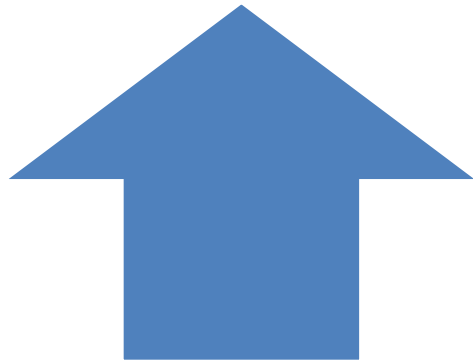# Greetings from
Brown School of Social Work
Washington University in St. Louis

Greetings from Basel Switzerland

Implementation Science

Accelerate & increase use of discoveries from research

Decrease use of ineffective, wasteful, or harmful interventions

4

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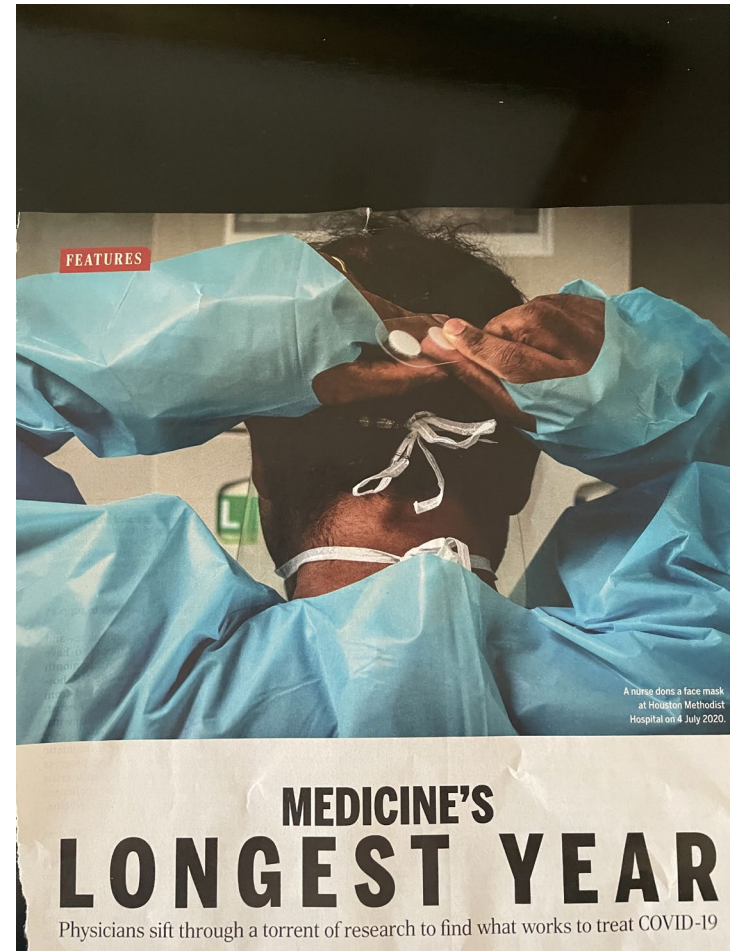# How long does it take?

17 years*

15 years**

*Balas and Boren (2000) Managing clinical knowledge for health care improvement. In Bemmel & McCray (eds), Year Book of Medical Inforamatics (Schattauer Verlagsgesellschaft

** Khan, Chambers, & Neta (2021) Revisiting time to translation….Cancer Causes & Control, 32:221-230

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Is 15 years fast enough?

- Pandemics
- Disaster relief
- Opioid crisis
- Child maltreatment
- Refugee relief
- Alzheimer's Disease
- Cancer
- Blood stream infections
- Traumatic injuries

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WE NEEDED TO KNOW WHAT TO DO

FEATURES

A nurse dons a face mask at Houston Methodist Hospital on 4 July 2020.

