Special Grand Rounds: May 7, 2020

COVID-19 in Nursing Homes: Pragmatic Research Responses to the Crisis

David C. Grabowski, PhD – Dept. of Health Care Policy, Harvard Medical School

Susan L. Mitchell, MD, MPH – Marcus Institute, Hebrew SeniorLife

Vince Mor, PhD – Brown University

Objectives

- Learn about impact of COVID-19 in U.S nursing homes
- Gain knowledge about rapid pragmatic research approaches in response to the crisis in health care systems
    - Hebrew SeniorLife
    - Genesis Health Care
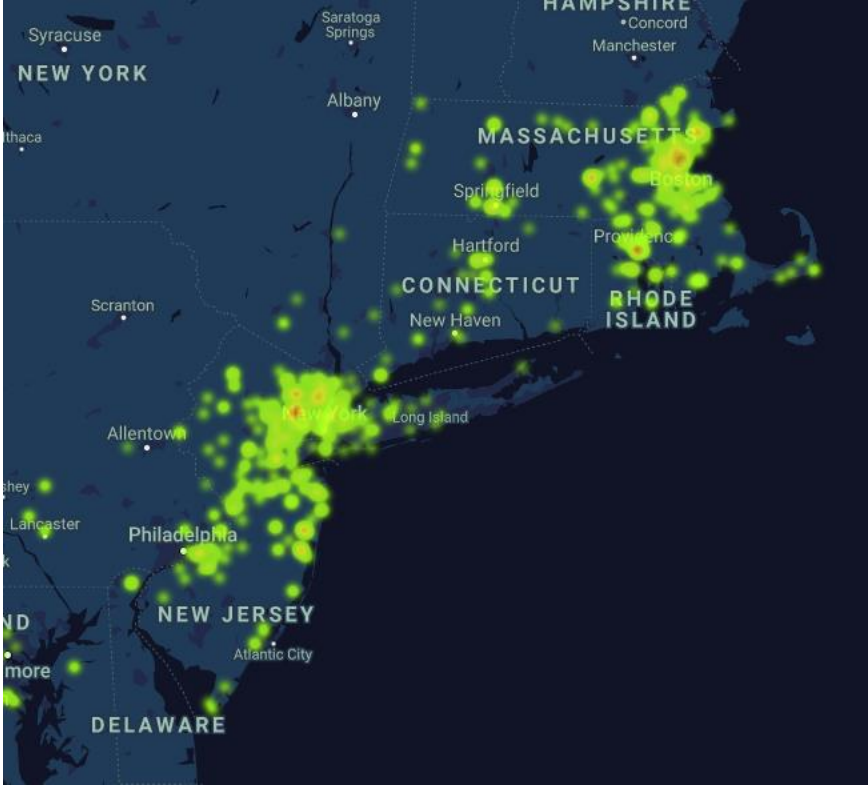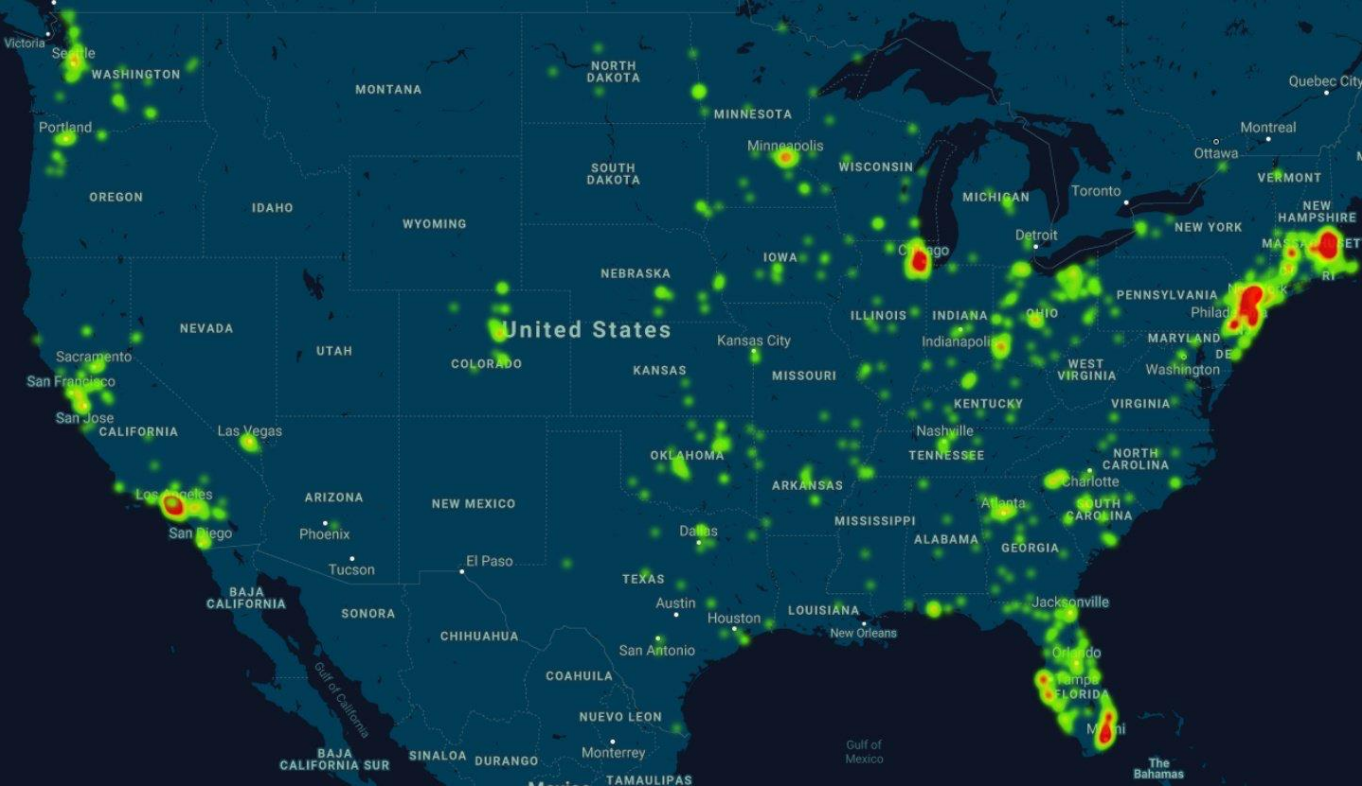   - Bluestone

MOMENT

COVID-19 and Nursing Homes

David C. Grabowski, PhD

COVID and Nursing Homes

- ~5,000 US nursing homes have reported COVID cases

- This is an undercount…
  - Only 35 states provided data
  - Many unreported cases even in 35 states with data

- National data are coming (when???)

