HARVARD MEDICAL SCHOOL
TEACHING HOSPITAL

Utilization of Telehealth in the Management of Cardiovascular Disease

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Objectives

- Summarize the opportunities associated with implementation of telehealth.
- Describe the communities who may benefit most from more extensive utilization of telehealth.
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Clinical Case

History:

58-year-old man with a history of persistent atrial fibrillation and non-sustained ventricular tachycardia in the context of ischemic cardiomyopathy (LVEF ~30%) and frequent hospitalizations for decompensated heart failure. Also with severe COPD, BMI 45, and prior pneumonia. ICD in place.

Presenting Problem:

Ten-pound weight gain over one week, associated with racing heart rate.

Additional issues:

Patient does not have a consistent place to stay.
Access to transportation is also not consistent.
Weight gain occurred during the third week of April 2020.

Clinical Case

- How do I treat a heart failure exacerbation in a patient who cannot reliably make it to an in-person visit?

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- Can I manage his issues solely through the use of data acquired by the patient and then sent to me electronically?

Clinical Case

Heart failure management through a standardized data form provided to the patient – he wound fill this out daily and periodically send me the completed form via EHR:

Date	BP	HR	Weight	Lasix dose	Metoprolol dose

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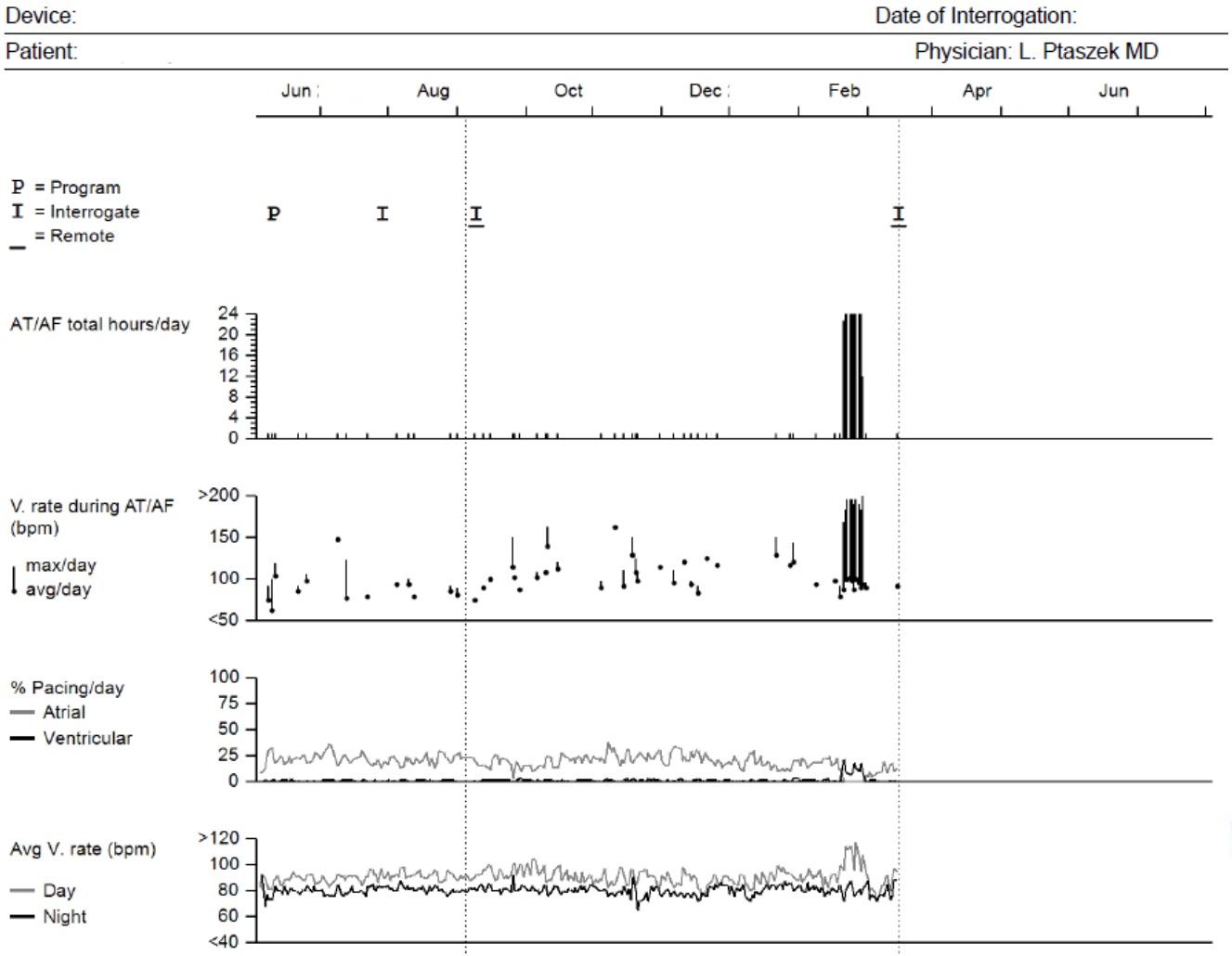
Clinical Case

