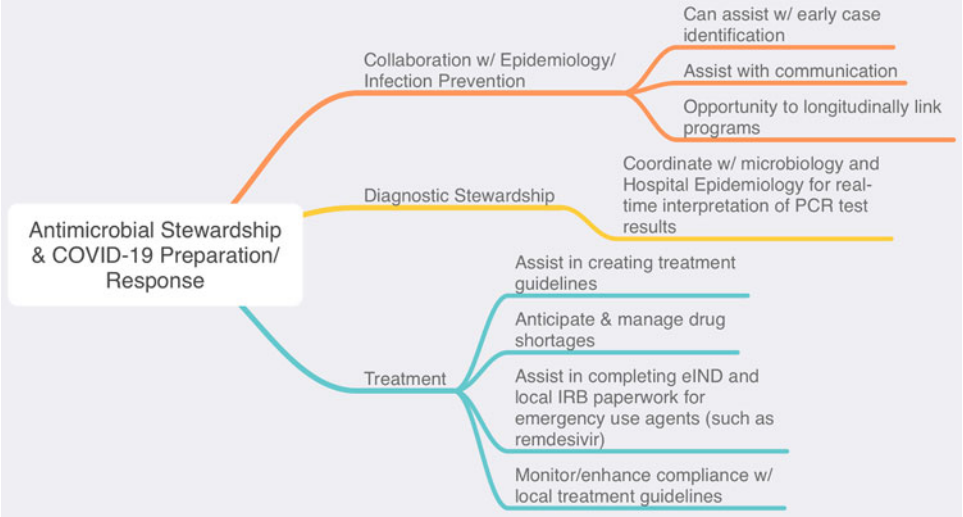

Fig. 1. Opportunities for antimicrobial stewardship programs to assist COVID-19 response preparation and planning efforts.

Conflicts of interest. All authors report no conflicts of interest relevant to this article.

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Protecting Chinese healthcare workers while combating the 2019 novel coronavirus

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To the Editor—Hospital-associated transmission is an important route of spreading the 2019 novel coronavirus SARS-CoV-2 and pneumonia (coronavirus disease 2019, COVID-19).[1] Healthcare workers (HCWs) are at high risk while combating COVID-19 at the very front line, and nosocomial outbreaks among HCWs are not unusual in similar settings. The 2003 severe acute respiratory syndrome (SARS) outbreak led to >966 HCW infections with 1.4% deaths in mainland China.[2] As of February 11, 2020, 3,019 HCWs might have been infected with SARS-CoV-2 in China, and 1,716 HCW cases of COVID-19 have been confirmed by nucleic acid testing.[3] At least 6 HCWs have died, including the famous whistleblower Dr Li Wenliang. In view of this severe situation, we are recommending urgent interventions to help to protect HCWs.

A few aspects of COVID-19 have created a more severe situation than expected among HCWs. First, many infected individuals present with a typical symptoms, such as gastrointestinal symptoms and fatigue, or are asymptomatic.[4] This situation may lead to a lack of recognition of the infection while patients are highly

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contagious. Furthermore, HCWs have not been not well prepared for this sudden COVID-19 outbreak, especially in departments other than infectious diseases. In Wuhan at the beginning of the outbreak, there was a general lack of awareness among HCWs to take precautions, and inadequate training among HCWs was noted, with staff incorrectly wearing personal protective equipment (PPE). In fact, ~30 HCWs in the Wuhan Mental Health Hospital were reported to be infected.[5] Third, no point-of-care diagnostic assay was available in hospitals before late January 2019. In addition, the positive rate of the SARS-CoV-2 nucleic acid test kit remains relatively low even at present, and many patients have been diagnosed after >4 tests. These factors led to a diagnostic delay and opportunities for exposure among HCWs. Fourth, a good many tertiary and secondary hospitals are experiencing shortages of PPE and are calling for donations. HCWs have to use daily plastic products (photographic film, plastic wrap, file bag, and so forth) to make simple PPE. Lastly, some COVID-19 patients were admitted to the other departments by concealing their epidemiological history, which led to unnecessary exposure of HCWs.

Much can be done! We hope all countries and all people in the world can support the brave men and women on the front line of combating SARS-CoV-2. More PPE should be produced or imported, and it should be delivered to hospitals quickly. Training of HCWs to identify suspicious cases and to use PPE properly is urgently needed, especially for HCWs in departments other than infectious diseases. Furthermore, concealing medical history should have legal consequences.

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The role of masks and respirator protection against SARS-CoV-2

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To the Editor— The outbreak of COVID-19, the novel coronavirus SARS-CoV-2 infection, was first reported on December 31, 2019, in Wuhan, a central city in China. The SARS-CoV-2 virus has infected >30,000 people in a very short time, with hundreds of deaths.[1] COVID-19 continues to be a flaming infectious disease across the world. However, many details of the biological features of this virus remain largely unknown.

SARS-CoV-2 is the third coronavirus to have threatened global public health in the past 20 years, following severe acute respiratory syndrome coronavirus (SARS-CoV) in 2002 and Middle East respiratory syndrome coronavirus (MERS-CoV) in 2012.[2] In an updated COVID-19 report, Wang et al[3] indicated that the median age of death was 75 years, and fever (64.7% of deaths) and cough (52.9% of deaths) were identified as initial clinical manifestation.[3] Genomic characterization of samples from 9 COVID-19 patients indicated that SARS-CoV-2 had 88% identity with 2 bat-derived SARS-like coronaviruses (bat-SL-CoVZC45 and bat-SL-CoVXC21), whereas these bat viruses had 79% identity with SARS-CoV and 50% identity with MERS-CoV.[4] A phylogenetic analysis has indicated that SARS-CoV-2 belongs to the genus *Betacoronavirus* and the subgenus *sarbecovirus*.[4]

Given that large-scale spread of this virus is now occurring around the world, the identification of cases and the containment of possible routes of spread have become a priority. Increasing risk has narrowed the window of opportunity for effective abatement of COVID-19. Containing an outbreak becomes much more complicated and challenging when hospitalized populations are exposed. Notably, Zhou et al[5] recommended urgent interventions for the protection of Chinese healthcare workers against SARS-CoV-2. In fact, this warning raised attention regarding the role of daily-use N95 respirators and masks during this pandemic.

Given the similarity of SARS-CoV-2 and SARS-CoV, initial political recommendations in China highlighted the use of masks and N95 respirators for protection against SARS-CoV-2. Wearing masks and respirators and self-isolation at home has been issued as a practice guideline for public in China. Of 213 medical staff with no mask, 10 were infected by SARS-CoV-2, but none of the 278 medical staff wearing N95 respirators was infected.[6] Interestingly, a higher risk of infection has been noted in male

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