Nursing Home COVID Heat Map
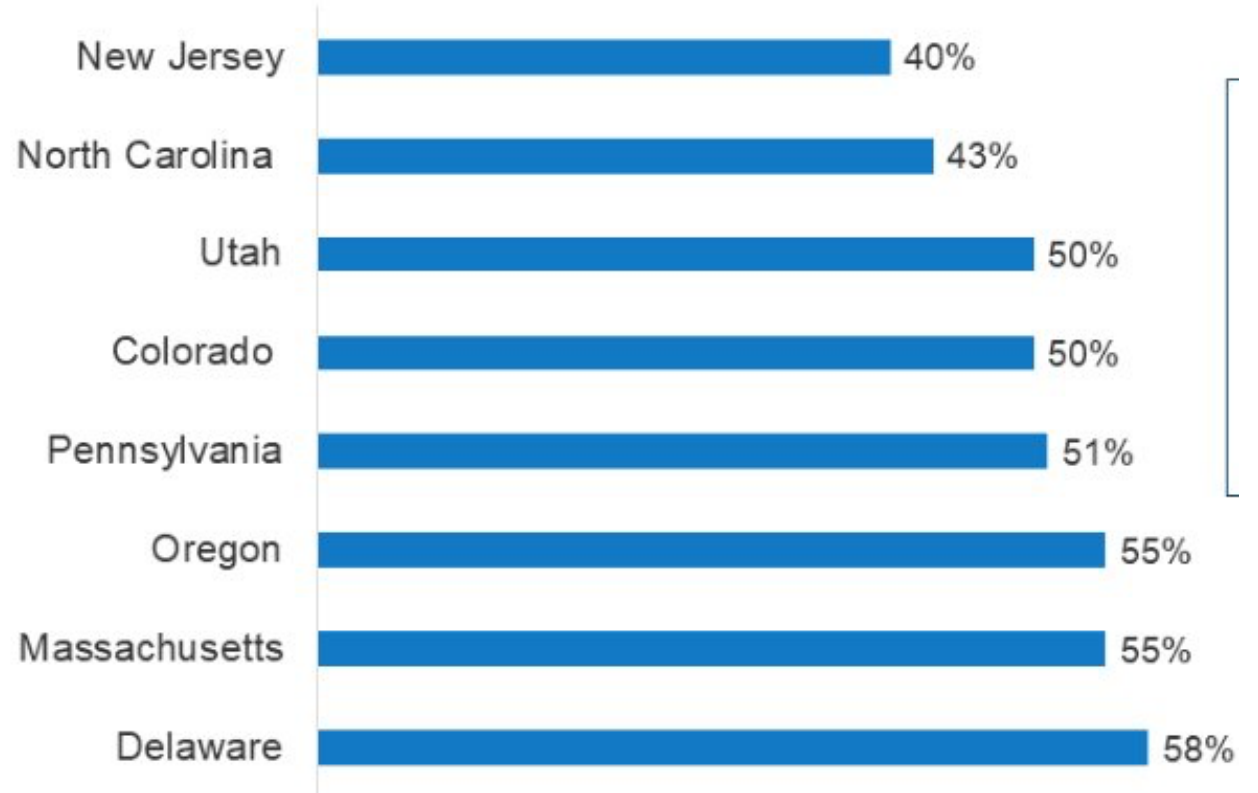
https://www.ascp.com/page/heatmap

Which Facilities Have COVID Cases?

- In our analyses of 20 states reporting NH identifiers, facilities with cases <u>were</u>:
  - Larger
  - Urban
  - Located in states with more cases
- Facilities with cases <u>were not</u>:
  - Higher rated on NH Compare five-star
  - More likely to have prior infection violation
  - For-profit
  - Chain
  - High Medicaid
- Where you are, not who you are…

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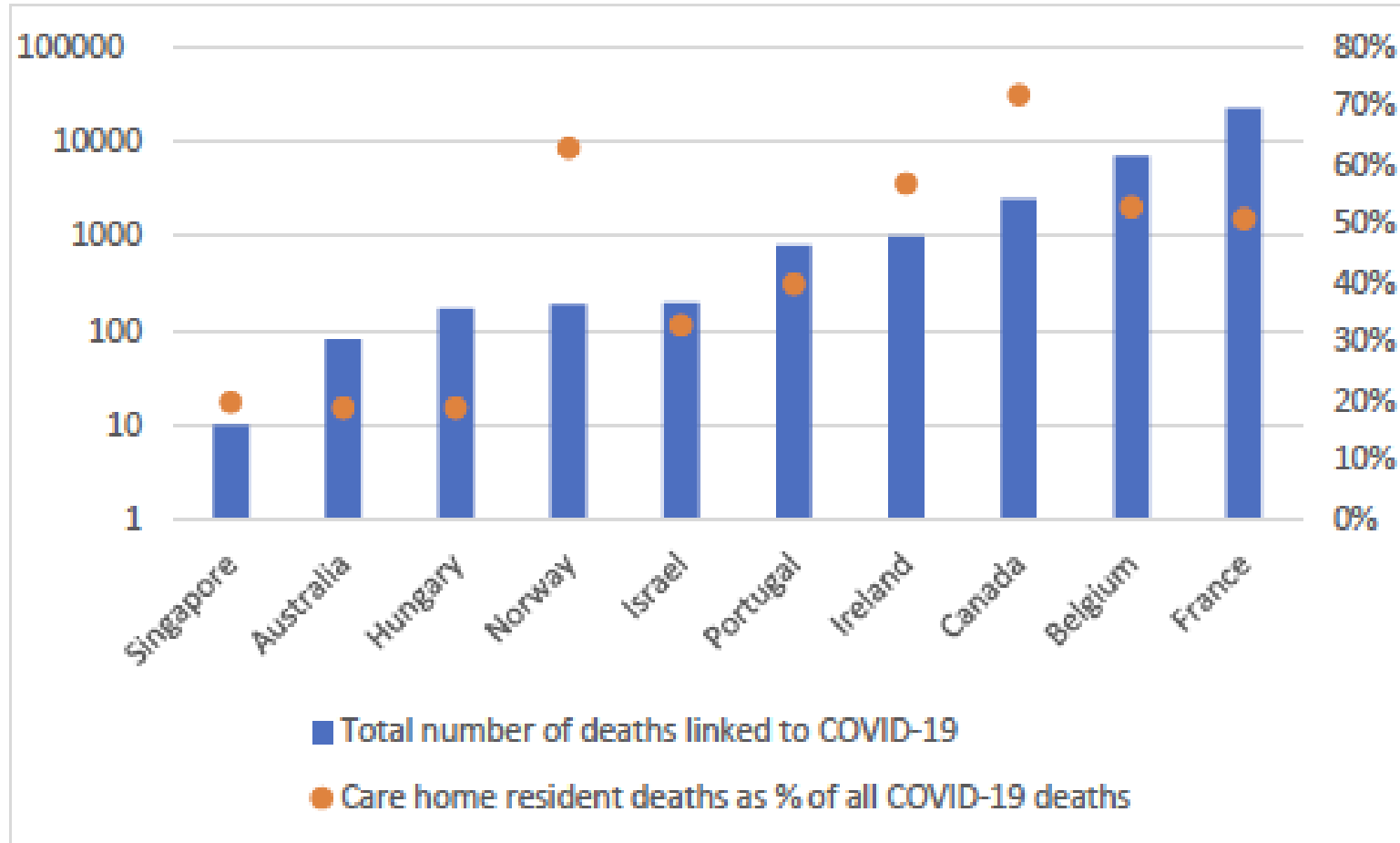
COVID Fatalities and Nursing Homes