Arrhythmia burden assessment through patient-initiated remote checks of his defibrillator that were sent via EHR:



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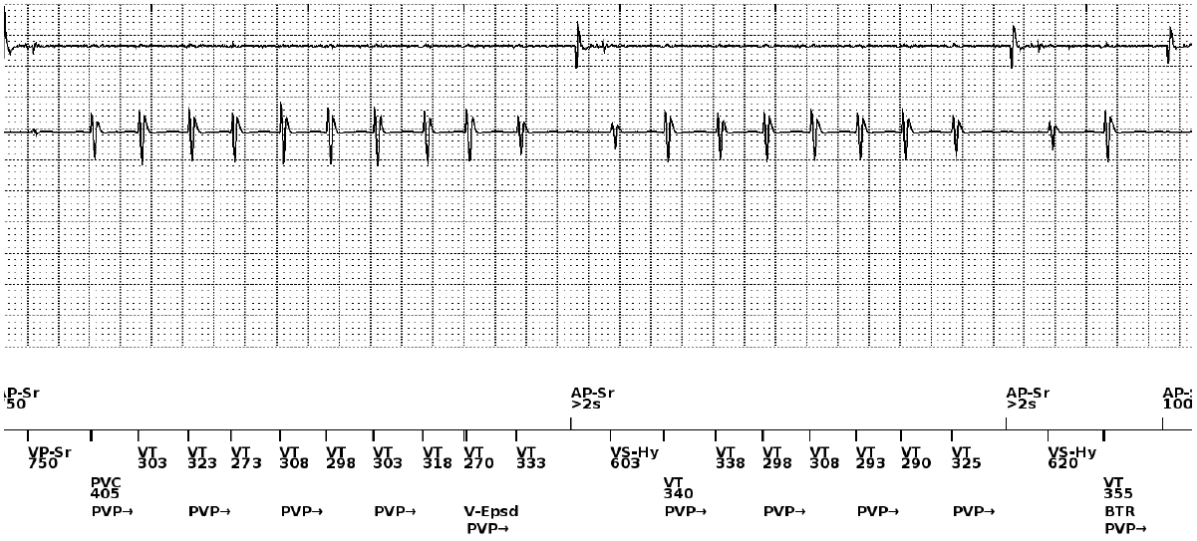

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Clinical Case

- Weekly virtual visits during which we would review his vital sign tables (sent from his mobile phone to the EHR patient portal) and ICD remote interrogations / alerts.

- Successfully maintained “dry” weight without hospitalization for heart failure from the beginning of the COVID pandemic until 2022.

COVID-Related Telehealth Utilization for Patients with Cardiovascular Disease

- Telehealth encounters increased during the peak of the COVID pandemic (Feb 2020 – Apr 2020):
  - Increased from 0.3 to 25 encounters per 100 patients.*
- Telehealth encounters reduced after the peak of the COVID pandemic (Jun 2020 – Jun 2021):
  - Decrease from 17 to 9 encounters per 100 patients.*

* JS Lee et al., J Am Heart Assoc 2023;12:e028713

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Cost Effectiveness of Telehealth Utilization

	Telehealth	**In-person**
Mean outpatient encounter cost	$113	$164

* JS Lee et al., J Am Heart Assoc 2023;12:e028713

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Lessons from COVID: Telehealth Assists Management of CV Disease

