

Integrated Care Models for Long-COVID Clinics

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What is integrated care?

- System of care across the spectrum focused on delivery of care
- Team based approach
- Address the health needs of the whole person
- Multi-disciplinary
- Traditionally includes primary care and behavioral health
- Has been used in multiple other complex medical conditions including spinal cord injury, hemophilia, MS, and stroke



Case for Integrated Care Models for Long-COVID Clinics

Individuals who have survived COVID
have been noted to have significant deficits
in physical and cognitive functioning and
worsened quality of life.

Feeling of being shuffled from provider to provider

Patients lack a "home" in the medical system

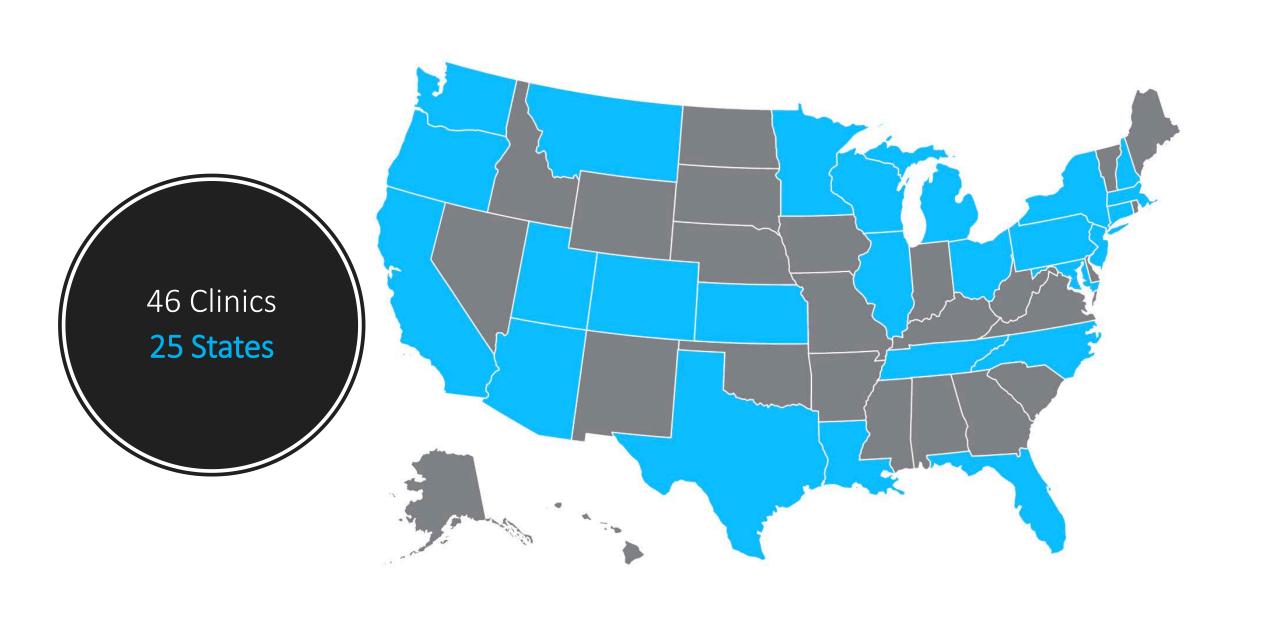
Lack of expertise in challenging new condition



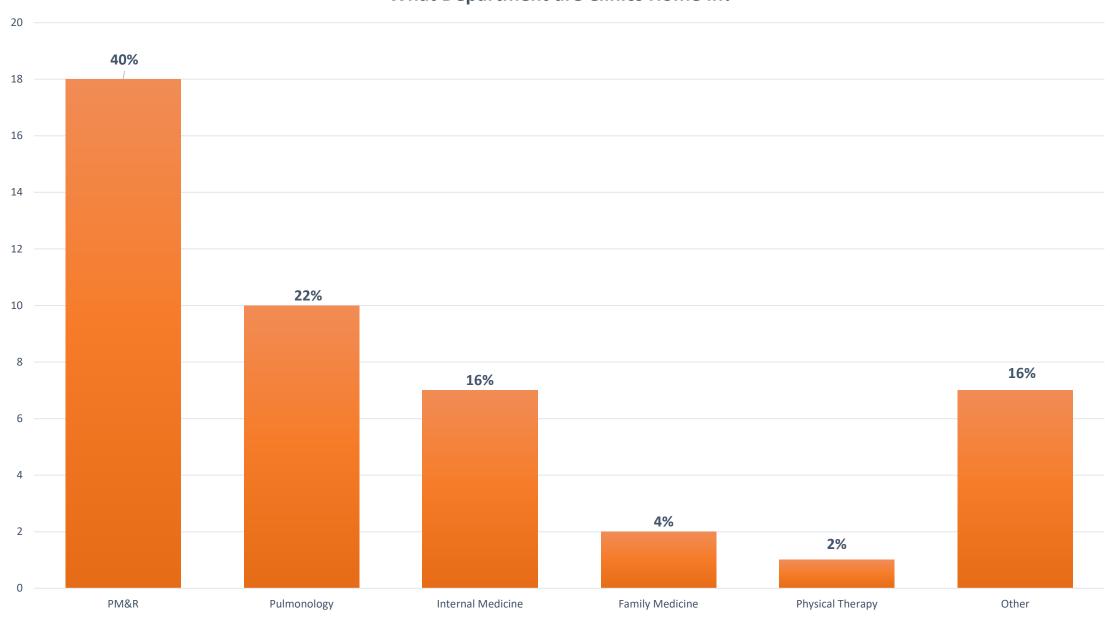
Case for Integrated Care Models for Long-COVID Clinics