- ~17,000* reported COVID fatalities
  - *NY State just identified 1,600 "new" COVID deaths on Monday
- NH residents account for almost one-fourth of all COVID deaths

Share of COVID Deaths in Nursing Homes

State	Share
New Jersey	40%
North Carolina	43%
Utah	50%
Colorado	50%
Pennsylvania	51%
Oregon	55%
Massachusetts	55%
Delaware	58%

Source: Kaiser Family Foundation

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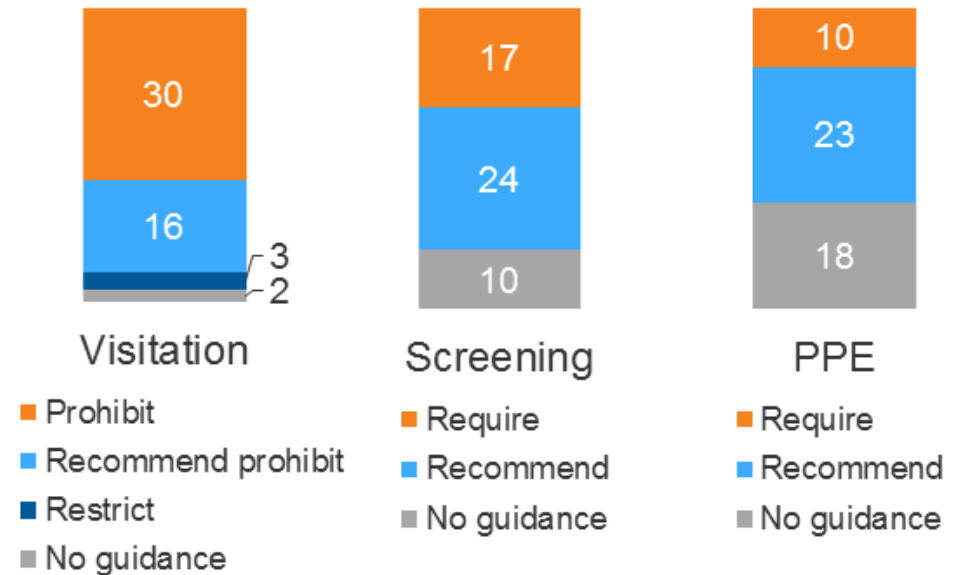# Other Countries Have Similar Share of NH COVID Deaths

Source: LTCCovid.org

Efforts to Stem COVID Taking Huge Toll

- Most nursing homes are in lockdown

- No visitors

- No communal dining/activities

Nursing Home Guidance in 50 states + DC

Visitation
- Prohibit: 30
- Recommend prohibit: 16
- Restrict: 3
- No guidance: 2

Screening
- Require: 17
- Recommend: 24
- No guidance: 10

PPE
- Require: 10
- Recommend: 23
- No guidance: 18

Source: Kaiser Family Foundation

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Virus Is Spreading in Spite of Lockdown

- Asymptomatic/Pre-symptomatic spread

- Case study in Massachusetts SNF
  - SNF went to lockdown in mid-March
  - All residents tested in early April
  - Initial COVID test: 51/97 (52.6%) residents COVID positive
  - Retesting five days later: 82/97 (85%) residents COVID positive
  - 86 of 147 staff members (58.5%) tested; 34 (39.5%) tested positive
  - In 2 weeks post-testing, 30 residents (30.9%) had died, with 24 (80%) having tested positive

Workforce Has Been Decimated

- No testing or PPE has led to caregivers:
  - Becoming infected
  - Staying home because they don't feel safe
- Wealthier hospital workers have been given lots of support: (PPE; testing; hazard pay; meals; childcare; public cheering; sick leave; etc.)
- CNAs are paid near minimum wages: they have been given very little support in terms of hazard pay, childcare, sick leave, other benefits
- Hospital workers are heroes, nursing home workers are _____
  - Hint (the answer is "also heroes")

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We have not supported NH residents or staff

This is a <u>system</u> problem, not a <u>bad apples</u> problem

What Can We Do at Policy Level?

