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## Infectious disease surveillance in China



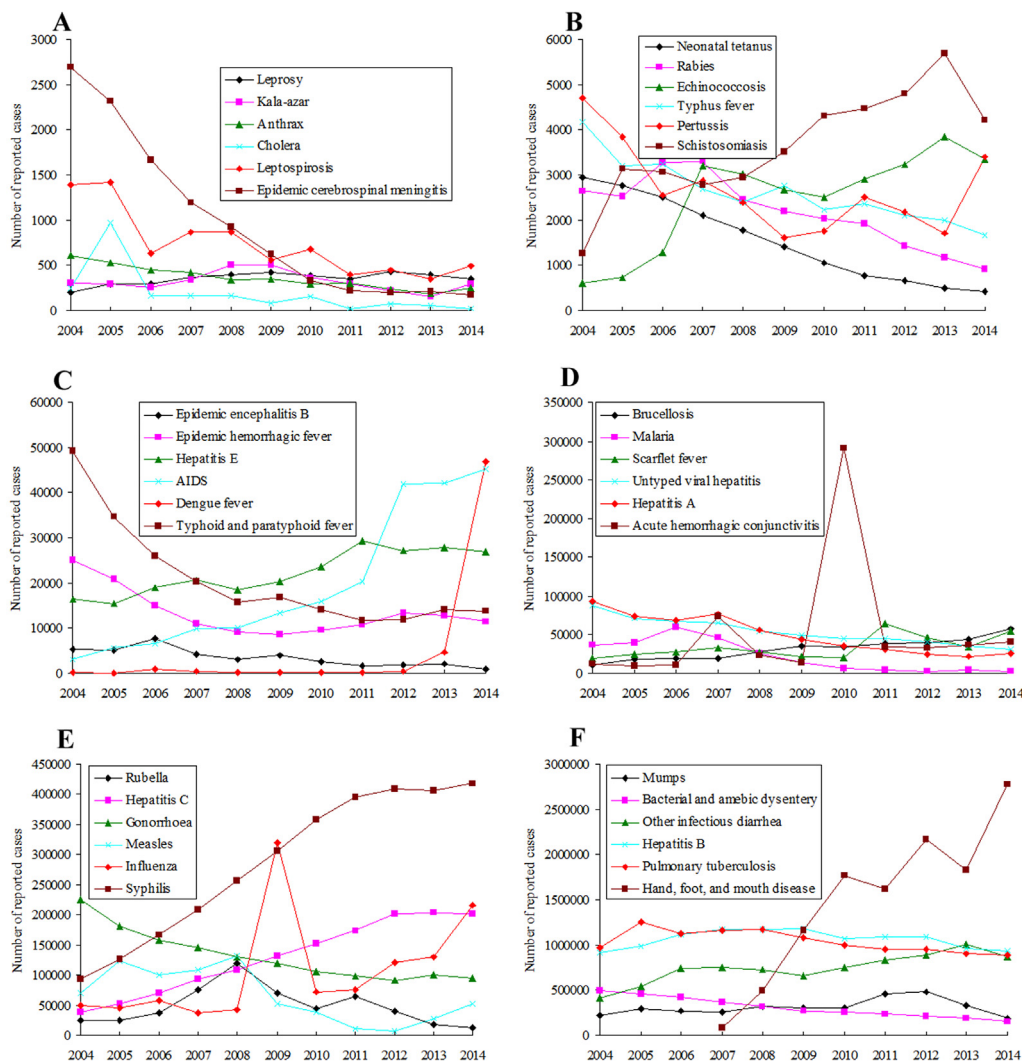
### To the Editors:

In this journal, Freeman and colleagues described their evaluation of a national microbiological surveillance system for automated outbreak detection in England.<sup>1</sup> The Chinese government had also established a similar surveillance system after the outbreak of severe acute respiratory syndrome in 2003. That system is comprised of a

web-based disease reporting system and the National Infectious Diseases Monitoring Information System Database. These resources have helped to strengthen the Chinese infectious disease prevention and control strategies. For example, the outbreaks of H1N1 influenza in 2013 and H7N9 influenza in 2009 were swiftly detected and effectively controlled.<sup>2</sup> Moreover, the outbreak of imported wild-type poliovirus in 2011 was quickly detected by this system, and the vulnerable population was vaccinated, which led to the successful termination of the outbreak within 1.5 months after laboratory confirmation of the index case.<sup>3</sup>

