M6 - Scaling up and spreading improvement work:

a practical guide for moving promising projects to impact at the system level

Amar Shah, East London NHS Foundation Trust & NHS England

Helen Bevan, *affiliation*

Pierre Barker, Institute for Healthcare Improvement

Nana Twum-Danso, Institute for Healthcare Improvement

10 April 2024
International Forum on Quality & Safety in Health Care | London
Session M6

Disclosures

The faculty have no conflicts of interest to declare

Faculty Introductions

Workshop Agenda

Time	Activity
9:30-9:45	Session welcome and orientation
9:45 – 10:15	Setting the Scene - What have we learned from experience of trying to scale improvement?
10:15 – 10:45	Theoretic Underpinnings of Getting to Scale • Spread, scale definitions • Theories of spread and scale-up
10:45 – 11.00	Break
11.00 – 11:30	Phases of Scale Up and Spread: Illustrations and Discussion
11:30 – 12:20	Tabletop activity: Hands-on building of a scale-up or spread programme
12:20 -12:30	Learnings and Wrap-up

Institute for Healthcare Improvement

What have we learned from the experience of trying to scale improvement?

- your experience: describe a success or challenge with scaling up or spreading your improvement project

Institute for Healthcare Improvement

What have we learned from the experience of trying to scale improvement?

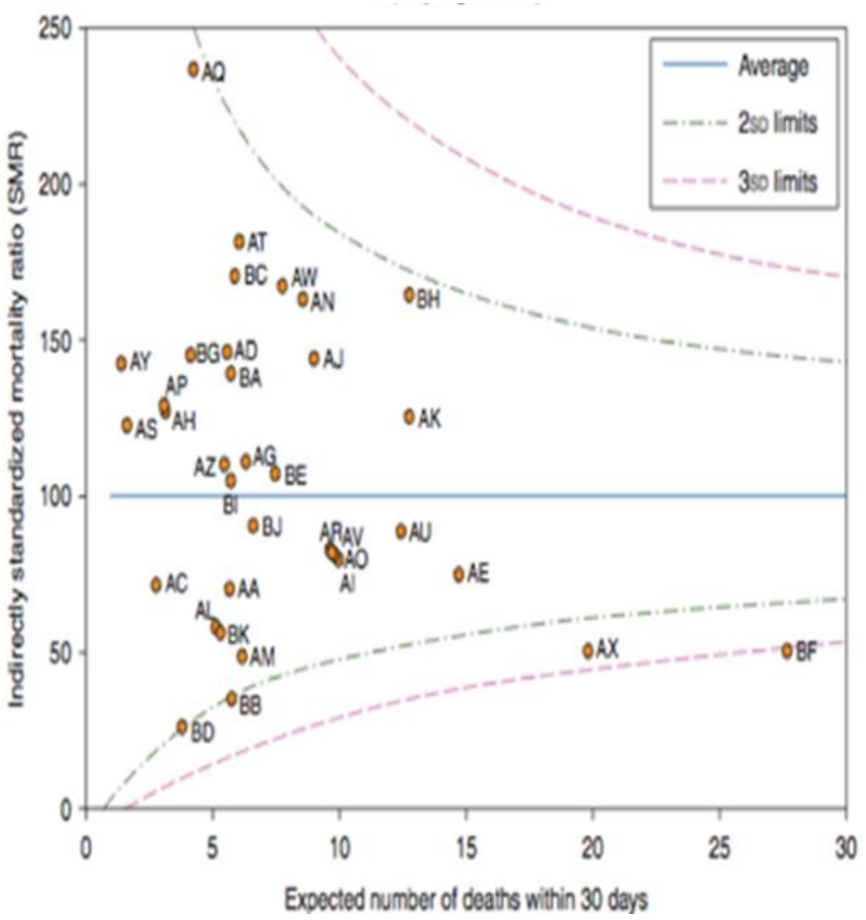
- lessons from the field

Why is it so hard to go from Successful Model to Scale up? Case #1 Improving Post-Surgical Mortality

The Problem:

- ~ 30000 patients undergo emergency abdominal surgery in NHS hospitals each year
- 30-day mortality >10%.
- Large variation in Post-laparotomy mortality

30 day Standardized Mortality Ratio for Emergency Laparotomy



Variations in Mortality after emergency laparotomy, UK Saunders et al, BJA 2012

Case #1: Post-Laparotomy Mortality

Use of a pathway quality improvement care bundle to reduce mortality after emergency laparotomy

S. Huddart[1], C. J. Peden[2], M. Swart[3], B. McCormick[4], M. Dickinson[1], M. A. Mohammed[5] and N. Quiney[1] on behalf of the ELPQuiC Collaborator Group

BJS 2015; 102: 57–66

The Successful Model:

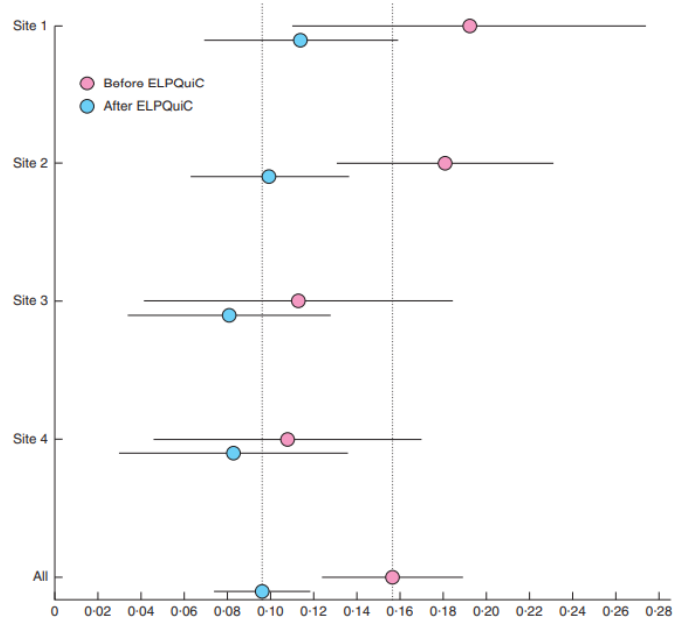
4 NHS Hospitals

Clinical intervention (bundle)
- Early warning score,
- early antibiotics,
- goal-directed fluid therapy
- Rapid response to OR/theater
- Senior MD involved
- postoperative intensive care

QI Implementation intervention
- Multidisciplinary team
- executive -level support
- PDSA testing adoption
- 6 weekly in-person learning meetings
- Data collected on every patient for 8 months
- Sharing of project data

Study Design:
- Quasi-experimental (no controls)
- Risk-adjusted cumulative sum (CUSUM) plots and a logistic regression model.

The Result: risk of death from 15·6 to 9·6 % (39% reduction)



Case #1: Post-Laparotomy Mortality

The Test of Scale up Model:

Aggarwal G, et. al., JAMA Surgery 2019;154:1-9

QI intervention in 26 NHS Hospitals

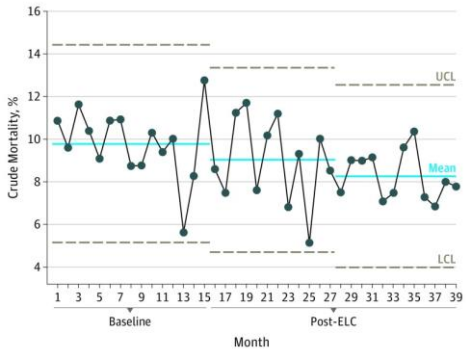
Clinical intervention (bundle)
- Early warning score,
- early antibiotics,
- goal-directed fluid therapy
- postoperative intensive care

QI Implementation intervention
- Multidisciplinary team
- executive -level support
- hospital teams meeting every 3 months.
- On-site support by improvement teams coaches

Study Design:
- Quasi-experimental (no controls)
- Risk-adjusted cumulative sum (CUSUM) plots
- SPC analysis .

The Result:

Significant improvement in key processes:
ICU admissions, senior doc involved



Adjusted risk of death
5.3% to 4.5% =
15.1% reduction

Case #1: Post-Laparotomy Mortality

Large-Scale Scale up:

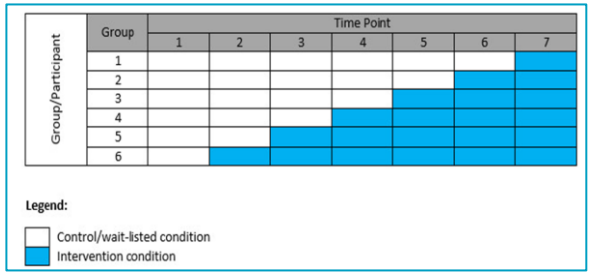
Peden CJ, et al. Lancet 2019;393:213-21

93 NHS Hospitals in 15 “clusters”

Clinical intervention

- 36-component intervention
- 10 components selected for emphasis

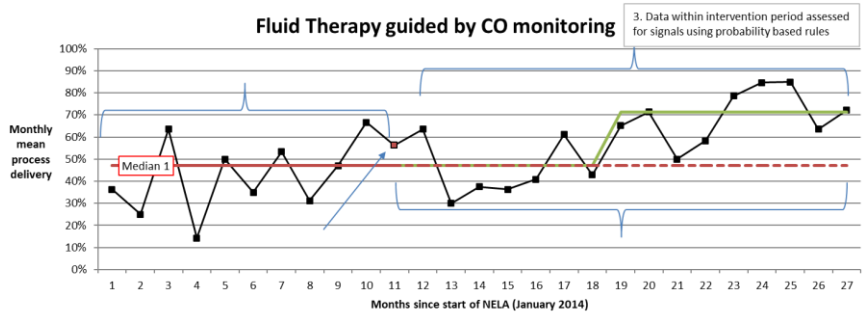
Study Design:
Step wedge cluster design (intervention time 1 - 20 months)