MEDICINE'S LONGEST YEAR

Physicians sift through a torrent of research to find what works to treat COVID-19

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Discoveries: what to do-COVID

Clinical preventive and treatment measures

     Treatments identified in 5 months

     Vaccine trials < one year

Behavior change prevention strategies

     Personal: Masking, PPE, social distance, handwashing,

     Social: quarantine, supply limitations

     Policy: shutdowns and closures, tracking and reporting

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OBSTACLES

- Distrust
- Politicized environment
- Inadequate supply: vaccines, PPE
- Nationalized response
- Inequitable distribution & access
- Features of the virus:
  - Respiratory transmission
  - High contagion
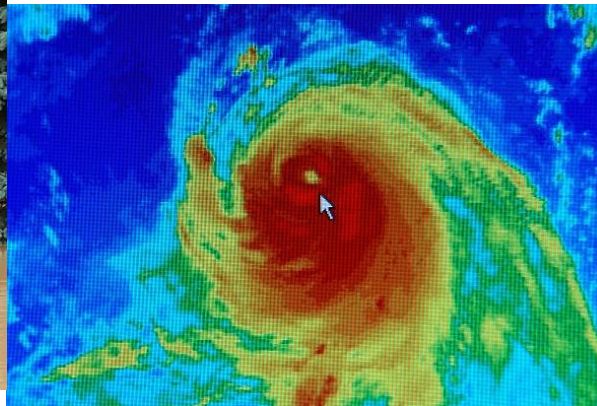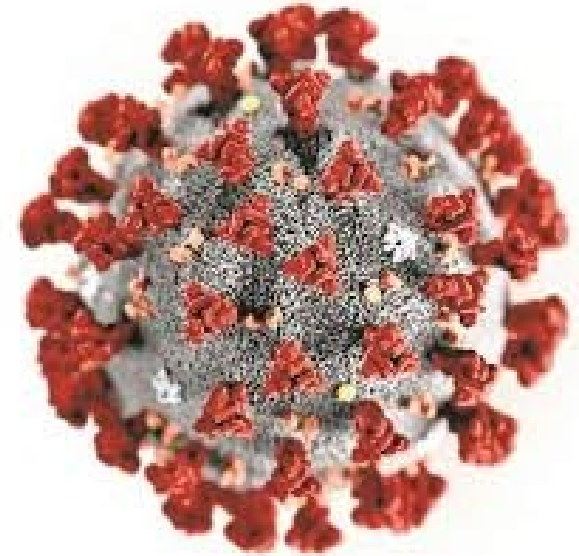 - Often asymptomatic
  - Unpredictability
  - Mutability

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Lives lost
Long-term morbidity
Health systems disrupted
Economies devastated
Social isolation
Mental health crises

Slow costs lives: the case of COVID-19 mitigation policies, June 15, 2020

- Effect of a one-week delay in policy implementation:
  - increased cumulative hospitalizations from 2246 hospitalizations to 8005
  - increased deaths from 482 deaths to a projected 1304 deaths

- Effect of a two-week delay in policy implementation:
  - 3292 deaths—a 583% increase beyond what was actually observed.

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CAN WE DO BETTER NEXT TIME?

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A new lane for science

A lane focused on rapid uptake

of proven interventions

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"COVID-19 has shown the world that 'knowing what to do' does not ensure 'doing what we know.'"

Implementation and speed

- Speed = understudied metric in implementation science.

- Current research approaches have not accelerated implementation
  - Design innovations--hybrid effectiveness-implementation trials notwithstanding

Thus we are ill-equipped to answer the question:
  - What are the variables and conditions most likely to impact speed of implementation?

Implementation science has not met the challenge of equipping providers and systems for rapid response

Speed of implementation is complex:
– What is fast enough?
– Is there a "too fast?"

Intervention development and implementation research should capture
– Metrics for capturing speed
– Factors associated with faster or slower implementation.

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COMMENTARY

FAST: A Framework to Assess Speed of Translation of Health Innovations to Practice and Policy

Enola Proctor[1] · Alex T. Ramsey[2] · Lisa Saldana[3] · Thomas M. Maddox[4,5] · David A. Chambers[6] · Ross C. Brownson[7,8,9]

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The Debate: Fast or Slow?
Does haste make waste?

