSS: National Notifiable Diseases Surveillance System, US: United States, CoM: *Coccidioides* meningitis, SPS: sero-prevalence study, Ig: immunoglobulin, EDW: electronic data warehouse, CSS: Cross sectional study, NS; not stated, PCM: paracoccidioidomycosis

\*Classified according to the European Organization for the Treatment and Research of Cancer/Mycoses Study Group criteria for the diagnosis of invasive fungal disease100

#Archived at Centre for Disease Control and Prevention (GZCDC)

^Using the double-antibody sandwich ELISA for Mp1p antigen

&Likely due to ecological conditions and humidity

$HIV admissions

†Arizona, Arkansas, California, Delaware, Indiana, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Washington, Wisconsin, and Wyoming)

**Table S7. Trends in infections with** ***Talaromyces marneffei*, *Coccidioides* species and *Paracoccidioides* species.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Author** | **Year** | **Study design** | **Study period** | **Country** | **Level of care** | **Population description** | **Number of patients (N)** | **Trend\*** |
| Li *et al.*58 | 2021 | RCS  SC | 2013-2019 | China | Tertiary | Adults and children with PFI | Total  Inpatients:  40504  Outpatients:  219414  Confirmed PFI:  Inpatient:  1368  Outpatient:  1313  *Talaromyces marneffei*:  42 | 2013:  0.17/1000, 2014:  0.31/1000, 2015:  0.46/1000, 2016:  0.74/1000, 2017:  0.70/1000, 2018:  1.14/1000, 2019:  1.97/1000  16% year-on-year increase in the incidence.  2013-2019  (*P* < 0.001) |
| Sun *et al.*88 | 2021 | RCS  SC | 2015-2020 | China | Tertiary | Adults with HIV and *Talaromyces marneffei* BSI | Total with HIV:  8621  HIV with *Talaromyces marneffei* BSI:  87 | Trends in *Talaromyces marneffei* BSI:  2015:  13 (0.99%), 2019:  18 (1.01%), 2020:  2.09% |
| Ying *et al.*50 | 2020 | RCS  SC | 2011-2017 | China | Tertiary | HIV-associated talaromycosis | Total:  7575  With talaromycosis:  1214  With complete data:  1079 | 2011:  125 (15.7%)  2017:  253 (18.8%) |
| ***Coccidioides* species** | | | | | | | | |
| Benedict *et al.*77 | 2019 | PBS  MC | 2011-2017 | USA | Various | Adults and children with CM reported to the NNDSS | Total:  93, 371 | Overall:  Decreased from  2011  (22,634 cases)  to  2014  (8,232 cases)  Then increased to  2017  (14,364 cases)  Variability between states:  Arizona: Decreased from  2011  (260.5/100,000)  to  2013  (90.8/100,000)  (-41%)  Then stable from 2013-2017  California:  Decreased from  2011  (15.7/100,000)  to  2014  6.0/100,000  (-27%)  Then increased to  2017  (18.2/100,000) (+48%).  In other states, relatively stable |
| Webb *et al.*53 | 2018 | RCS  MC | 2006-2015 | USA | Various | Patients with possible, probable or proven IFI# | Total:  3154 patients (3374 episodes)    CM:  790  (93% of 849 dimorphic fungi) | For dimorphic fungi overall: 2011:  6.3/100,000 patients, 2012: 7.4/100,000 patients, 2013: 6.6/100,000 patients, 2014: 5.9/100,000 patients, 2015: 8.7/100,000 patients |
| ***Paracoccidioides* species** | | | | | | | | |
| Vieira *et al.*31 | 2014 | RCS  SC | 1997-2012 | Brazil | Tertiary | Patients with PCM | 2163 | Decrease from  2011 to 2012: 44 cases/1,576,455  vs.  38/1,590,011  (-11%)  Equivalent to 2.7/100,000  vs.  2.4/100,000 population |

N: number, RCS: retrospective cohort study, SC: single center, PFI: pulmonary fungal infection, HIV: human immunodeficiency virus, BSI: bloodstream infection, PBS: population-based surveillance, MC: multi-center, USA: United States of America, NNDSS: National Notifiable Diseases Surveillance System, IFI: invasive fungal infection, CM: coccidioidomycosis, PCM: paracoccidioidomycosis

\*Over the duration of the included studies

#Classified according to the European Organization for the Treatment and Research of Cancer/Mycoses Study Group criteria for the diagnosis of invasive fungal disease100