- Telehealth can facilitate more frequent interactions between clinicians and patients.
- Best utilized for tracking data/observations that do not require a physical exam.
- Opportunity for tighter control of chronic conditions:
  - Diabetes mellitus
  - Hypertension
  - Heart Failure
  - Cardiac Arrhythmias

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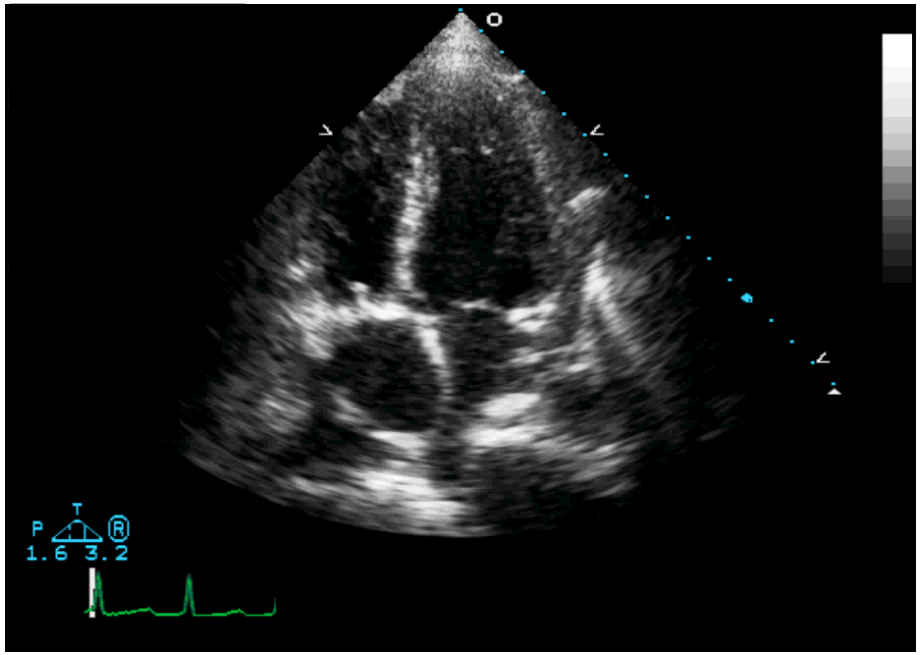
Utilization of Telehealth in Cardiology

- Many decisions in cardiology are based on data not acquired on exam:
  - BP / HR / Weight data (patient-measured)
  - Echocardiography, other imaging
  - Heart rhythm monitor
  - CIED-derived data



Telehealth: an Opportunity to Improve Cardiovascular Disease Outcomes?

- Mortality due to cardiovascular disease remains stubbornly high since 2010.

- Stagnation in reduction of cardiovascular mortality led to stagnation of life expectancy gains in urban areas and reversal of life expectancy gains in rural areas.*

- Utilization of telehealth to better manage cardiovascular disease (and risk factors) could address these trends.

* Abrams LR et al., Int J Epidemiol 2022;50:1970-1978

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Who Might Benefit Most from Telehealth?

- All patients may benefit from availability of telehealth.
- Patients in rural areas have worse cardiovascular disease outcomes.*
- Telehealth could address the geographical and logistical barriers to care experienced by patients who live in rural areas.

