ABSTRACT

Objective
The incidence of fungal infections in Belgium is unknown. We aimed to estimate the total number of serious fungal infections occurring yearly in Belgium.

Methods
Methodology of the LIFE program was used. Number of cryptococcal infections was retrieved from the National Reference Center (NRC) for Mycosis. Populations at risk and fungal infections frequencies in these populations were used to estimate incidence or prevalence of other fungal infections. Numbers were retrieved from the Civil Registration Data Base Belgium (2013), Registry of the Belgian AIDS Reference Centers (2012), Pneumocystis jiroveci (PCP) distribution (HIV versus non-HIV) in UZ Leuven, Belgian tuberculosis (TB) register (2013), Eurotransplant (2011), Belgian Cancer Register and European Cystic Fibrosis (CF) Society (2013).

Results
The Belgian population consists of 11.10 million people including 17% children under the age of 18 and 24% women older than 60. Cryptococcal meningitis is rare (~10 cases yearly). 15 of the 1227 newly diagnosed HIV/AIDS cases presented with PCP as indicator disease. This accounts for ~1-14% of total PCP cases (n=120). The incidence of candidia is estimated as 5’100,000 resulting in 555 cases, additionally we assume 83 Candida peritonitis cases (50% of candidia cases in ICU). A total number of 675 invasive aspergillosis (IA) cases was obtained based on following assumptions: 10% rate in AML patients which accounts for ~50% of the total number of IA cases in the hematological population, 0.5-4% rate in solid organ transplant recipients and 1.3% rate in COPD hospital admissions. Chronic pulmonary aspergillosis is estimated to be prevalent in 662 cases (including 132 post-TB). ABPA cases was estimated to be 23,119 applying a 2.5% and 15% rate in adult asthma and CF patients respectively. Severe asthma with fungal sensitization cases was estimated to be 30,402 (3.3% of 921,262 adult asthmatics).

There were 17,746 women with recurrent Candida vaginitis assuming a 6% rate in women aged between 15 and 50. Conclusion
Based on available data approximately 233,000 people of the Belgian population (2.1%) are estimated to suffer from a fungal infection on a yearly basis. This estimate needs further validation but is important to increase the awareness of the burden of fungal infections.

METHODS

- The methodology of the LIFE program was used (www.LIFE-worldwide.org) to estimate the burden of fungal disease in Belgium.
- The number of cryptococcal infections was retrieved from the National Reference Center (NRC) for Mycosis.
- The incidence or prevalence of other fungal diseases was estimated based on populations at risk and fungal infections frequencies in these populations. Following sources were consulted to retrieve data about the at risk populations:
  - Civil Registration Database 2013 (http://bestat.economie.fgov.be/) for demographic data.
  - European Cystic Fibrosis Society (2013) for the number of cystic fibrosis (CF) patients.
  - Registry of the Belgian AIDS Reference Centers (2012) for numbers of HIV/AIDS cases that presented with PCP as AIDS indicator disease.
  - Retrospective study (2010-2012, non-published data) of PCP cases in UZ Leuven (1900 bed tertiary care hospital, Leuven, Belgium) for the ratio of PCP diagnosis in HIV versus non-HIV patients.
  - The Belgian tuberculosis register (2012) for the number of pulmonary tuberculosis (TB) patients.
  - Eurotransplant (2011) for the number of solid organ transplantations.
  - Belgian Cancer Register for the number of patients with acute myeloid leukemia (AML).
  - The number of invasive aspergillosis (IA) cases was obtained based on the assumption of a 10% rate in AML patients (n=1641), an equal number in the non-AML patient population; 0.5% in renal transplant recipients (Tx) (n=437), 4% in lung Tx (n=106), 6% Heart Tx (n=867), 4% Liver Tx (232) and 1.3% in COPD hospital admissions (n=21,005).
  - Allergic bronchopulmonary aspergillosis (ABPA). Calculated based on the assumption of a prevalence of 2.5% in adult asthmatics (10% asthma rate in adults) and 15% in adult CF patients.

  - Severe asthma with fungal sensitization (SAFS). Calculated based on the assumption of a prevalence of 3.3% in adult asthmatics.

CONCLUSIONS

There is no mandatory systematic national surveillance system for fungal infections in Belgium as such there is a high uncertainty about the burden of fungal disease in this country. This study is a first attempt to estimate the fungal disease burden but improved diagnostic testing and reporting is needed to further validate these data.