- COVID Testing

- PPE & infection control

- Workforce support

- Cohorting

- COVID specialized PAC facilities (Grabowski & Joynt Maddox, 2020 JAMA)

- Invest in HCBS

- Transparency for families & other stakeholders

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Hebrew SeniorLife Advance Care Planning (ACP) Swat Team

Susan L. Mitchell, MD, MPH – Marcus Institute, Hebrew SeniorLife

Rationale

- Over 80% of deaths due to COVID-19 are among persons 65+

- Survival of frail older persons requiring hospitalization and especially ventilation is exceedingly small

- Advance care planning (ACP) and documentation of advance directives is highly variable even in long-term care setting

- Special circumstances of COVID-19 warrants reconsideration of preferences to ensure goal concordant care
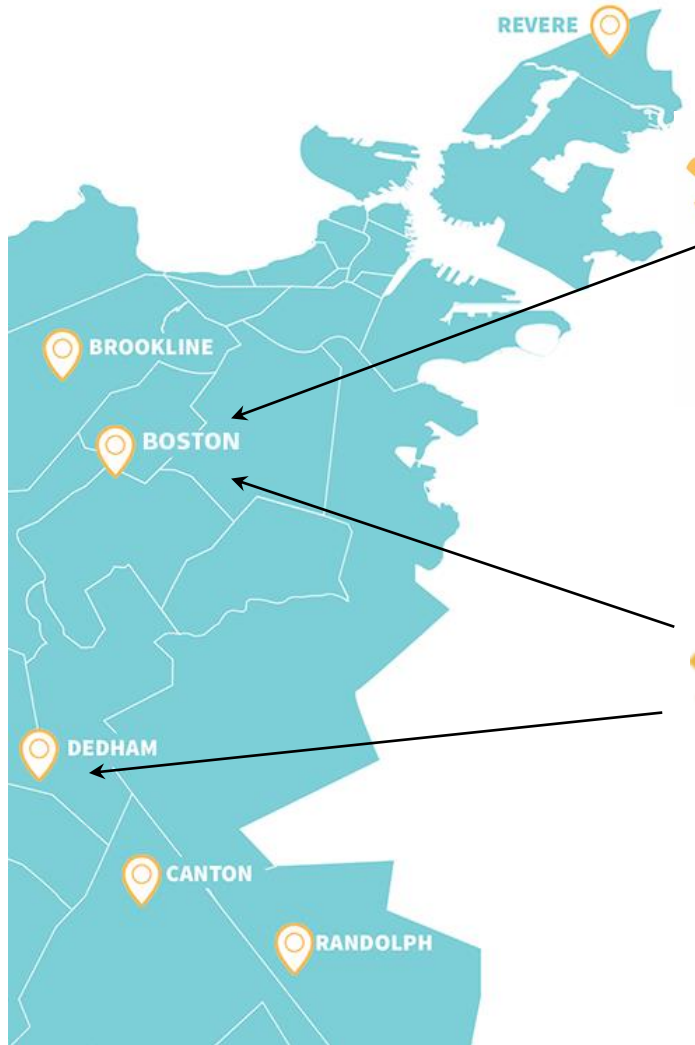
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Hebrew SeniorLife

405 long-term care beds at HRC-Boston
220 long-term care beds at HRC-Dedham

HSL Advance Care Planning (ACP) Swat Team

- April 11:   Need driven from key stakeholder

    Palliative Care Team email to V.P. Research

    > "We are mobilizing a large ACP response to COVID. Can Marcus help us operationalize and track our efforts?"

- April 12:   Team assembled and convened

    o Palliative care clinical leader

    o Palliative care researcher

    o Project director (s)

    o Director of Research Informatics

    o Information Technology liason

    o Program Analyst

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ACP Swat Team Goals

- Identify Residents most in need of ACP
  - No Do-Not-Hospitalize (DNH) order
    - COVID-19 status
    - Cognitive status
    - Activated Health Care Proxies

- Contact proxies

- Conduct a "compassionate" COVID-specific ACP discussion

- Document outcome of discussion

- Translate into an advance directive order

- Track efforts

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ACP Swat Team and Intervention

- Members
  - Palliative Care Clinical Team (N=5);
    - 5-10 hours/week
    - Focus on residents with decision-making capacity
  - Redeployed Clinicians (N=5, varied disciplines)
    - 30-40 hours/week
    - Focus on residents without decision-making capacity (activated proxies)

- ACP Swat Team Toolkit
  - Discussion Guide: Adapted CAPC/VitalTalk/Respecting Choices/Ariadne
  - Protocolized work flow

- Rapid Training
  - ACP Discussion
  - Work flow and REDCap

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ACP SWAT Team Work Flow

- ☑ **Review Daily List , Cohort by Unit, Triage Calls**
- ☑ **Contact Proxy**
- ☑ **Advance Care Planning Discussion**
- ☑ **Document Discussion in EMR**
- ☑ **REDCap Tracking**
- ☑ **Communication with Primary Care Teams**

~ 1 hour

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Identify Residents: Leveraging the EMR

Resuscitation Status	
Code Status	
DNAR/DNI/DNH	
Health Care Proxy:	Activation
Reason for Healthcare Proxy:	Cognitive impairement
MOLST/Care Form Signed in Chart Y/N:	N
Cardiopulmonary Resuscitation Y/N:	N
Ventilation - for a patient in respiratory distress Y/N:	N
Ventilation - Non-invasive Y/N:	N
Transfer to Hospital Y/N:	N
Dialysis:	No
Artificial Nutrition:	

Order Date	Order Time	Service Date	Service Time	Ordered By	Category	Procedure	Status
4/28/20	16:36	4/29/20	07:00	Gorodetsky NP	LAB	Procalcitonin	In Process
					LAB	BMP, BASIC METABOLIC...	In Process
					LAB	COMPLETE BLOOD COUNT	Complete
4/23/20	14:53	4/24/20	07:00	Gorodetsky NP	LAB	BMP, BASIC METABOLIC...	Complete
					LAB	COMPLETE BLOOD COUNT	Complete
4/10/20	10:41	4/10/20	10:41	Gorodetsky NP	LAB	Procalcitonin	Complete
					LAB	CMP,COMPREHENSIVE ME...	Complete
					LAB	CBC WITH AUTOMATED D...	Complete
4/8/20	09:28	4/8/20	09:27	Gorodetsky NP	NUR	CM Vital Signs (QSHIFT)	In Process
					NUR	SR Precautions, Cont (QSH...	In Process
					NUR	SR Precautions, Drop (QSH...	In Process
					LAB	COVID-19	Complete

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Identify Residents: Leveraging the EMR

VisitID	Age	LocationName	LocationID	COVID	O0100k	O0100k2	C1000	C0500	ResuscitationSt	OrderDateTime
Mrs. P				NULL	NULL	NULL	3	NULL	DNAR/DNI	4/9/2019
Mr. S				NULL	NULL	NULL	3	NULL	Full Code	11/18/2014
Mr. S				NULL	NULL	NULL	3	NULL	Full Code	11/18/2014
Mr. S				NULL	NULL	NULL	3	NULL	DNAR/DNI	2/3/2015
Mr. S				NULL	NULL	NULL	3	NULL	Full Code	3/4/2015
Mr. S				NULL	NULL	NULL	3	NULL	DNAR/DNI	3/13/2015
Mr. S				NULL	NULL	NULL	3	NULL	DNAR/DNI	3/30/2015
Mr. S				NULL	NULL	NULL	3	NULL	DNAR/DNI/DNH	2/17/2017
Mrs. Z				NULL	NULL	NULL	3	NULL	DNAR/DNI	2/6/2020
Mrs. Z				NULL	NULL	NULL	3	NULL	DNAR/DNI/DNH	4/10/2020