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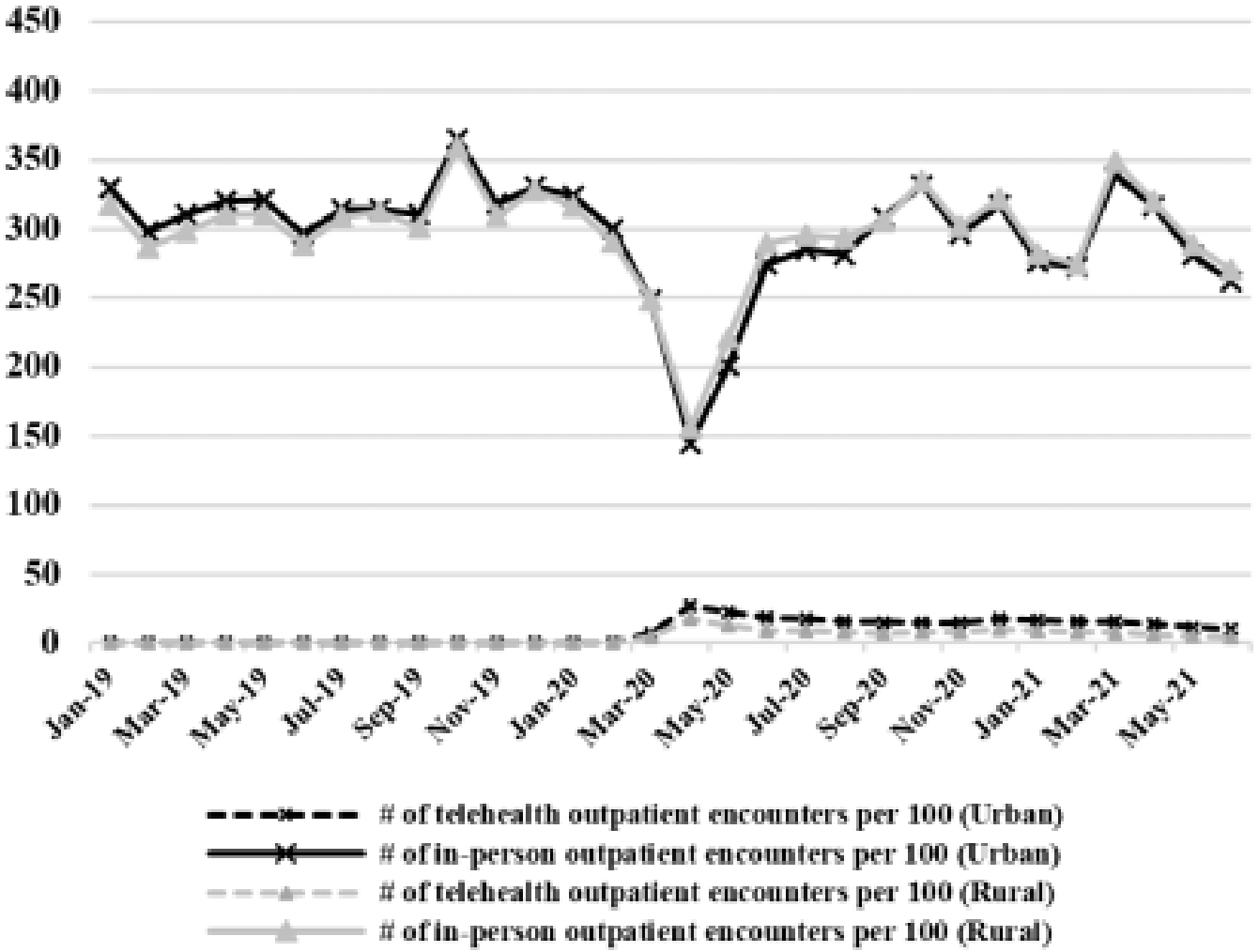
Barriers to Utilization of Telehealth

- Insurance and regulatory barriers related to telehealth.
  - Emergency relaxation of CMS barriers to telehealth services and expansion of covered services during COVID were subsequently reversed.*

- Acceptance of telehealth by patients and clinicians.
  - Many patients and clinicians alike report negative perceptions of telehealth vs in-person visits.

* https://www.cms.gov/About-CMS/Agency-Information/Emergency/EPRO/Current_Emergencies/Current-Emergencies-page