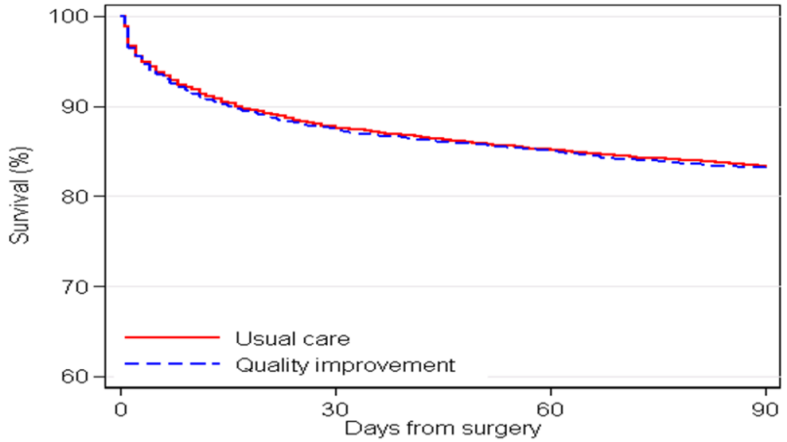
QI Implementation intervention

- reframing the high mortality as “burning platform”
- Support QI leads to engage staff and leaders
- Basic QI training
- Support data analysis and feedback
- online virtual learning
- half-day follow-up F2F meeting @
- 16 weeks. 2 national meetings

The Result:



Some processes improved



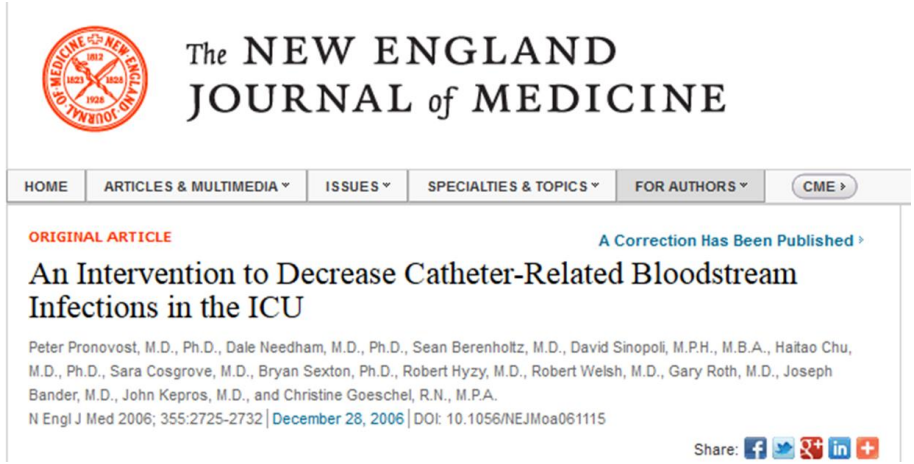
Survival

90 day mortality 16% in intervention and 16% control hospitals

Case #1: Post-Laparotomy Mortality (Summary)

	Number of Hospitals	Clinical Intervention	QI Intervention	Study Design	Result
Demonstration	4	6 –part evidence based intervention	Multi-Discip. team Leadership PDSA testing 6 weekly in-person learning meetings Data collection and feedback	Quasi-exp	15·6 to 9·6 % (39% reduction)
Test of Scale	26	6 –part evidence based intervention	Multi-Discip. team Leadership F2F teams meeting (~ 3mo). On-site support by improvement teams coaches Data collection and feedback	Quasi-exp	5.3% to 4.5% (15.1% reduction)
Large Scale Implementation	93	36-component intervention	Multi-Discip. team Leadership PDSA testing One F2F meeting Data collection and feedback	Step-wedge trial	Intervention *and* control both 16% reduction

Case #2: Spreading a Successful Model into a New System



The NEW ENGLAND JOURNAL of MEDICINE

HOME | ARTICLES & MULTIMEDIA | ISSUES | SPECIALTIES & TOPICS | FOR AUTHORS | CME

ORIGINAL ARTICLE

A Correction Has Been Published

An Intervention to Decrease Catheter-Related Bloodstream Infections in the ICU

Peter Pronovost, M.D., Ph.D., Dale Needham, M.D., Ph.D., Sean Berenholtz, M.D., David Sinopoli, M.P.H., M.B.A., Haitao Chu, M.D., Ph.D., Sara Cosgrove, M.D., Bryan Sexton, Ph.D., Robert Hyzy, M.D., Robert Welsh, M.D., Gary Roth, M.D., Joseph Bander, M.D., John Kepros, M.D., and Christine Goeschel, R.N., M.P.A.