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Data Work Flow

Palliative Field Team

REDCap
Research Electronic Data Capture

MEDITECH

Clinical Teams

Tracking System

Medical Records

COVID-ACP Data Mart

Meditech Data Repository

Automated Reports (email)

Reporting | Analytics

Marcus Institute Team

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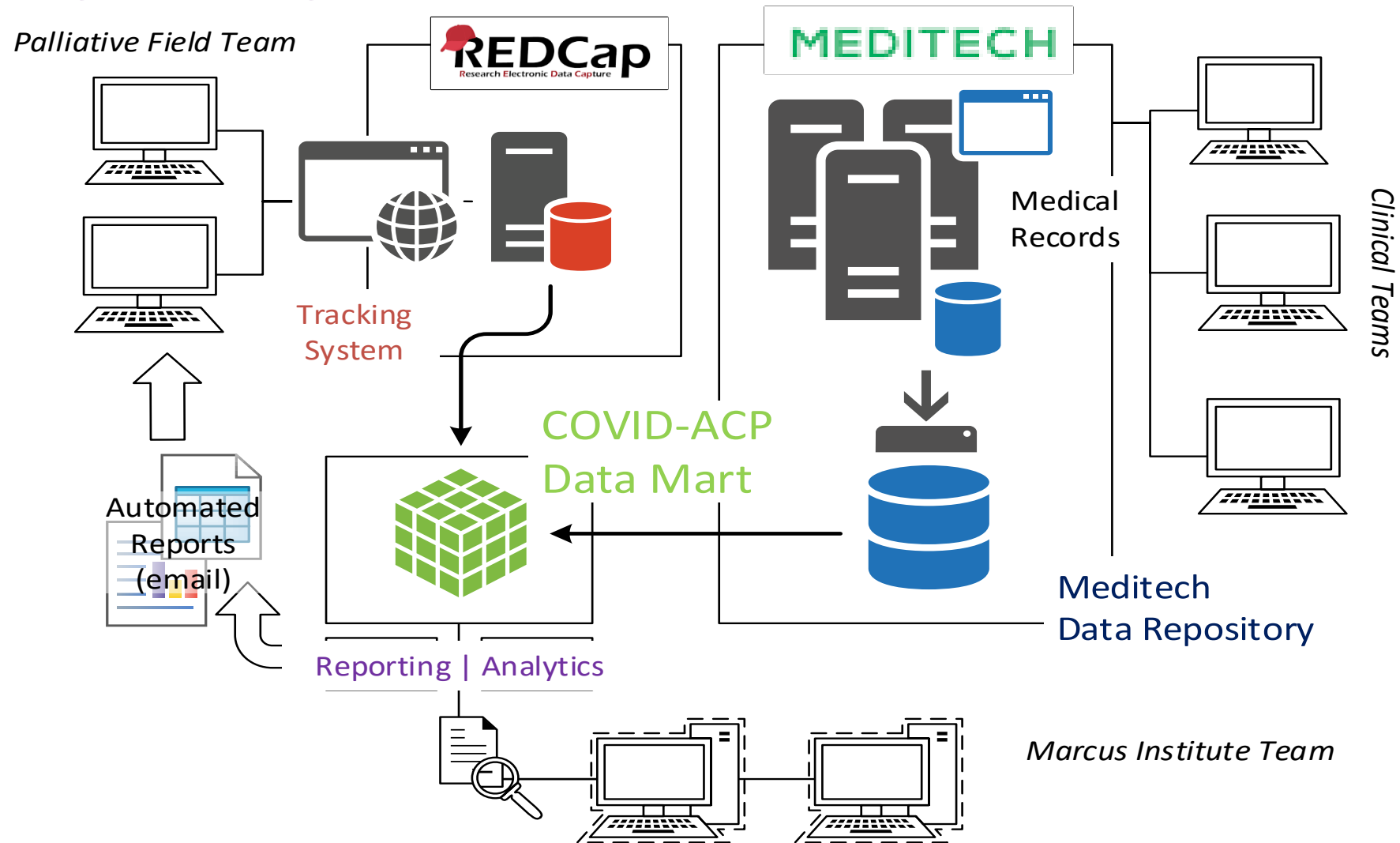
Automated List and Tracking

Covid-19 ACP Redcap Tracking system

Covid-19 ACP Calls Completed Report

Patient ID acp_r_id	Date of outreach to resident's contact acp_c_date	Outcome of ACP discussion acp_outcome	Referrals Made? acp_referrals	Contact disposition acp_disposition
■■■■	04-29-2020	Pt/family choose not to change advance directives orders (0) (0)	No (0)	Contact complete --- no further action needed (3)
■■■■	04-23-2020	Pt/family choose not to change advance directives orders (0) (0)	No (0)	Contact complete --- no further action needed (3)
■■■■	04-14-2020	Pt/family decided to change advance directive orders (1) (1)	Yes (1)	Contact complete --- no further action needed (3)
■■■■	04-20-2020	Pt/family decided to change advance directive orders (1) (1)	Yes (1)	Contact complete --- no further action needed (3)
■■■■	04-22-2020	Pt/family choose not to change advance directives orders (0) (0)	No (0)	Contact complete --- no further action needed (3)
■■■■	04-16-2020	Pt/family refused ACP discussion (9) (9)	Yes (1)	Contact complete --- no further action needed (3)
■■■■	04-27-2020	Pt/family undecided about changing advance directive orders (2) (2)	Yes (1)	Contact made --- needs follow-up (2)
■■■■	04-21-2020	Pt/family decided to change advance directive orders (1) (1)	Yes (1)	Contact complete --- no further action needed (3)
■■■■	04-16-2020	Pt/family decided to change advance directive orders (1) (1)	No (0)	Contact complete --- no further action needed (3)
■■■■	04-23-2020	Pt/family decided to change advance directive orders (1) (1)	Yes (1)	Contact made --- needs follow-up (2)
■■■■	04-24-2020	Pt/family choose not to change advance directives orders (0) (0)	No (0)	Contact complete --- no further action needed (3)
■■■■	04-23-2020	Pt/family decided to change advance directive orders (1) (1)	No (0)	Contact complete --- no further action needed (3)
■■■■	04-23-2020	Pt/family choose not to change advance directives orders (0) (0)	No (0)	Contact complete --- no further action needed (3)