Telehealth Utilization is Lower in Rural Areas



JS Lee et al., J Am Heart Assoc 2023; 12: e028713

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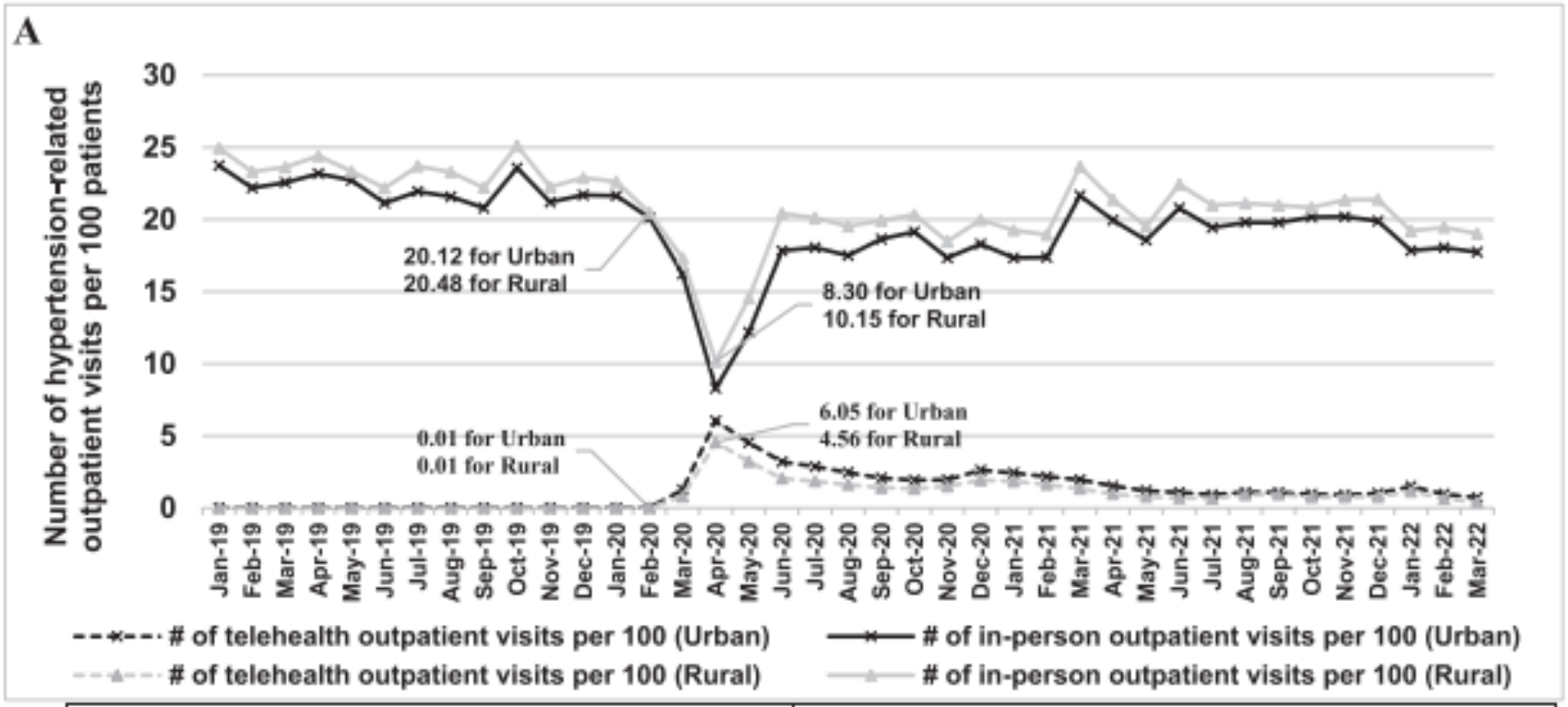
Telehealth Utilization for HTN Management

Rural residents are less likely to use telehealth for HTN management



Average values of the telehealth visits:	Average values of the in-person visits:
Pre-COVID-19: 0.00 (Urban), 0.01 (Rural)	Pre-COVID-19: 22.00 (Urban), 23.17 (Rural)
During COVID-19: 1.94 (Urban), 1.38 (Rural)	During COVID-19: 18.08 (Urban), 19.61 (Rural)
After stay-at-home order: 1.59 (Urban), 1.14 (Rural)	After stay-at-home order: 18.93 (Urban), 20.37 (Rural)