N Engl J Med 2006; 355:2725-2732 | December 28, 2006 | DOI: 10.1056/NEJMoa061115

Share:

- 108 ICUs across Michigan, USA
- BTS collaborative
- “bundle” of 5 interventions to reduce CLABSI
- Basic QI teaching
- biweekly coaching, biannual meetings

- incidence-rate ratios continuously decreasing from 0.62 at baseline to 0.34 at 16 to 18 months

BMJ Qual Saf doi:10.1136/bmjqs-2012-001325

Original Research

‘Matching Michigan’: a 2-year stepped interventional programme to minimise central venous catheter-blood stream infections in intensive care units in England

OPEN ACCESS

Julian Bion[1], Annette Richardson[2], Peter Hibbert[3], Jeanette Beer[3], Tracy Abrusci[1], Martin McCutcheon[4], Jane Cassidy[2], Jane Eddleston[5], Kevin Gunning[6], Geoff Bellingan[7], Mark Patten[8], David Harrison[9], THE MATCHING MICHIGAN COLLABORATION & WRITING

- 223 adult and paediatric ICUs in England.
- Same “bundle” of 5 interventions
- Step-wedge intervention

- All clusters decreased at similar rates
- The trend for infection rate reduction did not accelerate following interventions training.

Case #2: Spreading a Successful Model into a New System

RESEARCH Open Access

Explaining *Matching Michigan*: an ethnographic study of a patient safety program

Mary Dixon-Woods[1*], Myles Leslie[2], Carolyn Tarrant[1] and Julian Bion[3]

- Burning platform: baseline rates were much lower in UK vs Michigan
- Unreceptive atmosphere due to previous "top-down" efforts to tackle central line infections.
- Misunderstanding that introduction of simple checklist would be sufficient
- Did not use regular face to face network meetings
- Did not provide regular follow up
- "imposed" vs "voluntary" participation
- importance of monitoring controls and secular trends

Context

Lack of attention to psychology of change, adult learning

Fidelity of design:

Attributes of the environment

Do Rapid Response Teams Work? (a: “variably, sometimes”) Variation in Results

J Patient Saf. 2020 Sep; 16(3 1 Suppl): S3–S7.
Published online 2020 Aug 24. doi: 10.1097/PTS.0000000000000748
PMCID: PMC7447182
PMID: 32809994

The Use of Rapid Response Teams to Reduce Failure to Rescue Events: A Systematic Review

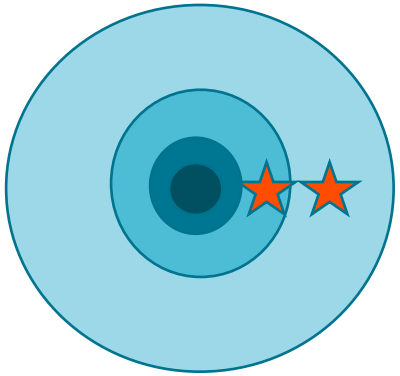
Kendall K. Hall, MD, MS,* Andrea Lim, MD, MPH,† and Bryan Gale, MA*

▸ Author information ▸ Copyright and License information Disclaimer

Abstract Go to:

Conclusions:

- “There is moderate evidence linking the implementation of RRTs with decreased mortality and non-ICU cardiac arrest rates
- The benefits of RRTs may take a significant period after implementation to be realized, owing to the need for change in safety culture”



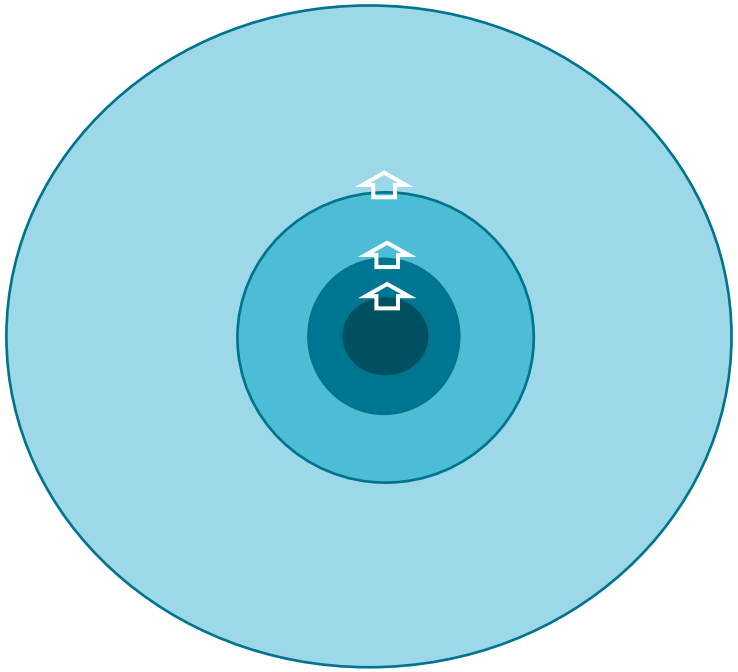
Institute for Healthcare Improvement

Theoretical Underpinnings

- Spread, scale definitions –
- Theories of spread and scale-up: -
- Going beyond planned scale up- how to build a Movement –
Helen Bevan

Scale up or Spread?