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Baseline Cohort (April 13)

N=354/620 (55%) residents had <u>no</u> Do-Not-Hospitalize Order

	No DNH (N=354)	DNH (N=266)
Age (mean)	86 (10)	88 (8)
Female , N (%)	238 (67)	185 (70)
Moderate-Severe Cognitive Impairment, N (%)	94 (27)	132 (50)
Activities of Daily Living (0-28)(mean)	14 (7)	18 (8)
Do-Not-Resuscitate, N (%)	80 (23)	266 (100)

Status: All Residents with no DNH at baseline
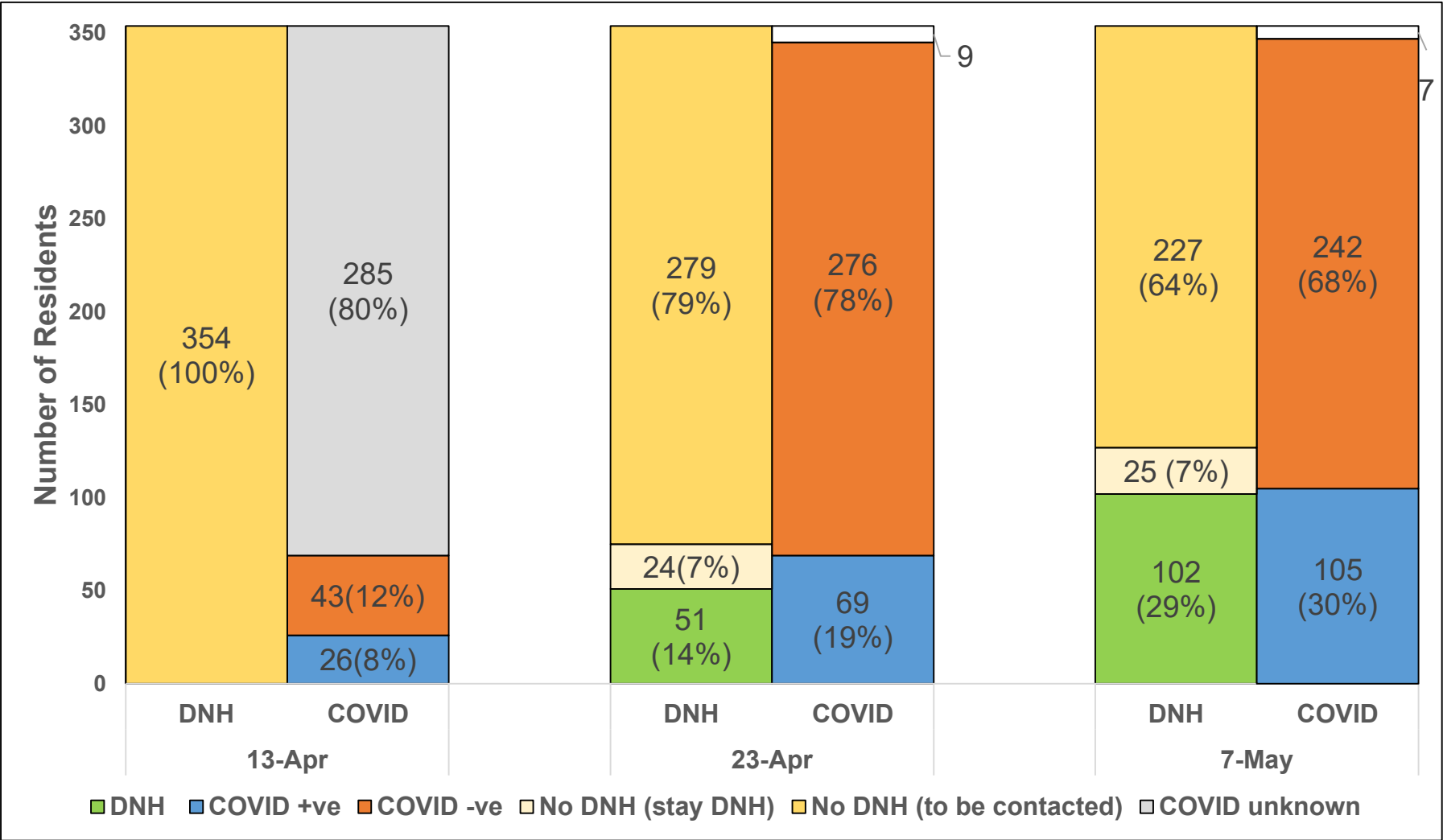
Status: Cognitively Impaired Residents
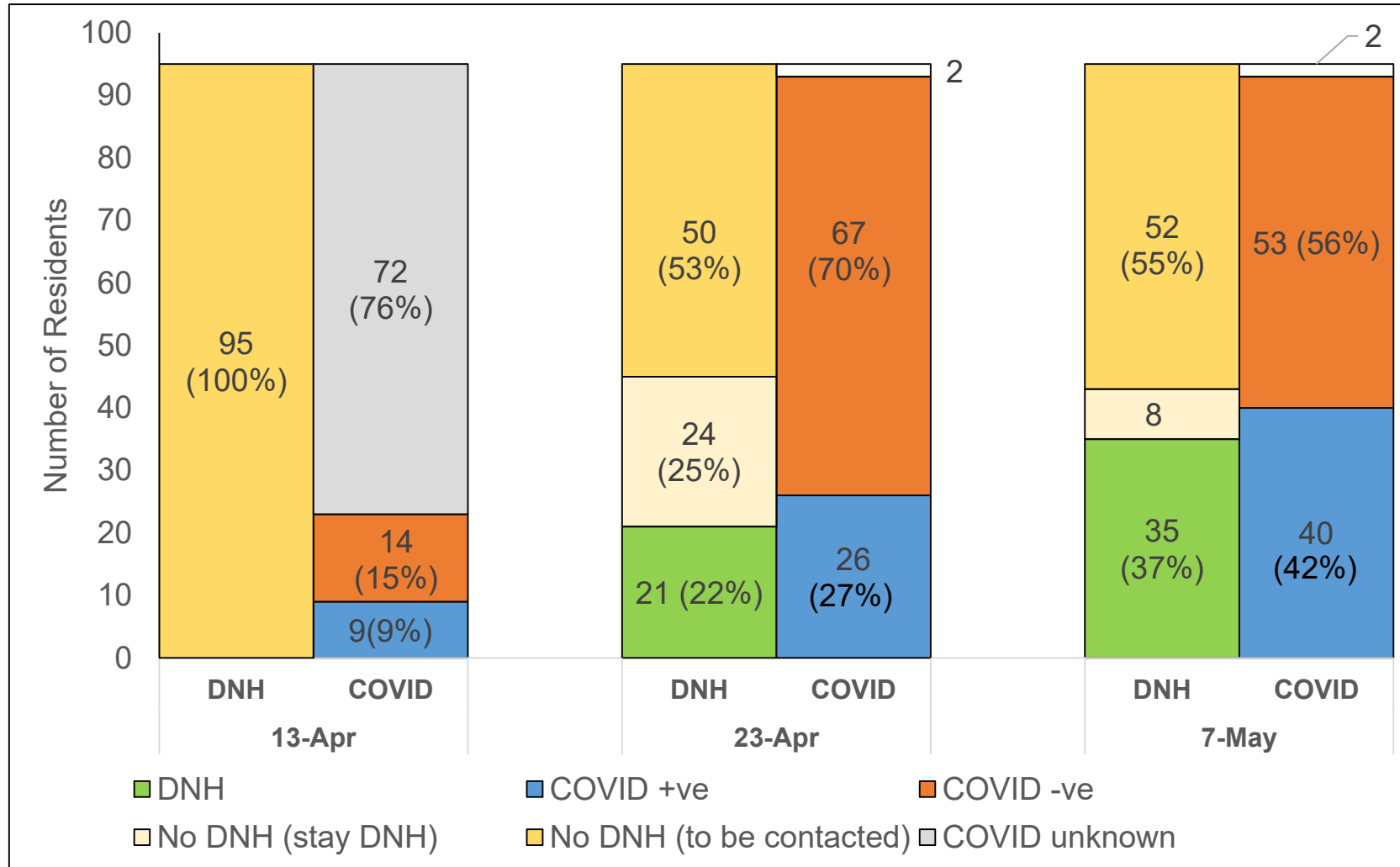
Other Outcomes (May 7)