JS Lee et al., Am J Hypertens 2024;37: 107-111

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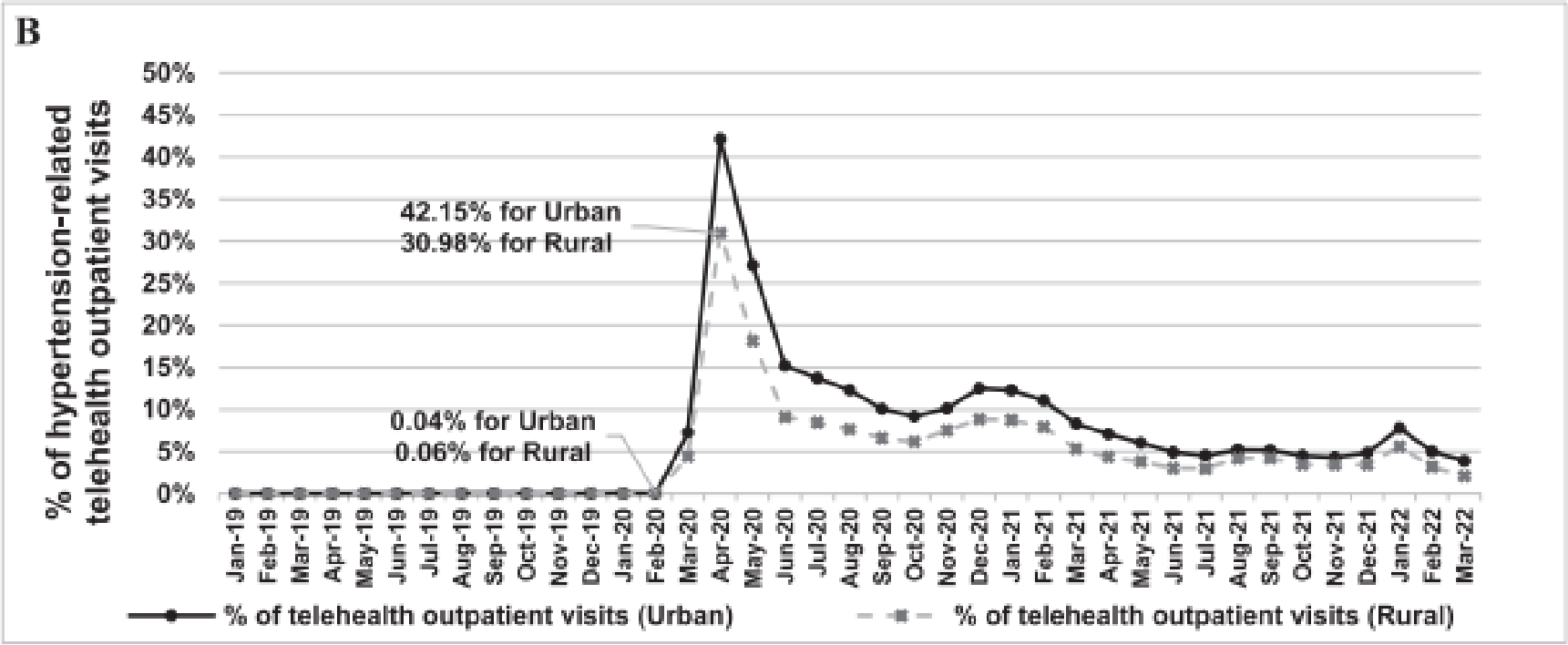

Average values of the proportions:
Pre-COVID-19: 0.02% (Urban), 0.03% (Rural)
During COVID-19: 10.19% (Urban), 6.96% (Rural)
After stay-at-home order: 7.76% (Urban), 5.30% (Rural)

JS Lee et al., Am J Hypertens 2024;37: 107-111

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Optimizing Telehealth Utilization: Next Steps

- Recognize appropriate settings for use of telehealth
  - Focus on decisions less dependent on data gathered on physical exam
- Recognize the specific barriers to telehealth utilization within individual environments.
  - Patient / clinician acceptance
  - Insurance / payor restrictions
- Address these barriers to enhance utilization of telehealth in areas where it can improve patient outcomes.
  - Solutions (e.g., treatment protocols) will vary among regions

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Summary

- Summarize the opportunities associated with implementation of telehealth.
  - Enhanced management of chronic conditions through more frequent contact.
  - Help engage patients in their care through data acquisition at home.
- Describe the communities who may benefit most from more extensive utilization of telehealth.
  - People who have geographical or logistical barriers to care (e.g., rural environment, working parents).
- Describe the challenges associated with implementation of telehealth.
  - Absence of physical exam data can be limiting.
  - Insurance and regulatory barriers may exclude some patients.


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