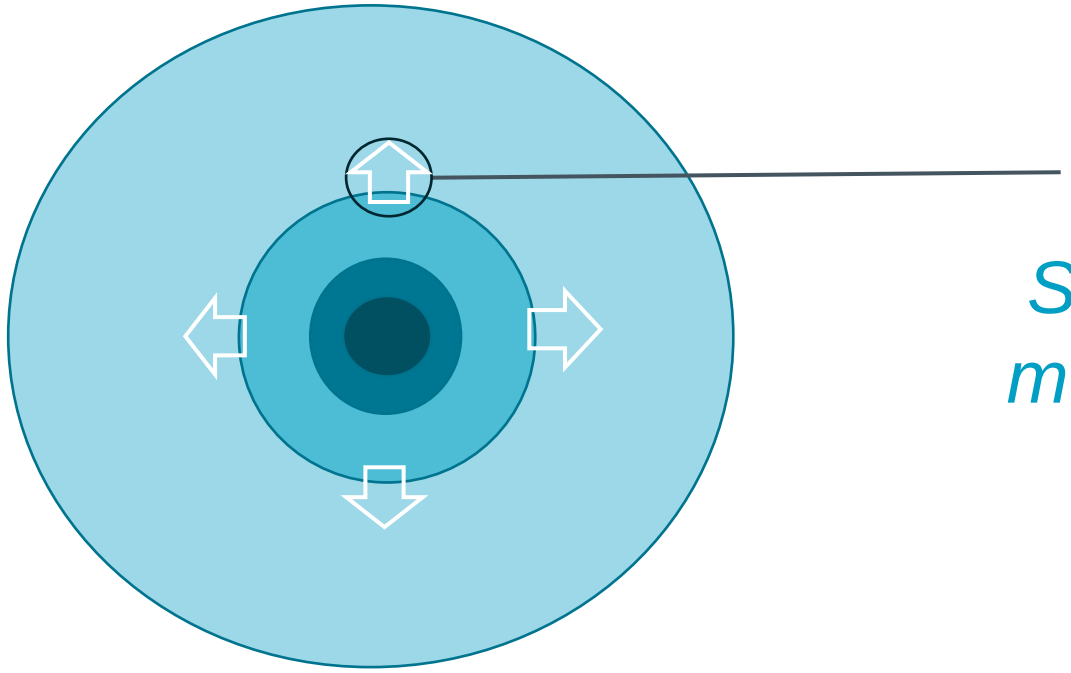
Scaling vs Spreading Improvement



Scaling up Improvement:

Building a scalable model
Testing in different contexts
Creating conditions for scale up

Scaling vs Spreading Improvement



Spreading Improvement

Spreading a well tested model in a well-prepared environment

3 Common Design Features in Scale-up Models

1. Sequential Scale up Plan
2. Influence Adoption
3. Build Infrastructure to Scale

Barker *et al. Implementation Science* (2016) 11:12
DOI 10.1186/s13012-016-0374-x

Implementation Science

METHODOLOGY Open Access

A framework for scaling up health interventions: lessons from large-scale improvement initiatives in Africa

Pierre M. Barker[1,2*], Amy Reid[1] and Marie W. Schall[1]

