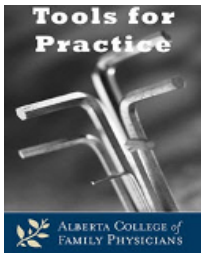
Tools for Practice is proudly sponsored by the Alberta College of Family Physicians (ACFP). ACFP is a provincial, professional voluntary organization, representing more than 4,800 family physicians, family medicine residents, and medical students in Alberta. Established over sixty years ago, the ACFP strives for excellence in family practice through advocacy, continuing medical education and primary care research. www.acfp.ca

April 3, 2020

COVID-19 Rapid Reviews

Along with regular Tools for Practice, the PEER team will be writing rapid reviews to address COVID-19 topics relevant for primary care. The evidence is changing rapidly and it is possible that as you read this, new evidence will already be available. We will try our best to stay in front and keep you up-to-date during these challenging times.



A rushed introduction to an uninvited guest

Clinical Question: COVID-19: What are the presenting symptoms, clinical course, and risk factors for mortality?

Bottom Line: Cough and fever are the most common symptoms. Differences in testing and reporting of cases limit prognostic estimations. At minimum, 80% of cases are clinically mild. Of those hospitalized in North America, ~25% will require ICU admission. Risk factors for mortality include age >65 years, co-morbidities, long-term care residents, and those with COVID-19 associated cardiac injury.

Evidence:

- Case reports from countries that have experienced COVID-19 including China and Italy. North American evidence emerging.
    - Epidemiology:
        - Confirmed and presumptive cases worldwide will soon cross 1 million and 50,000 deaths.[1,2]
        - Case numbers/fatality rates vary substantially depending on testing protocols, access to testing or care, length of time since illness (patient) or outbreak (population) started, transparency of reporting and potential misclassification of cause of death.[3]
    - Presenting Signs/Symptoms:
        - From 1099 hospitalized or outpatient cases in China:[4]
            - Cough (68%), fever (44% on admission, 89% during hospitalization) most common symptoms.
            - Lymphopenia: common lab abnormality (83%).

        - Chest X-ray abnormalities in 59%: local/bilateral shadows or ground-glass opacity most common.
        - Atypical symptoms (including gastrointestinal) have been reported and many symptoms (sore throat) are seen in other viral illnesses.[4]
    - Clinical Course:
        - China: 80% of detected cases are mild (described as "non-pneumonia" or "mild pneumonia"), ~15% severe (dyspnea, respiratory rate >30/min, O_2 saturation <93%), 5% critical (respiratory/multi-organ failure).[5]
        - North America:[6,7]
            - Between 8-12% of detected cases are hospitalized.
            - ~25% of admitted patients require ICU.
        - If requiring admission, mean time from:
            - Symptom onset to hospitalization: 4-7 days.[8,9]
            - Illness onset to ICU admission (if occurred):
                - 5 to 12 days.[8-10]
            - Mean hospital stay (survival or death)~2 weeks.[4,9-11]
    - Mortality Risk Factors:
        - Age:
            - China:[12] patients ≥65 years: ~6 times higher death rate than those <65.
            - Italy: 96% of deaths in patients ≥60 years.[3]
                - Mean age ~80 years.
        - Co-morbidities:
            - Mean number of co-morbid conditions:[3] 2.7.
                - Examples: cardiovascular disease, diabetes, chronic respiratory disease, hypertension.[5]
                - <1% of deaths in patients without co-morbidities.[4]
        - Cardiac injury (with significantly elevated troponin levels on admission):[13] mortality rate ~51%.
        - Long-term care residents:[14]
            - One American facility with 101/130 residents infected.
                - Mortality rate 34%.

Authors:

Michael R Kolber MD CCFP MSc & Christina Korownyk MD CCFP

Disclosures:

Authors do not have any conflicts of interest to declare.