- NICE: One stop multidisciplinary clinics are recommended, led by a doctor with relevant specialist skills and experience. NHS England has also emphasised the importance of multidisciplinary assessment and diagnostics being available in long covid clinics to avoid multiple referrals to different specialists
- CDC: Healthcare professionals may also consider referral to multidisciplinary post-COVID care centers, where available, for additional care considerations. Multidisciplinary post-COVID care centers based in a single physical location can provide a comprehensive and coordinated treatment approach to COVID-19 aftercare

PASC Clinic Survey

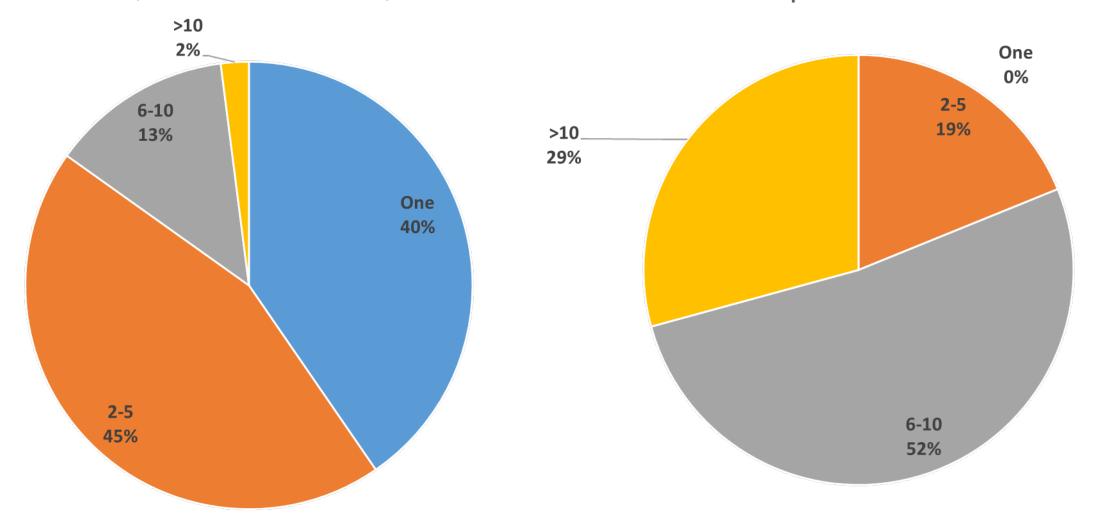


What Department are Clinics Home In?