Table 1 Review of frameworks for scaling up health interventions

Frameworks	Sequential scale-up plan	Adoption influences and infrastructure
Implementing Best Practices Consortium (15,16)	Preliminary setup phase, a test-of-concept phase, further testing in different environments, and an implementation scale-up phase to get to full scale; theory-based approach that tests the applicability of the intervention in different contexts before scaling	Outlines eight principles that support change including perception of benefits, change agent, resource support for the change agent, leadership support, staff motivation, small-scale testing using success to motivate, clear implementation ownership, and getting going by not delaying first steps
Expandnet (17–19)	Alignment to the local practices and contexts in the setup phase, and testing and learning from different contexts as the intervention starts to scale up, feeding the information learned into the final scale-up plan; theory-based approach that tests the applicability of the intervention in different contexts before scaling	Emphasis on understanding attributes of the innovation, the organization, the resource team and the larger social, political, economic, and institutional environment
WHO/Massoud (20)	Preliminary setup phase, a test-of-concept phase in a representative "slice" of the system, and exponential increase of these slices to fill out the areas of full scale through further testing in different environments; theory-based approach that tests the applicability of the intervention in different contexts before scaling; a major contribution from Massoud is the notion of planning from the outset with scale in mind and initial testing in a network of facilities across multiple layers of the system	Use of evidence of success as a mechanism for advocacy and will building, and creating a receptive environment for taking an intervention to full scale; suggest using leaders from successful early test phases of the work to become the advocates and local champions to drive the scale-up phases of the work
Management Systems International (21)	Planning, establishing pre-conditions for scaling up, and implementation; accounts for, and anticipates the needs of, different contexts through deep inquiry into local conditions	Highlights the need for pre-work, stage setting, and engagement that will support successful scaling up, especially in terms of attaining necessary resources and buy-in through advocacy methods
Consolidated Framework for Implementation Research (22)	Planning, engaging, executing, and reflecting/evaluating; accounts for, and anticipates the needs of, different contexts through deep inquiry into local conditions	Five areas to consider: intervention characteristics, inner setting, outer setting, individual characteristics, and the implementation process
Yamey (23)	Phased delivery strategy as one of six success factors that needs to account for and anticipate needs of different contexts through deep inquiry in to local conditions as well as using a phased approach	Outlines six areas that influence successful scale-up, including attributes of the tool/service being scaled up, of the implementers, of the community, of the socio-political environment, of the research environment, and the delivery strategy

Reviewed in Barker, Reid, Schall Implementation Science (2016) 11:12

3 Common Design Features in Scale-up Models (+ Tom Nolan)

1. Sequential Scale up Plan

2. Influence Adoption

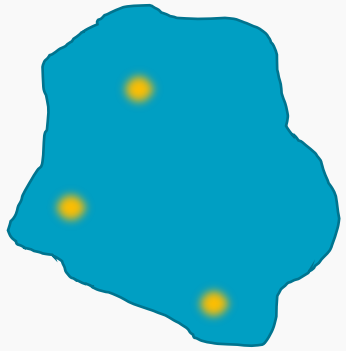
3. Build Infrastructure to Scale

2. Will, *Ideas* and Execution	"If you want to achieve major change, you need will, ideas, execution" *-Tom Nolan (API)*

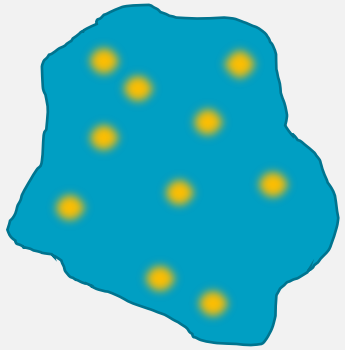
Core Concept #1: Sequential Scale-up
4 steps to getting to impact at full scale

1. *Prepare the Ground*

2. *Build the model*



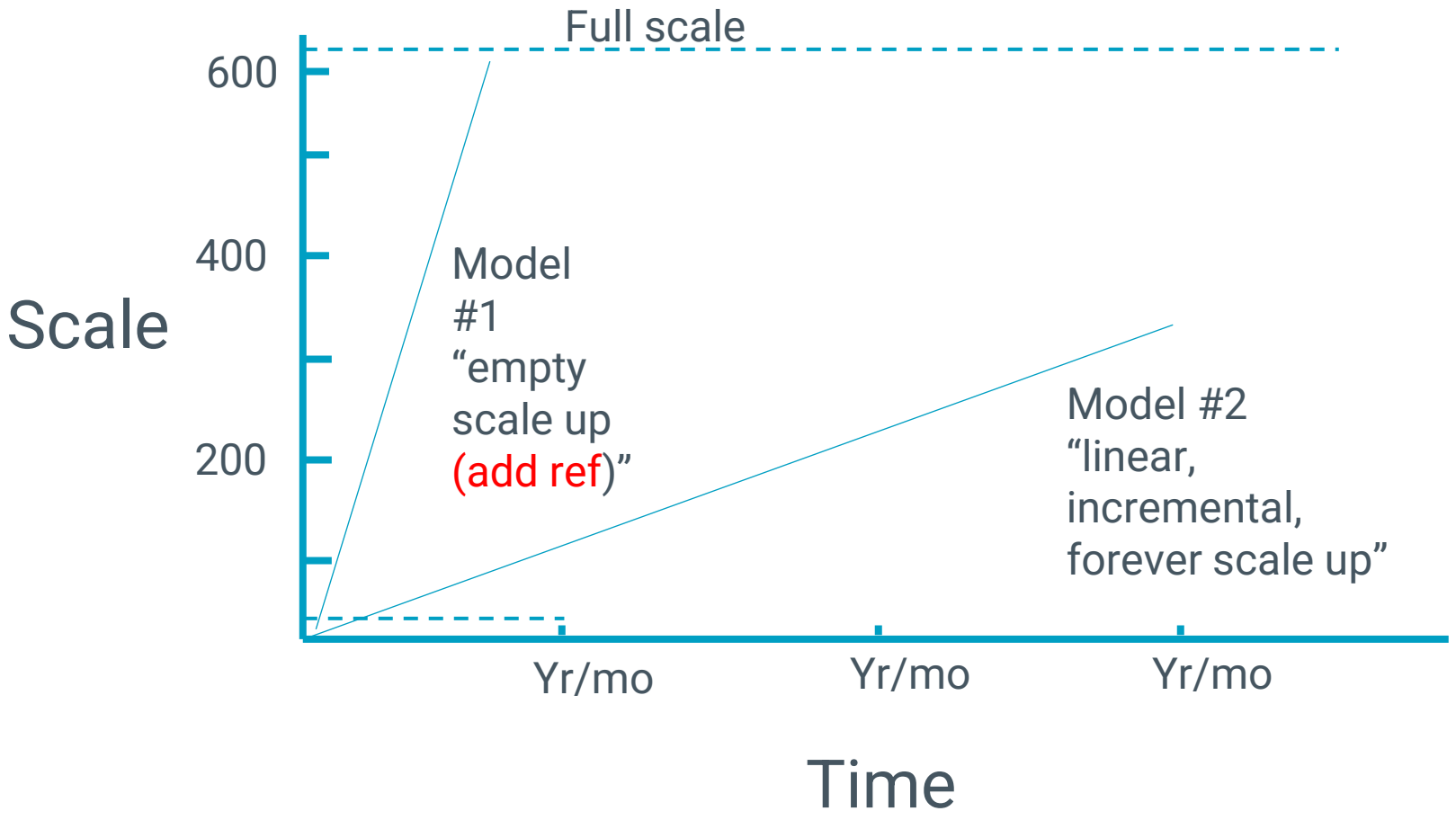
3. *Test the model in different contexts*



