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Letter to the Editor

The impact of COVID-19 preventative measures on airborne/droplet-transmitted infectious diseases in Taiwan


Dear Editor,

With immense interest, we read the recent article by de Lusignan et al.,¹ which reported an absolute excess mortality of approximately 2 deaths per 100 person-years in England during the first wave of coronavirus disease 2019 (COVID-19). This report reminds us of the possible collateral damage caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infections, particularly in countries with high number of COVID-19 cases. In contrast, several recent reports revealed the collateral benefit of implementing infection control and prevention interventions during the COVID-19 pandemic on other respiratory infectious diseases.^{2–5} Therefore, we conducted this study to investigate the impact of COVID-19 preventative measures on airborne/droplet-transmitted infectious diseases in Taiwan, a country with a low number of COVID-19 cases.

We used the database of the National Notifiable Disease Surveillance System, which collected regular, frequent, and timely information on notifiable infectious diseases (NIDs) in Taiwan for their prevention and control.⁶ To assess the potential impact of COVID-19 on the occurrence of airborne/droplet-transmitted NIDs (ADT-NIDs) in Taiwan, we evaluated the number of aforementioned cases between January and October in 2019 and 2020 for comparison. After excluding the ADT-NIDs with zero cases in both 2019 and 2020, 14 infectious diseases including measles, rubella, pertussis, influenza with severe complications, invasive pneumococcal disease, Q fever, mumps, meningococcal meningitis, varicella, legionellosis, invasive *Haemophilus influenzae* type b infection, hantavirus syndrome, tuberculosis (TB), and multidrug-resistant TB (MDRTB) were investigated in this study.

Overall, the number of cases of these 14 ADT-NIDs decreased from 10,631 in 2019 to 7636 in 2020, with a reduction of 28.2% (Table 1). Moreover, 11 of these diseases had lower case numbers in 2020 compared to those in 2019, and no measles and rubella cases were found in 2020. A reduction of more than 1000 cases from 2019 to 2020 was observed for severe influenza and TB. Only three ADT-NIDs presented increased case numbers from 2019 to 2020; these were legionellosis (227 cases in 2019, 241 cases in 2020), invasive *H. influenzae* type b infection (1 case in 2019, 3 cases in 2020), and hantavirus syndrome (1 case in 2019, 10 cases in 2020).

Except for TB and MDRTB, other 12 ADT-NIDs had the reported numbers of locally transmitted and imported cases. In 2019, the locally transmitted cases were about 3178, which decreased to 1354 cases in 2020, showing a reduction of 57.4%. A total of 108 imported cases were found in 2019, which further decreased to 16 in 2020, with a reduction of 85.2%. Moreover, the number of cases for five NIDs, including measles, rubella, invasive pneumococcal disease, Q fever, and varicella, had declined to zero in 2020, whereas the number of cases for four NIDs, including pertussis, meningococcal meningitis, invasive *H. influenzae* type b infection, and hantavirus syndrome, remained zero in both 2019 and 2020.

This was the first study to comprehensively investigate the impact of COVID-19 on the occurrence of ADT-NIDs. First, we found that most of the ADT-NIDs had a lower case number in 2020 than that in 2019. Although the number of cases of three NIDs—legionellosis, invasive *H. influenzae* type b infection, and hantavirus syndrome—was higher in 2020 than that in 2019, the number of increase was limited. The decreasing trend of these ADT-NIDs remained unchanged for only locally transmitted cases. Presumably, this could be due to the implementation of various COVID-19 preventative measures in Taiwan.^{7–10} The most important intervention could be wearing a mask, which limited the spread of SARS-CoV-2 and other pathogens associated with ADT-NIDs. Furthermore, other measures, such as universal hygiene, social distancing, and avoiding crowded areas, may help prevent the transmission of these ADT-NIDs.

Second, we found that the number of imported cases of 12 ADT-NIDs had decreased from 2019 to 2020 or even remained zero in 2020. The major cause could be the implementation of border control in Taiwan since the early outbreak of COVID-19. Initially, Taiwan implemented on-board quarantine inspection in direct flights from Wuhan, China, and promoted related prevention measures among other travelers. Moreover, the interventions, such as 14-day quarantine, were applied to travelers from China, Hong Kong, and Macao after February 7, 2020, and expanded for passengers arriving from all countries after March 19, 2020. Furthermore, the transit of airline passengers through Taiwan was suspended from March 24 onward. All these measures may have resulted in decreased number of imported cases.

In conclusion, measures for the prevention and containment of the COVID-19 outbreak in Taiwan can bring collateral benefit of controlling other ADT-NIDs.

Table 1

Summary of the case numbers of airborne/droplet-transmitted notifiable infectious diseases between January and October in 2019 and 2020.

Disease	Overall			Locally transmitted cases			Imported cases		
	2019	2020	Changes (%)	2019	2020	Changes (%)	2019	2020	Changes (%)
Measles	133	0	−100.0	80	0	−100.0	53	0	−100.0
Rubella	21	0	−100.0	4	0	−100.0	17	0	−100.0
Pertussis	25	4	−84.0	25	4	−84.0	0	0	–
Influenza with severe complication	1933	443	−77.1	1925	439	−77.2	8	4	−50.0
Invasive pneumococcal disease	352	193	−45.2	350	193	−44.9	2	0	−100.0
Q fever	23	13	−43.5	18	13	−27.8	5	0	−100.0
Mumps	511	412	−19.4	503	407	−19.1	8	5	−37.5
Meningococcal meningitis	6	5	−16.7	6	5	−16.7	0	0	–
Tuberculosis	7278	6204	−14.8	NA	NA	NA	NA	NA	NA
Varicella	53	46	−13.2	52	46	−11.5	1	0	−100.0
Multidrug-resistant tuberculosis	67	62	−7.5	NA	NA	NA	NA	NA	NA
Legionellosis	227	241	6.2	213	234	9.9	14	7	−50.0
Invasive <i>Haemophilus influenzae</i> type b infection	1	3	200.0	1	3	200.0	0	0	–
Hantavirus syndrome	1	10	900.0	1	10	900.0	0	0	–

NA, the data are not available.

Declaration of Competing Interest

The authors declare no conflict of interest.

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