In addition to China's population-based vaccination programs, the national microbiological surveillance system has substantially contributed to the control of infectious diseases in China during the last 11 years (Fig. 1).<sup>4</sup> According to Chinese governmental reports, severe acute respiratory syndrome was eradicated in 2004, and during the last 3 years there have only been four cases of plague and no cases of diphtheria or filariasis. Since 2004, >50% decreases have been reported in the number of cases of anthrax, cholera, leptospirosis, epidemic cerebrospinal meningitis, neonatal tetanus, typhus fever, epidemic hemorrhagic fever, typhoid and paratyphoid fever, un-typed viral hepatitis, hepatitis A, gonorrhoea, and bacterial and amebic dysentery. Furthermore, although the number of reported cases of kala-azar, rabies, epidemic encephalitis B, malaria, and rubella had initially risen from 2004 to 2007–2010, a subsequent downward trend in recent years has resulted in a lower number of cases in 2014 (vs. 2004). Similarly, although the number of reported mumps cases had increased from 2004 to 2012, a 60.9% decrease from 2012 to 2014 resulted in a lower number of cases in 2014 (vs. 2004). Although the numbers of reported hepatitis B and leprosy cases in 2014 were higher than those in 2004, the 2014 numbers were lower than those in the peak years of 2009 and 2012, respectively. Finally, the number of pulmonary tuberculosis cases has decreased slowly during the past decade, from 1,259,308 in 2005 to 889,381 cases in 2014.

The reported number of other infectious diseases has increased in 2014 in China, compared to that previously observed (Fig. 1).<sup>4</sup> This is believed to be attributable to microbes being able to spread more easily now than before owing to a dirty environment, changed climate, and population migration. The national microbiological surveillance system has been able to effectively and promptly detect this change in status. Although China had effectively reduced the number of pertussis cases between 2004 and 2009, the number of cases was significantly higher in 2014. Although fewer measles cases were reported in 2014 (vs. 2004), the 2014 incidence was 8.5-fold higher than the incidence in 2012. The number of reported hepatitis E cases has also increased by >60% since 2004. Similarly, the numbers of reported acute hemorrhagic conjunctivitis and influenza cases were 3.1-fold and 2.6-fold higher in 2014, respectively, compared to the numbers in 2004 (excluding the outbreaks in 2010 and 2009, respectively). Furthermore, the numbers of reported syphilis, brucellosis, scarlet fever, schistosomiasis, echinococcosis, and hepatitis C cases have exhibited fluctuating or sharply increasing trends from 2004 to 2014, with approximately 3–6-fold more cases reported in



**Figure 1** The number of reported infectious disease cases in China from 2004 to 2014. A) Leprosy, kala-azar, anthrax, cholera, leptospirosis, and epidemic cerebrospinal meningitis. B) Neonatal tetanus, rabies, echinococcosis, typhus fever, pertussis, and schistosomiasis. C) Epidemic encephalitis B, epidemic hemorrhagic fever, hepatitis E, AIDS, dengue fever, and typhoid and paratyphoid fever. D) Brucellosis, malaria, scarlet fever, un-typed viral hepatitis, hepatitis A, and acute hemorrhagic conjunctivitis. E) Rubella, hepatitis C, gonorrhoea, measles, influenza, and syphilis. F) Mumps, bacterial and amebic dysentery, other infectious diarrhea, hepatitis B, pulmonary tuberculosis, and hand-foot-and-mouth disease. Un-typed viral hepatitis: all viral hepatitis cases except cases of hepatitis A, B, C and E. Other infectious diarrhea: all cases of infectious diarrhea that were not listed above.

2014 (vs. 2004). Moreover, the number of reported hand-foot-and-mouth disease cases has increased by >30-fold, from 83,344 cases in 2007 to 2,778,861 cases in 2014. A recent increase in dengue fever cases has also emerged over the last 2 years, with a 180-fold increase between 2004 and 2014. Surprisingly, a large year-over-year increase in the number of AIDS cases was reported, from 3054 in 2004 to 45,145 in 2014.

In conclusion, both China and England have effectively implemented national microbiological surveillance systems. Adoption of similar systems by other countries, especially Africa countries, may enable public health authorities to quickly collect information and make effective decisions to combat potential and ongoing outbreaks.

**Conflict of interest**

None declared.