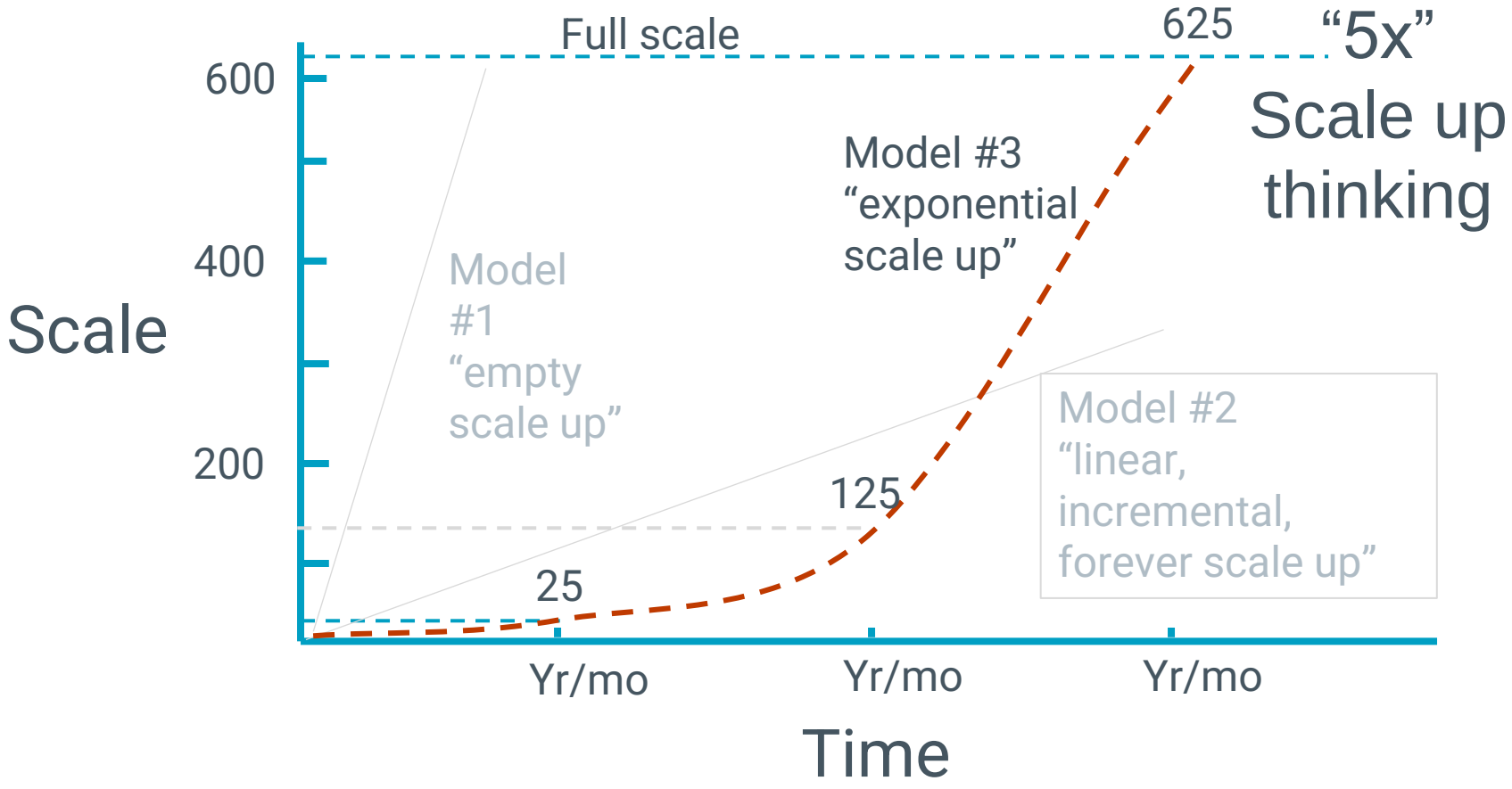
5. *Implement the model at full scale*

Core Idea #1: Sequenced