Outcome	All	Cognitively Impaired
Deaths	**26/354 (7%)**	**14/95(15%)**
COVID +	21/26 (81%)	11/14 (79%)
DNH before death	18/26 (69%)	10/14 (71%)
Hospitalizations	**13/354 (4%)**	**7/95 (7%)**
DNH before hospitalization	0/13 (0%)	0/7 (0%)
COVID +	8/13 (62%)	3/7 (43%)
Died	5/13 (38%)	3/7 (43%)

*Residents DNH at baseline (April 13): Deaths, N=51/266 (19%); COVID +ve deaths, N=36/51 (70%)

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Comments from Stakeholders

"Kudos to the whole team at HRC. You all have really made this process as pleasant and comfortable as possible, under the circumstances."
-Health Care Proxy

"This is wonderful work - thank you for connecting with families and supporting them through these challenging times."
-Physician

"I'm really glad you are talking to me about this."
-Health Care Proxy

"- Powerful platform allowing our clinicians to focus their efforts during this unprecedented time"
-Chief Nursing Officer

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Challenges

- ACP Program
  - (Only 3 family members out of ~100 expressed discomfort with call)
  - SWAT Team often not primary care provider (PCP)
    - Some training
    - Need to close loop with PCP to write orders and sometimes reconfirm wishes
  - Took time

- Data Flow
  - Minimal added documentation took time, but clinical team willing
  - Occasional need back-fill REDCap tracking system
  - Some initial hurdles extracting EMR data

Lessons from HSL ACP SWAT Project

- Potential model to adapt to larger HCS
- Benefit to clinical (and research) team by bringing structure to chaos
- Pragmatic research approaches
  - Need driven by key stakeholders
  - With baseline infrastructure can be done quickly
  - Enabled by forward thinking creation of clinical EMR
  - Minimal data gathering can be integrated into work flow if providers see value
- ACP planning interventions
  - Can be done sensitively and successfully by allied disciplines, but takes time
  - Guided discussion and protocolized work flow
  - Lots of room to move needle on advance directives to promote goal concordant care, especially during COVID 19

THANK YOU!

ACP SWAT TEAM

Estimating the Impact of COVID on the Nursing Home Population

Vincent Mor, Ph.D. on behalf of COVID-19 Research Team

Using "Real Time" EMR data to Track the Epidemiology of COVID in Nursing Homes

- Leverage Longstanding relationship with large NH Company
- Over 350 Centers in 30 states
- Health Care System Participant in IMPACT Collaboratory
- Robust, centrally hosted EMR
- Have participated in past embedded Pragmatic Trials
- Agreed to Share data with Brown Analysts
- Data Transferred nightly from EMR and multiple systems
- Brown Analysts serve to answer BOTH epidemiological AND operational question jointly with company leadership

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Data Structure

Track COVID-19 status from facility specific line lists since COVID-19 tests often generated by state labs and delivered in bulk

Daily Facility Census files locate unique patients in unique rooms to create:

> Facility Level Aggregates (predictors of diffusion in a center)
>
> Patient Level Analyses (changing vitals and symptoms)
>
> Patient day level Analyses (are movers better off?)

