Objectives: Pneumocystis jiroveci pneumonia (PCP) in HIV-negative immunocompromised patients is associated with high mortality rates. Although trimethoprim-sulfamethoxazole (TMP-SMX) provides a very effective prophylaxis, PCP still occurs and may even be emerging in these populations, due to sub-optimal characterization of patients most at risk, hence precluding targeted prophylaxis. We aimed to provide original data on the spectrum of diseases associated with PCP in non-HIV infected patients, and to estimate the incidence of PCP in these conditions, in order to better inform the targeted use of TMP-SMX prophylaxis in HIV-negative patients.

Methods: We retrospectively analyzed all cases of documented PCP in HIV-negative patients admitted in our institution, a referral center in the area, from January 1990 to June 2010, and extracted data on their underlying condition(s). A case of PCP was defined by a positive direct examination on bronchoalveolar lavage. PCP documented only by PCR were not included. To estimate incidence rates within each condition, we estimated the number of patients followed-up in our area for each condition, by measuring the number of patients admitted with the corresponding international classification diagnostic code, through the national hospital discharge database (PMSI). An estimate of the incidence rates of PCP in each condition was derived by dividing the number of cases of PCP documented in this group by the number of patients followed-up for this condition in our institution over the study period, and then by the study duration.

Results: From 1990 to 2010, 293 cases of PCP were documented, of whom 154 (52.6%) tested negative for HIV. The proportion of PCP admitted in ICU was higher in HIV-negative patients than in non HIV-infected patients (51.9% vs. 28.1%, P = .006). Likewise, in-ICU mortality rates were higher in HIV-negative patients than in non HIV-infected patients (52.9% vs. 15.4%, P = .008). The main underlying conditions were haematological malignancies (32.5%), solid tumors (18.2%), inflammatory diseases (14.9%), solid organ transplant (12.3%), and vasculitis (9.7%). Estimated incidence rates could be ranked in three categories: i) high risk (incidence rates > 45 PCP per 100,000 patient-year): polyarteritis nodosa, granulomatosis with polyangitis, polymyositis/dermatopolymyositis, acute leukemia, chronic lymphocytic leukemia, and non-Hodgkin lymphoma; ii) intermediate risk (25-45 PCP per 100,000 patient-year): Waldenstrom macroglobulinemia, multiple myeloma, and central nervous system cancer; and iii) low risk (< 25 PCP per 100,000 patient-year): other solid tumours, inflammatory diseases, and Hodgkin lymphoma.

Conclusions: PCP is more common, and more severe, in HIV-negative, as compared to HIV-positive patients, with higher rates of ICU admission, and in-ICU mortality. Haematological malignancies represent the main group at risk. We propose a hierarchical classification of HIV-negative populations at risk of PCP that may be used to better target TMP-SMX prophylaxis.