The case for speed	The case for slow
Health and social crises	Need for evidence
Reactive nature of systems	Stakeholder engagement
Inequities	Human centered designs?

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WHO CARES ABOUT SPEED? WHY?

Stakeholders	Perspectives and priorities (sample questions)
Intervention developers, trainers, and purveyors	How long until the innovation is adopted?
Clinicians	How long will the innovation take to learn? How long to reach competence? When can the innovation be used?
Clients and patients	How long until the innovation is available? How long until improvement is seen?
Administrators	How long is the change process? How quickly will new innovation become routine?

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WHO CARES ABOUT SPEED? WHY?

Payers	How long until return on investment?
Policy makers	How do current or proposed policies affect the speed of research translation?
Communities	How long until users of the innovation are reached? How long until coverage rates are adequate?
Advocates	Does rapid research affect health equity? How long until equity is realized?

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WHAT INFLUENCES SPEED?

- Features of the innovation (program, policy, intervention)
- Adopter characteristics
- Features of context
- Implementation strategies
  - Which are efficient?

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Potential influences on speed

Features of the innovation	Examples
Compatibility	Similar training required?
Relative advantage	Demonstrably better
Complexity	Challenges for providers to learn and deliver
Cost	Payment available?
Certainty of evidence	Do we know that the innovation is the right one?

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Potential influences on speed

Adopter characteristics	Examples
Risk tolerance	Open to change?
Capacity	Do providers / organizations have training or are they willing to learn?

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Potential influences on speed

Features of context	Examples
Pull	Do users want the innovation?
Demand	Is there an emergency? Is there policy mandate?

Potential influences on speed

Implementation strategies	Examples
Training	Duration
Practice facilitation	Task shifting (training, coaching, monitoring)

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STRATEGIES THAT TAKE TIME

Use trusted champions

Co-develop strategies with communities

Trai health-care professionals to address science mistrust/hesitancy

Tailor communication and outreach strategies to specific communities

STRATEGY

World Health Organization

TDR For research on diseases of poverty
UNICEF · UNDP · World Bank · WHO

Washington University in St. Louis

HOW TO ACCELERATE?

- Leverage Hybrid One Designs to Capture knowledge about context in intervention trials

- Acceptance rates

- Time, resource, infrastructure demands

Effectiveness-implementation Hybrid Designs: Combining Elements of Clinical Effectiveness and Implementation Research to Enhance Public Health Impact

Curran, Geoffrey M.; Bauer, Mark; Mittman, Brian; More

Medical Care. 50(3):217-226, March 2012.

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What can we learn from Hybrid One Trials

- What are potential barriers and facilitators to "real-world" implementation of the intervention?
- What problems were associated with delivering the intervention during the clinical effectiveness trial and how might they translate or not to real-world implementation?
- What potential modifications to the clinical intervention could be made to maximize implementation?
- What potential implementation strategies appear promising?

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How can these lessons affect speed?

- Reveal needed preparation, training
- Reveal needed adaptation
- Reveal work needed at organizational level
- Reveal needed infrastructure supports
- Suggest strategies most likely to be effective

HOW TO ACCELERATE?

- Build repertoires of implementation strategies

    -What works where, for what contexts, for what interventions?

    – What works at multiple levels?

    – What works for multiple evidence-based interventions?

    – Identify and streamline mechanisms of change

IMPLEMENTATION STRATEGY REPERTOIRES

SPECIFY

- Actor: who?

- Action: Does what?

- Target: to what?

- Temporality (when?)