References:

1. Johns Hopkins Coronavirus Resource Center. Available at https://coronavirus.jhu.edu/map.html. Accessed Mar. 31, 2020.
2. World Health Organization. Coronavirus disease 2019 (COVID-19) Situation Report - 71. Mar 31, 2020. Available at: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200331-sitrep-71-covid-19.pdf?sfvrsn=4360e92b_8. Accessed Mar 31, 2020.
3. Onder G, Rezza G, Brusaferro S. Case-Fatality Rate and Characteristics of Patients Dying in Relation to COVID-19 in Italy. JAMA. 2020 Mar 23. doi: 10.1001/jama.2020.4683.

4. Guan W, Ni Z, Hu Y *et al*. Clinical Characteristics of Coronavirus Disease 2019 in China. NEJM. 2020 Feb 28; DOI: 10.1056/NEJMoa2002032
5. Wu Z, McGoogan JM. Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention. JAMA. 2020 Feb 24. doi: 10.1001/jama.2020.2648. [Epub ahead of print]
6. Government of Canada. Epidemiological summary of COVID-19 cases in Canada. https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/health-professionals/epidemiological-summary-covid-19-cases.html. Accessed Mar 31, 2020.
7. Centers for Disease Control and Prevention. Morbidity and Mortality Weekly. Severe Outcomes Among Patients with Coronavirus Disease 2019 (COVID-19) - United States, February 12-March 16, 2020. Weekly March 26, 2020; 69(12);343-346. https://www.cdc.gov/mmwr/volumes/69/wr/mm6912e2.htm?s_cid=mm6912e2_w. Accessed Mar 31, 2020.
8. Arentz M, Yim E, Klaff L, *et al*. Characteristics and Outcomes of 21 Critically Ill Patients With COVID-19 in Washington State. JAMA. 2020 Mar 19. doi: 10.1001/jama.2020.4326. [Epub ahead of print]
9. Bhatraju PK, Ghassemieh BJ, Nichols M *et al*. Covid-19 in Critically Ill Patients in the Seattle Region - Case Series. NEJM. March 30, 2020. DOI: 10.1056/NEJMoa2004500
10. Zhou F, Yu T, Du R *et al*. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. Lancet. 2020;395(10229):1054-1062. doi: 10.1016/S0140-6736(20)30566-3. Epub 2020 Mar 11.
11. Remuzzi A, Remuzzi G. COVID-19 and Italy: what next? Lancet. 2020 Mar 13. pii: S0140-6736(20)30627-9. doi: 10.1016/S0140-6736(20)30627-9. [Epub ahead of print]
12. Wu C, Chen X, Cai Y *et al*. Risk Factors Associated With Acute Respiratory Distress Syndrome and Death in Patients With Coronavirus Disease 2019 Pneumonia in Wuhan, China. JAMA Intern Med. 2020 Mar 13. doi: 10.1001/jamainternmed.2020.0994.
13. Shi S, Qin M, Shen B, *et al*. Association of Cardiac Injury With Mortality in Hospitalized Patients With COVID-19 in Wuhan, China. JAMA Cardiol. 2020 Mar 25. doi: 10.1001/jamacardio.2020.0950.
14. McMichael TM, Currie DW, Clark S, *et al*. Epidemiology of Covid-19 in a Long-Term Care Facility in King County, Washington. N Engl J Med. 2020 Mar 27. doi: 10.1056/NEJMoa2005412. [Epub ahead of print]

Tools for Practice is a biweekly article summarizing medical evidence with a focus on topical issues and practice modifying information. It is coordinated by G. Michael Allan, MD, CCFP and the content is written by practising family physicians who are joined occasionally by a health professional from another medical specialty or health discipline. Each article is peer-reviewed, ensuring it maintains a high standard of quality, accuracy, and academic integrity. If you are not a member of the ACFP and would like to receive the TFP emails, please sign up for the distribution list at http://bit.ly/signupfortfps. Archived articles are available on the ACFP website.