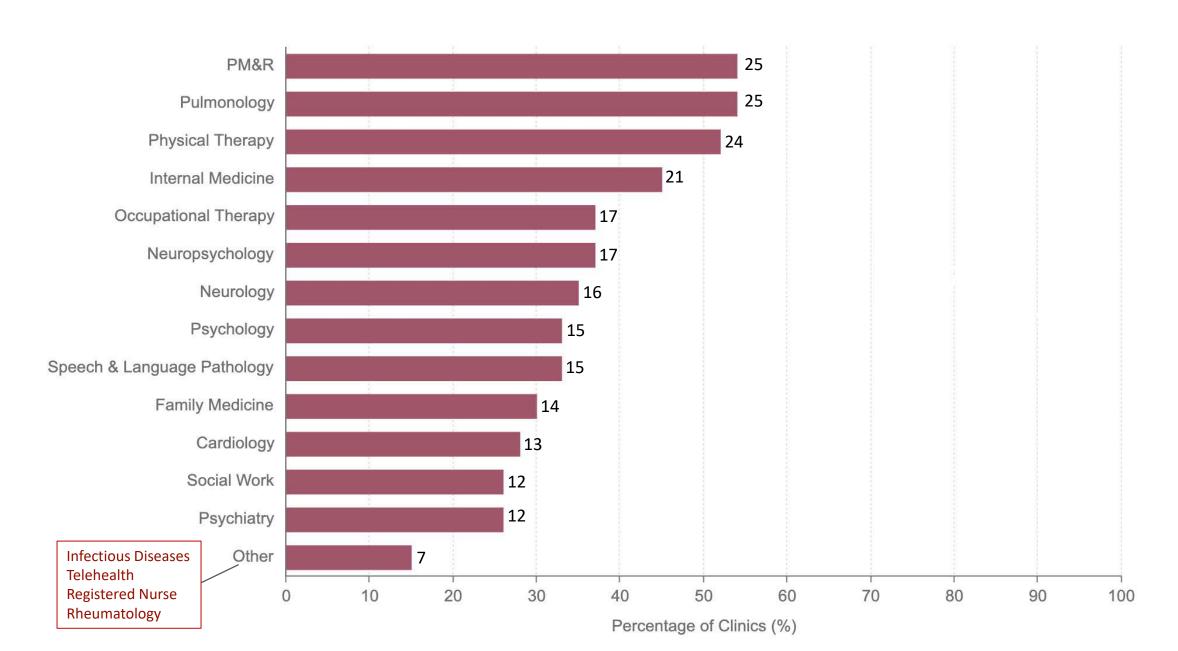


Number of Specialties Routinely Involved

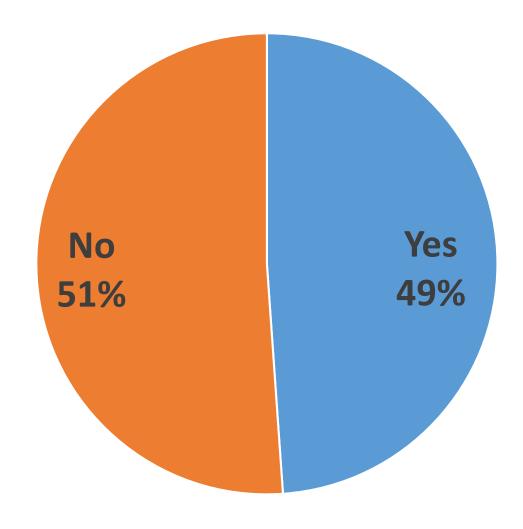
Number of Specialties Part of Team



What specialties are available during the initial patient visit?



Formal Interdisciplinary Team Meetings

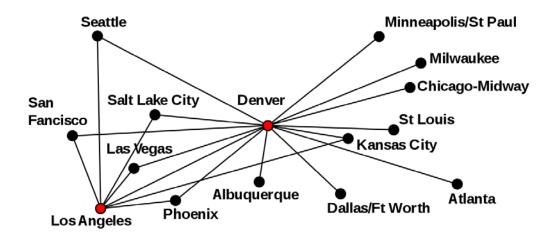


Other Interesting Findings

- 51% of clinics directly managed behavioral health needs of their patients
- 33% hosted support groups
- 64% completed disability paperwork
- 24% reported need for more staffing, physicians and social work support

Survey Lessons

- All clinics have processes to involve multiple specialties
- Routinely involve multiple specialties vs. hub and spoke model
- Half clinics have interdisciplinary team meetings
- Physical therapy, pulmonology, PM&R, neurology, and cardiology involved in treatment team in over 2/3 of clinics





Penn Medicine Post-COVID Assessment and Recovery Clinic

Post-COVID PM&R Team

- Centered in Physical Medicine and Rehabilitation
- •Background in taking care of patients with multi-system, complex medical issues
- Team developed over time



