CLINICAL CONDITIONS ASSOCIATED WITH PASC IN KAISER PERMANENTE MID-ATLANTIC STATES

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BACKGROUND

- The natural history of the longer-term effects of SARS-CoV-2 (COVID-19), known as Post-Acute Sequelae of SARS-CoV-2 (PASC), is limited and not well defined.
- Disease characterization and definition changed over time and identification via standard diagnosis codes was only recently enacted.
- We aim to identify a cohort of individuals with PASC among Kaiser Permanente Mid-Atlantic States (KPMAS) members, and to identify the clinical conditions of greater burden for those with PASC.

METHODS

- We identified adult patients (≥18 years) who had a detectable SARS-CoV-2 RT-PCR result between 1/1/2020–12/31/2020.
- Diagnoses for these patients were pulled from our electronic health record system during Ambulatory, ED, or Virtual Visit encounters, that occurred in-person or virtually, with a physician
- Resulting diagnoses were grouped using AHRQ HCUP[1] Clinical Classification Software (CCS) to isolate conditions for PASC.
- Non-COVID CCS conditions were categorized into specific time intervals based on the first positive SARS-CoV-2 test as the index date (T_0), defined as:

  (1) “Prevalent": diagnoses in 4 years prior to T_0 and excluded from later consideration;

  (2) “Persistent/acute": new disease diagnoses 0-30 days post-T_0 and persisted 30-120 days further, and not included as prevalent;

  (3) “Incident/late": new disease diagnoses 30-120 days post-T_0, not previously identified as prevalent or persistent/acute.

- Final CCS distributions were computed relative to the condition counts for each time interval, validated by infectious disease physicians to identify conditions of focus (COF).

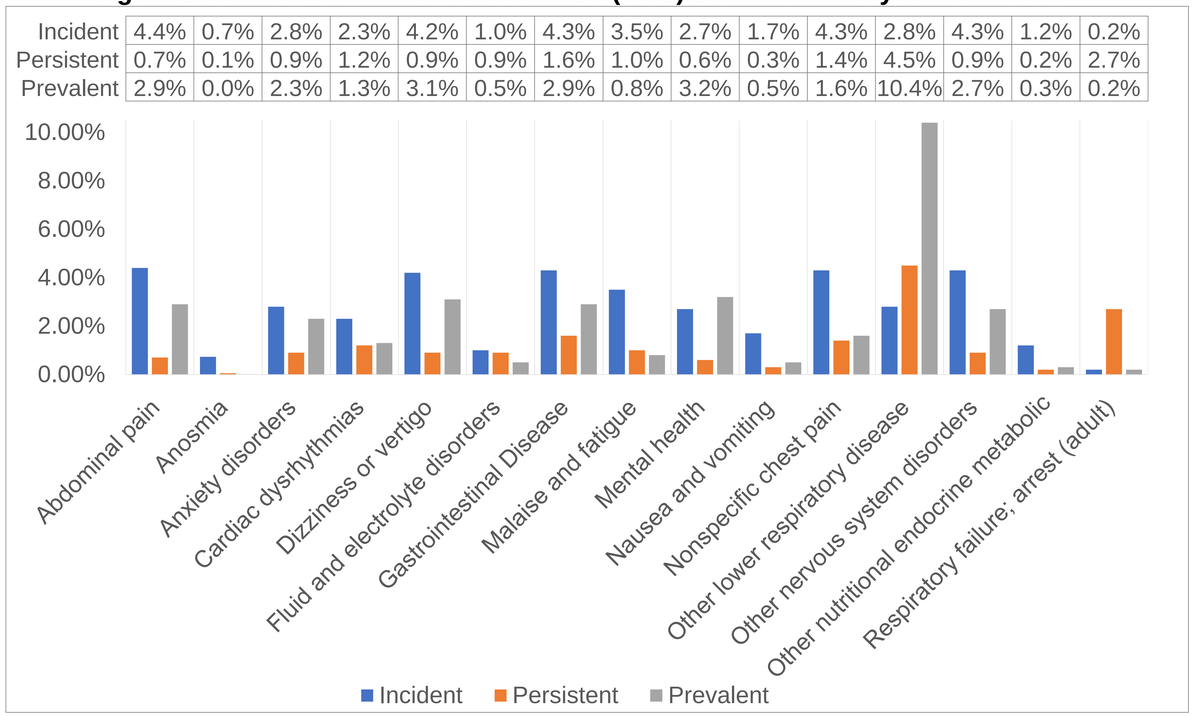
[1]Quality. AfHRa. HCUP Clinical Classification Software (CCS) for ICD-10 CM. . In:2019. https://www.hcup-us.ahrq.gov/toolssoftware/ccsr/ccs_refined.jsp

RESULTS

Table 1. KPMAS COVID(+) PCR Patient Demographics

Category	Detected Patient Population
Total, n(%)	31,390 (100.0%)
Gender, n(%)	
Female	17,631 (56.2%)
Male	13,759 (43.8%)
Age, n(%)	
18-29	6,279 (20.0%)
30-49	12,401 (39.5%)
50-64	9,014 (28.7%)
65+	3,696 (11.8%)
Race, n(%)	
Asian	3,191 (10.2%)
Black	12,120 (38.6%)
Hispanic	9,044 (28.8%)
White	5,425 (17.3%)
BMI, n(%)	
25-29.9 (Overweight)	7,252 (23.1%)
30-39.9 (Obesity)	9,042 (28.8%)
40+ (Severe Obesity)	2,591 (8.3%)
Comorbidities, n(%)	
CKD	921 (2.9%)
COPD	282 (0.9%)
Diabetes	5,998 (19.1%)
HIV	260 (0.8%)
Pregnant	569 (1.8%)
Tumor	790 (2.5%)
Hospitalization, n(%)	
Hospitalized at Index	2,330 (7.4%)
Hospitalized 30-120 days	540 (1.8%)

Figure 1. Clinical Classification Software (CCS) Distributions by Time Interval



Time intervals were defined as follows: Incident: 30-120 days post COVID+ test date; Persistent 0-30 days post COVID+ test date and persisted 30-120 days; Prevalent: 4 years prior to COVID+ test date

Incident and persistent conditions of significance associated with Post-Acute Sequelae of SARS-CoV-2 (PASC), such as Non-Specific Chest Pain and Respiratory Failure, are evident in a COVID positive cohort

LIMITATIONS

- Prevalent conditions are based on a 4-year prior history so capture of symptom-based conditions in the incident and persistent time intervals may be artificially reduced
- Significant changes in healthcare utilization and practice have occurred during our COVID based study period. Possible outcome of these changes include overall data capture, modifications to patient follow up and potential changes in patient behavior.
- Some diagnoses, like “Brain Fog”, were not able to be captured from EHR diagnosis coding.

CONCLUSIONS

- We have identified conditions clinically associated with COVID-19, for both hospitalized and non-hospitalized patients, that persist from infection or present as incident beyond the acute COVID-19 period.
- This condition list can be utilized in clinical practice when following up with COVID-19 patients.

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