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Preliminary Results

- Combine data on selected states' facility lists with Company data

- Predictors of a Facility being positive

Size & Community Prevalence Predict Likelihood of COVID-19 Positive Cases in a Center

Characteristic, mean (sd) or no. (%)	COVID+ (n=143)	Not COVID+ (n=197)	p
Facility Characteristics			
Total beds	**131.5 (48)**	**106 (39.7)**	**<0.001**
% Medicare	13.3 (11.5)	14 (11.2)	0.546
Total RN&LPN FTEs/100 beds	24.1 (7.2)	21.6 (6.4)	<0.001
Total CNA FTEs/100 beds	33.8 (7.5)	34 (13.8)	0.855
Resident Characteristics			
Average Age	78.3 (5.1)	76.3 (7.1)	0.005
% Black	16.6 (19.7)	8.7 (13.9)	<0.001
% Dementia	43.2 (15.8)	42.6 (16.3)	0.705
Area (County) Characteristics			
Population density (per 1000)	**1459 (1879.6)**	**616.5 (1066.5)**	**<0.001**
% Black	12.3 (11.8)	7.4 (10.5)	<0.001
% Aged 65 and above	16.3 (2.7)	18 (4.3)	<0.001
No. medical doctors (per 1000)	4 (7)	2.2 (5.5)	<0.001
County COVID+ Cases (per 100,000)	**579.2 (445.5)**	**177.7 (214.9)**	**<0.001**

Correlation between SNF Cumulative COVID-19 Incidence and Cumulative County Incidence: 4/29/2020

Pearson correlation=0.52; Spearman=0.62
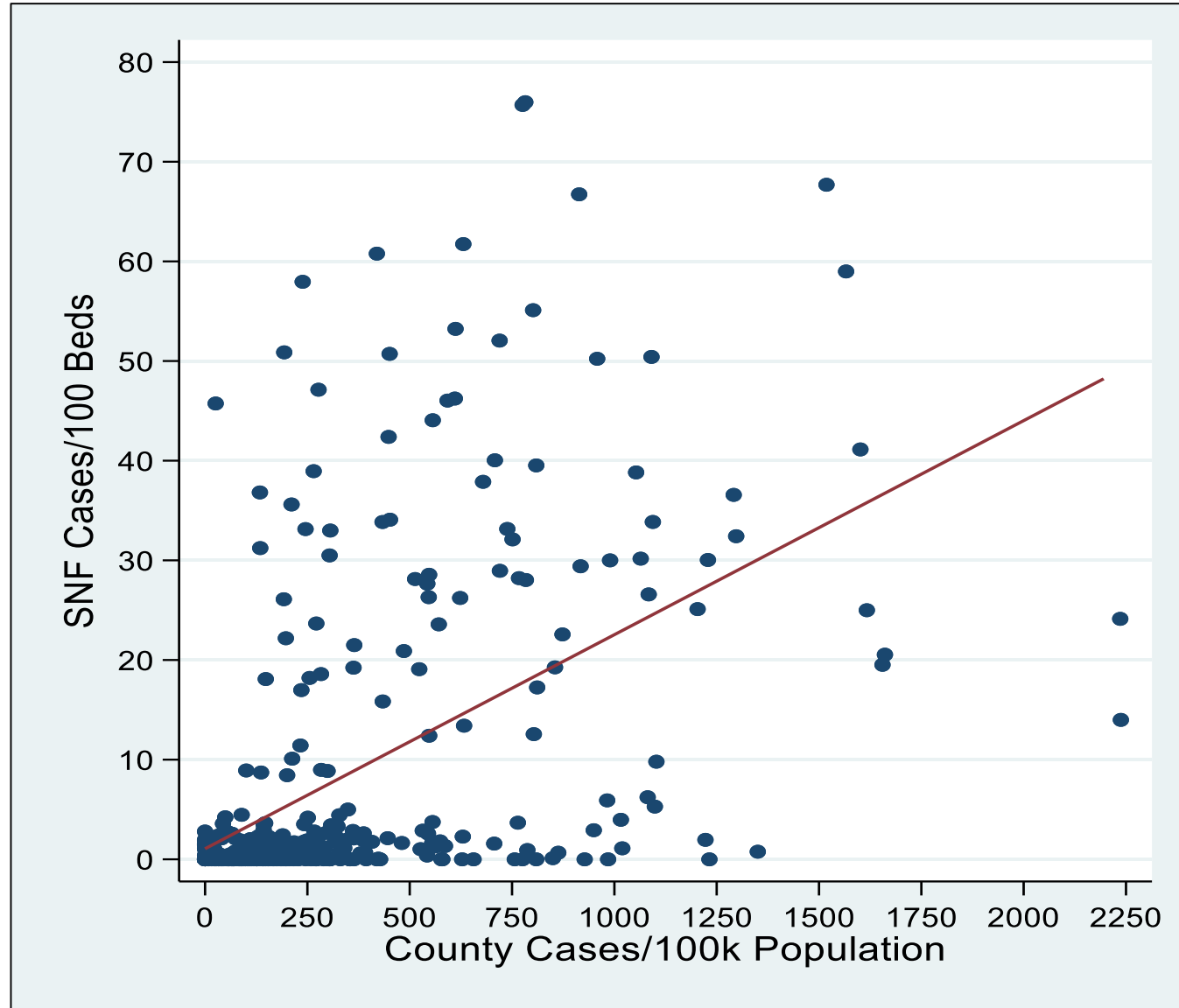
Mortality & Hospitalization among COVID-19+

- Cumulative Mortality of 22% among COVID-19 positive cases
  - Range from 0% to 61%

- Hospital Transfers: 10% of COVID-19 positive cases
  - Range from 0% to 50%

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Next Steps

- Predicting Patients becoming positive
  - Changes in Vital Signs & Symptoms (critical thresholds?)
  - How much do patient clinical & treatment factors relative to where the Center is located and whether staff found positive

- Asymptomatic Positive Cases in Universally tested Centers
  - What percent remain asymptomatic?
  - What differentiates "pre-symptomatic" from asymptomatic?

- Benefits of changing patients' rooms?
  - When COVID+ cases are identified are roomates or neighbors moved?
  - Are Movers OR non-Movers more likely to become COVID+

A Pilot Trial of Targeted Advance Care Planning in Assisted Living

Ellen McCreedy, Ph.D.

Specialty Geriatric Medicine Practice Serving Assisted Living Residents

- Primary care practices specializing in serving residents of assisted living who make "house calls" in the facility increasingly popular

- One group serves patients in ALFs in MN, WI and FL

- Has consistent EMR with data on physical and cognitive functioning

- Now mostly doing telehealth visits
- Able to identify residents with ADRD but without a DNH order

Pilot Experiment: testing effect of mailed vs. mailed plus personal tele-health outreach to residents' family on adoption of Do Not Hospitalize orders

- Randomize Assisted Living Facilities within state
  - Control – no message sent
  - Mailed/e-mailed or text alert to residents' families (same channel as visits)
    - Content drawn from multiple tested sources, emphasizing value of comfort care and poor outcomes of intubation
    - Encouraged to call primary care clinician
  - Mailed PLUS active outreach by clinician trained in ACP discussions

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Questions?

Contact Us: IMPACTcollaboratory@hsl.harvard.edu