CORRESPONDENCE

Research Letter

The Ambulatory Management of COVID-19 Via the German Department of Health

Most cases of SARS-CoV-2 infection present mild to moderate symptoms that do not require inpatient treatment (1). In Germany, resident doctors and the health authorities are responsible for the monitoring and management of outpatient cases; the extent of the personnel expenditure is not yet known. We report on the systematic monitoring of patients with COVID-19 by the Department of Health of Mainz–Bingen. The aim of this work was to determine the proportion of outpatients as well as the personnel expenditure in time and labor required for case and contact tracking.

Methods

Between 2 March 2020 and 5 April 2020, 507 people in the city of Mainz and in the Mainz–Bingen district tested positive for SARS-CoV-2, and their names were reported to the health department. The health department employees contacted the persons concerned by telephone for case recording as well as for contact and index case tracking (Figure). All contact persons named by the index patient were called. During the entire period of the home quarantine, all patients who initially tested positive were consulted by a doctor from the health department every day or, if the case was

uncomplicated, every two days. Hospitalization was arranged in cases of a severe course of the disease. All information was collected in an ongoing Excel spreadsheet. Hospitalizations were registered until 12 April 2020. The working hours of all 38 employees of the health department were recorded over three working days. The number of contact persons was subsequently determined for 131 index patients. Data on socio-demography and hospitalizations were evaluated with Microsoft Excel for Mac (version 16.16.11). IBM SPSS Statistics (version 25) was used to perform a *t*-test for independent samples using the variables hospitalization and age. Relative risk was determined using the variables hospitalization and sex.

Results

A total of 507 cases of COVID-19 were included in the analysis (51.9% women; median age 46 years, interquartile range [IQR]: 30–58, range [R]: 1–97). The majority (450 patients; 88.8%) received only outpatient care. Inpatients (*n* = 57) had a median age of 69 years (IQR: 56–81, R: 24–96), and 62.5% were men. The group of hospitalized patients was significantly older than that of non-hospitalized patients (mean difference

Measures of health departments and their expenditure of time during the outbreak with SARS-CoV-2; RKI, Robert Koch Institute

24.5 years, 95% confidence interval [CI]: [19.7; 29.2]; $p < 0.001$), and men required hospitalization more frequently than women (relative risk 1.9; 95% CI: [1.1; 3.1]; $p = 0.017$). The median time between symptom onset and hospitalization was 5.5 days (IQR: 1–9). During the observation period (median 17 days, IQR: 11–23) 1.4% of the patients died ($n = 7$; median age 81 years, range: 66–91). The initial symptoms were documented for 480 people. They included cough (48.5%), fever (38.1%), sore throat (21.5%), smell / taste dysfunction (21.5%), and headache (20.8%).

An asymptomatic course was reported for 51 patients (10.6%). Recording new cases and identifying their close contacts took an average of 47.6 ± 6.6 minutes. Contact tracking time was 20.2 ± 4.7 minutes per contact. On average, seven people (IQR: 3–10, range: 1–68) had to be contacted for each index case. Case tracking required a daily workload of 6.2 ± 1.2 minutes per active index case.

Discussion

The aim of this study was to determine the proportion of outpatients, as well as personnel requirements of the health department, during the SARS-CoV-2 virus outbreak. The observation period covered the previous peak of new cases in the region. Outpatient care was sufficient for most patients, and this could be implemented through the existing personnel resources of the Department of Health of Mainz–Bingen.

The high proportion of cases treated as outpatients was favored by the fact that our cohort, with a median age of 46 years, was somewhat younger as compared to all cases in Germany (50 years) (2). Being older and being a man were also identified in other studies as risk factors for a severe course (1). Because delayed hospitalization for COVID-19 is associated with an unfavorable prognosis (3), close attention should be paid to carrying out careful treatment stratification.

Our results show that the number of contact persons to be traced significantly influences the workload for the health department. A decision by the German federal government recommends that a contact tracking team of five people should be established per 20 000 inhabitants (4). The results of our study can help to make personnel planning more dynamic for health authorities. The short-term personnel requirements could be calculated by taking into account local outbreak activity and the current hygiene guidelines.

As limitations, it should be noted that our data on the work efforts were sampled, and that time requirements in other health offices may vary due to personnel or infrastructural aspects.

With limited human resources, it is important to optimize the digital infrastructure. App-based communication offers a time-effective alternative to telephone calls for patients with a mild course of the disease and for contact tracking in nursing homes. This procedure has been tested in the Department of Health of Mainz–Bingen since 20 April 2020. The public health service is critically involved in containing the pandemic and must be capable of acting even in the event of a rebound of COVID-19.

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Conflict of interest statement

The authors declare that no conflict of interest exists.

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