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POST COVID Team

Pulmonology



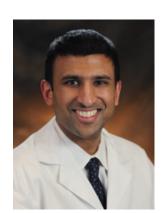
Rob Kotloff MD Cardiology

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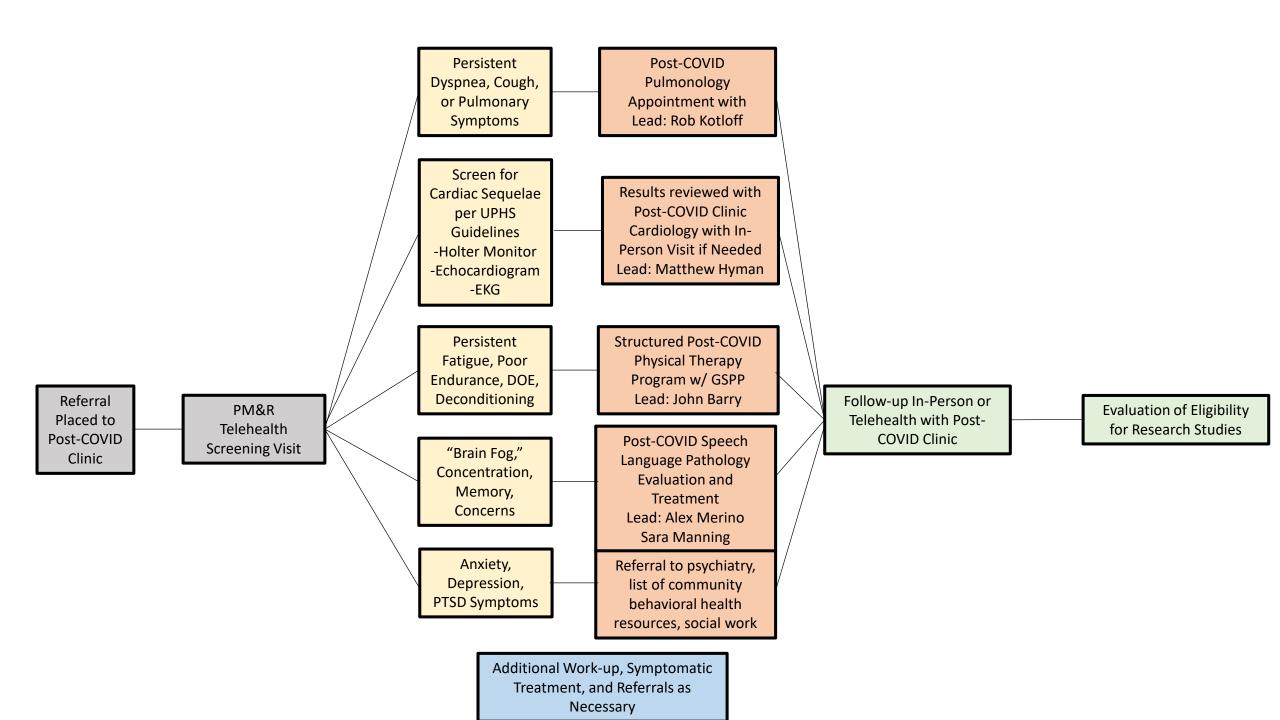
John Barry DPT

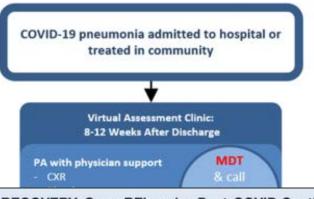


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Entry criteria: Patients with prolonged COVID-19 symptoms; typically persisting for over 3 months (or, less than3 months with complexity indicating multidisciplinary (MDT)approach required); symptoms with considerable impact on daily life and functioning; requiring input from 2 or more professionals; patients post discharge with complex

Entry Criteria: Post COVID-19 hospital discharges with low/moderate complexity needs met by usual discharge support, or needs primarily arising from other preexisting conditions. Post COVID-19 needs adequately met by single discipline input

Interventions: Home visits for assessments and reviews. Nurse plus allied health professional (AHP) clinic assessments and review; phone reviews; COVID-19 specific virtual pulmonary rehabilitation; facilitated virtual COVID-19 rehabilitation groups

> Interventions: Therapy Occupational Therapy for equipment provision only, Physiotherapy for deconditioning / basic mobility / needs. Dietetics for weight loss decreased appetite. Speech and Language Therapy for swallow and/or speech problems

Interventions: 'Your COVID-19 recovery' website (NHS England, 2020), 'Leeds COVID rehabilitation guide' (Leeds Teaching Hospital Trust, 2020) 'Royal College Occupational Therapy' fatigue management advice (Royal College Occupational Therapists, 2020)

RECOVERY: CompREhensive Post-COVID CentER at Yale

Referral Pathway

Inpatients (pre-discharge)

Respiratory Assessment

- Ambulatory oximetry
- Pulse oximeter & incentive spirometry training

Functional Assessment

- Physical & occupational therapy evaluation
- Swallow evaluation

Care Coordination

- Arrange home services
- Address care barriers

Outpatients (ongoing sx)

· Referral by outpatient provider, occupational medicine provider, health system COVID-19 hotline, or self

Initial Assessment

Visit 1 (telehealth)

- · Pulmonary consultation
- Subjective sx assessment
- Assess for extrapulmonary complications

Initial Diagnostics

- . Repeat imaging (HRCT)
- · PFTs, 6MWT
- · Repeat selected labs

Visit 2 (face-to-face)