- Dose (how much)

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Example – documenting implementation activities…supporting churches as champions

Name of strategy	Dates	Actor	Action (with dose and intensity)	Action target	Desired behavior of the target
Church engagement for vaccine promotion	July 1 to December 1, 2021	Community engagement liaison at the provincial health department	Reach, engage, educate and motivate pastors to use 3 points; attempt 2-4 conversations each of 30 pastors	Create capability to talk about vaccine in pastors; awareness that there are no fetal cells, motivate pastors to say so	Pastors incorporate three key talking points about vaccine into messages

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Example – documenting "engaging pastors" as implementation strategies to for implementation outcomes

Fidelity or adaptations	Acceptability, appropriateness	Actionable	Sustainability	Equity
Did community engagement agents reach out to pastors? With frequency and method intended? What changes (adaptations) had to be made?	Were pastors willing to talk with health authorities (acceptability) Did pastors find health a outside of the scope of their mission (appropriateness)?	Were motivated pastors able to introduce messages (did messages require sign-off or approval?	How long can the public health authorities maintain communications with the churches?	Was incomplete outreach and engagement different by resources, race or other elements of church communities?

Proctor E Administration and policy in mental health and mental health services research. 2011 Mar;38(2):65-76.

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How can strategy repositories affect speed?

- Provide a "go to source" for information about potential strategies

- Provide roster of strategies used previously for what and where

- Reveal varieties of actors

- Provide information about dose

- Provide information about context

- Provide information about effectiveness

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Designing for Accelerated Translation (DART) of emerging innovations in health

Alex T. Ramsey[1,*] , Enola K. Proctor[2], David A. Chambers[3], Jane M. Garbutt[4,5], Sara Malone[2,4], William G. Powderly[5] and Laura J. Bierut[1]

Without radically different approaches, implementation of evidence to practice will remain slow.

Researchers must considering implementation needs "early and often" for accelerated and dynamic translation.

Much evidence can be acted upon even when uncertainty is moderately high, recognizing that this evidence is evolving and subject to frequent reevaluation.

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Studying speed:
Research challenges

Few studies report speed
       of implementation phases
       to attain specific outcomes
       Thus we know little about how long it actually takes

What observations periods make sense?

How do we measure speed?

Challenge: how to measure speed?

| Domain	Example metrics
Time elapsed to attain specific outcome How long to train to fidelity?	# months to attain x%
Rate of progress over time	% increase in sites' adoption from 6 months to 1 year
	Visual depiction of providers' attaining fidelity
Time elapsed to implementation phases	# months for exploration phase, # months for preparation, per EPIS framework
How long to adapt Tx to client preferences?	# months to shape treatment
How long for human center design processes?	# months

Questions remaining

- Can fast lead to sustainable change?
  - Andre DeShields: "the fastest way to get where you are going is slow…"
- Can fast enable inclusion/ power sharing?
- Does fast last?
- How fast is best?
  - Goldilocks: *not too slow, nor too fast, just right*?

Better prepared to act faster
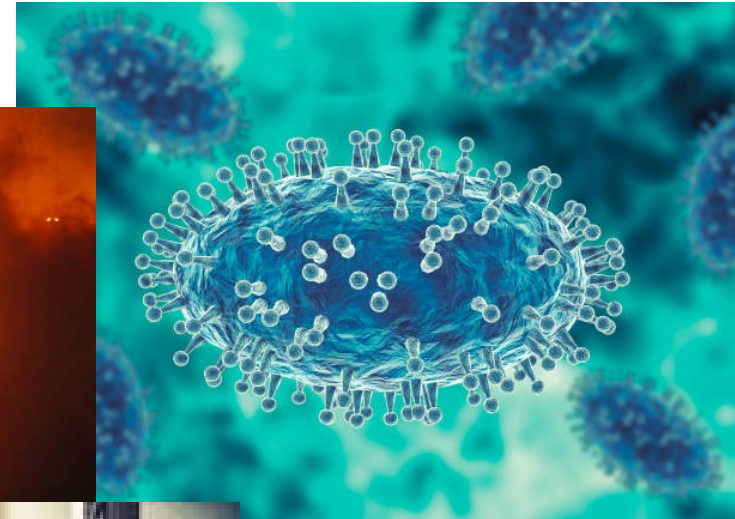
THANK YOU!

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