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**Prophylaxis against *Pneumocystis jirovecii* pneumonia in patients with adult T-cell lymphoma/leukemia receiving anti-CC chemokine receptor 4 monoclonal antibody**



Dear Editors,

Recently, Kim and colleagues in this Journal reported the characteristics of *Pneumocystis jirovecii* pneumonia (PJP) in patients without HIV infection.<sup>1</sup> Although PJP remains a cause of non-relapsing morbidity and mortality in patients without HIV infection, including those with adult T-cell leukemia/lymphoma (ATLL), we observed that trimethoprim-sulfamethoxazole (TMP-SMX) was an effective prophylactic for ATLL patients who received chemotherapeutic agents and immunosuppressants, including novel antibodies such as mogamulizumab, which is a humanized anti-CC chemokine receptor 4 monoclonal antibody with clinical antitumor effects in patients with relapsed ATLL.<sup>2</sup> Mogamulizumab has been available for clinical practice since May 2012 in Japan. Although combination of mogamulizumab with vincristine, cyclophosphamide, doxorubicin, prednisone, ranimustine, vindesine, etoposide, and carboplatin (VCAP-AMP-VECP) chemotherapy showed a better complete response rate, a phase

II clinical trial of PJP has not been reported.<sup>3</sup> We aimed to highlight a prophylactic effect against PJP during mogamulizumab therapy and post-chemotherapy that is crucial for the success of VCAP-AMP-VECP chemotherapy and mogamulizumab as an upfront treatment regimen for ATLL.

Ninety ATLL patients with acute- (n = 56) or lymphoma (n = 34)-type ATLL who received chemotherapy, including cyclophosphamide, doxorubicin, vincristine, and prednisone (CHOP; n = 55), CHOP plus etoposide, mitoxantrone, ranimustine, and vindesine (CHOP-VMMV; n = 19), VCAP-AMP-VECP (n = 9), CHOP plus etoposide (CHOPE; n = 4), or modified etoposide, prednisone, vincristine, cyclophosphamide, and doxorubicin (EPOCH; n = 3), and mogamulizumab (n = 12) from May 2003 to 2014 in our institute, were retrospectively evaluated (Table 1). A median of four patients (range, 1–4) were treated with mogamulizumab at 1 mg/kg/week. All patients received trimethoprim-sulfamethoxazole prophylaxis (n = 85) or treatment (n = 5) for PJP. Although 1/5 patients with PJP at the diagnosis of ATLL died of respiratory failure, there were no cases of PJP after chemotherapy alone or when combined with mogamulizumab. Twenty-three of our patients received allogeneic hematopoietic cell transplantation (HCT) and all three patients who received chemotherapy and mogamulizumab before allogeneic HCT died from graft-versus-host disease (GVHD), but there was no outbreak of PJP.

Ten patients (1 patient receiving CHOP with mogamulizumab, 9 patients receiving chemotherapy alone) required a reduction in the dosing schedule of trimethoprim-sulfamethoxazole (TMP-SMX) because of adverse drug reactions (ADR), such as rash (n = 8) or thrombocytopenia (n = 2). Eleven patients after chemotherapy combined with mogamulizumab and 69 patients after chemotherapy alone successfully completed oral 80 mg TMP plus 400 mg SMX daily or 320 mg TMP plus 1200 mg SMX twice a week (Table 2). No patient stopped TMP-SMT for prophylaxis because of ADR.

Prophylaxis for PJP in ATLL patients should be considered, particularly in those patients eligible for allogeneic HCT, because the occurrence of GVHD impairs immune reconstitution by requiring prolonged and intensive immunosuppressive therapy and allogeneic HCT; however, GVHD is still high risk for PJP. Prophylaxis for PJP in ATLL patients receiving chemotherapy was highly recommended in a nationwide survey in Japan.<sup>4</sup> We observed that TMP-SMX was a first-line prophylactic agent for the prevention of PJP in ATLL patients.

In summary, it is evident from the nationwide survey and our supporting retrospective cohort study that when TMP-SMX prophylaxis is used, no cases of PJP after chemotherapy alone or combined with mogamulizumab were observed. Limitations of this study include its retrospective nature and involvement of a single institution. Further evaluations are warranted to estimate the incidence of PJP and to establish the best time to start and stop prophylaxis for PJP in ATLL patients who are candidates for treatment with mogamulizumab, particularly in those who are eligible for allogeneic HCT.