- · Ongoing pulmonary care
- PT/OT assessment
- Subjective sx assessment
- Neurocognitive screening
- . Mental health screening
- Additional subspecialty involvement

Subsequent Care

MD visits

- · Planned 3, 6, and 12 mo or as needed per severity
- Extrapulmonary consultation as needed

Rehab

- PT/OT outpatient care
- Pulmonary rehabilitation

Lung function testing

- PFT & 6MWT at 3, 6, 12 mo
- · CPET for selected patients

Additional diagnostics

- VQ or CTA chest
- · Transthoracic Echo
- · Cardiac event monitoring
- Functional cardiac imaging
- Neurocognitive testing

Disposition

Sx resolve & PFT normal

Transition to primary care

Sx persist or PFT abnormal

- Non-specific phenotype → continue RECOVERY clinic
- Phenotype consistent with specific disease process → appropriate advanced lung disease program (e.g. interstitial lung disease, airways disease, pulmonary vascular disease)

Core Team:

1. Pulmonary-Critical Care

PACT Clinic

- 2. Physical Medicine & Rehabilitation
- 3. Homecare PT/OT/SLP
- 4. Pharmacy

Partnerships:

- Primary Care
- Psychiatry
- Psychology
- Neurology
- Cardiology
- Hematology
- · Infectious Disease
- Nephrology
- Dermatology
- Hepatology
- Otolaryngology

Multi-disciplinary discussion of active cases Translational research efforts Revision of clinic processes to meet patient needs and evolving evidence

O'Brien H, Tracey MJ, Ottewill C, O'Brien ME, Morgan RK, Costello RW, Gunaratnam C, Ryan D, McElvaney NG, McConkey SJ, McNally C, Curley GF, MacHale S, Gillan D, Pender N, Barry H, de Barra E, Kiernan FM, Sulaiman I, Hurley K. An integrated Intensive Care Unit (ICU); High Dependency Unit (HDU); Chest x-ray (CXR); multidisciplinary team (MDT); pulmonary function testing (PFT); Unit (HDU); Chest x-ray (CXR); multidisciplinary team (MDT); pulmonary function testing (PFT); Unit (HDU); Chest x-ray (CXR); multidisciplinary team (MDT); pulmonary function testing (PFT); Unit (HDU); Chest x-ray (CXR); multidisciplinary team (MDT); pulmonary function testing (PFT); Unit (HDU); Chest x-ray (CXR); multidisciplinary team (MDT); pulmonary function testing (PFT); Unit (HDU); Chest x-ray (CXR); multidisciplinary team (MDT); pulmonary function testing (PFT); Unit (HDU); Chest x-ray (CXR); multidisciplinary team (MDT); pulmonary function testing (PFT); Unit (HDU); Chest x-ray (CXR); multidisciplinary team (MDT); pulmonary function testing (PFT); Unit (HDU); Chest x-ray (CXR); multidisciplinary team (MDT); pulmonary function testing (PFT); Unit (HDU); Chest x-ray (CXR); multidisciplinary team (MDT); pulmonary function testing (PFT); Unit (HDU); Chest x-ray (CXR); multidisciplinary team (MDT); pulmonary function testing (PFT); Unit (HDU); Chest x-ray (CXR); multidisciplinary team (MDT); pulmonary function testing (PFT); Unit (HDU); Chest x-ray (CXR); multidisciplinary team (MDT); pulmonary function testing (PFT); Unit (HDU); Chest x-ray (CXR); multidisciplinary team (MDT); pulmonary function testing (PFT); Unit (HDU); Chest x-ray (CXR); multidisciplinary team (MDT); pulmonary function testing (PFT); Unit (HDU); Chest x-ray (CXR); multidisciplinary team (MDT); pulmonary function testing (PFT); Unit (HDU); Chest x-ray (CXR); multidisciplinary team (MDT); pulmonary function testing (PFT); unit (HDU); Chest x-ray (CXR); multidisciplinary team (MDT); pulmonary function testing (PFT); unit (HDU); (Epub 2020 Sep 7. PMID: 32894436; PMCID: PMC7475726.

Level

COVID

MDT

Level 2 Community

Therapy Teams

Level 3 Primary Care

(Hospital/General Practitioners (GP)

COVID-19

Core Team

Mental Health

walk test (6MWT); short from health assessment (SF-36); high resolution computer tomography (CT).

Conclusions

- Integrated care is a potential method to improve the care of individuals with long COVID
- Numerous integrated care models have been implemented
- Can be resource intensive and requires significant coordination between providers
- No research yet that suggests if one model is the more effective than ohters

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