Scale-up Design.

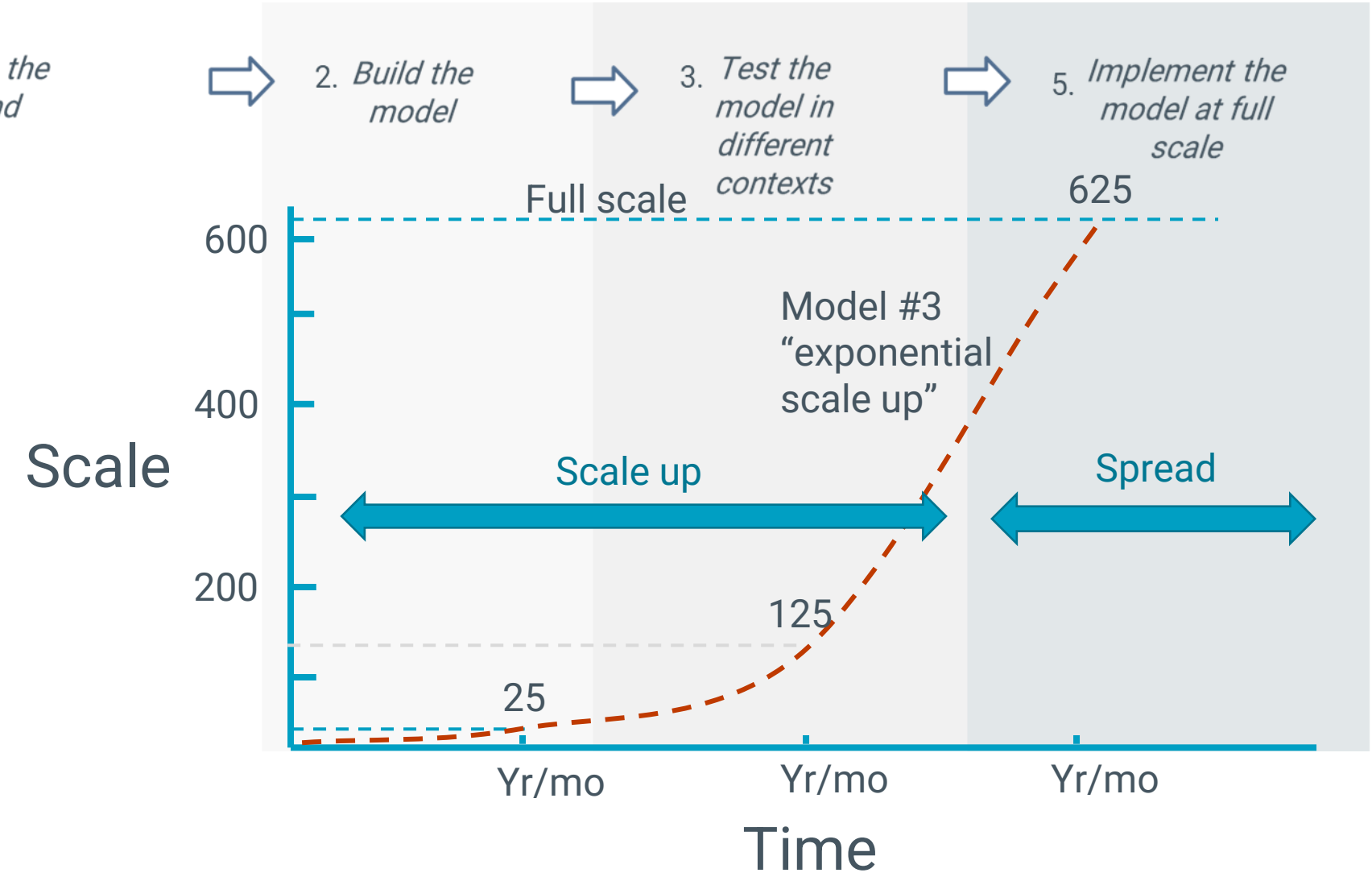
Exponential vs Linear Scale-up Thinking



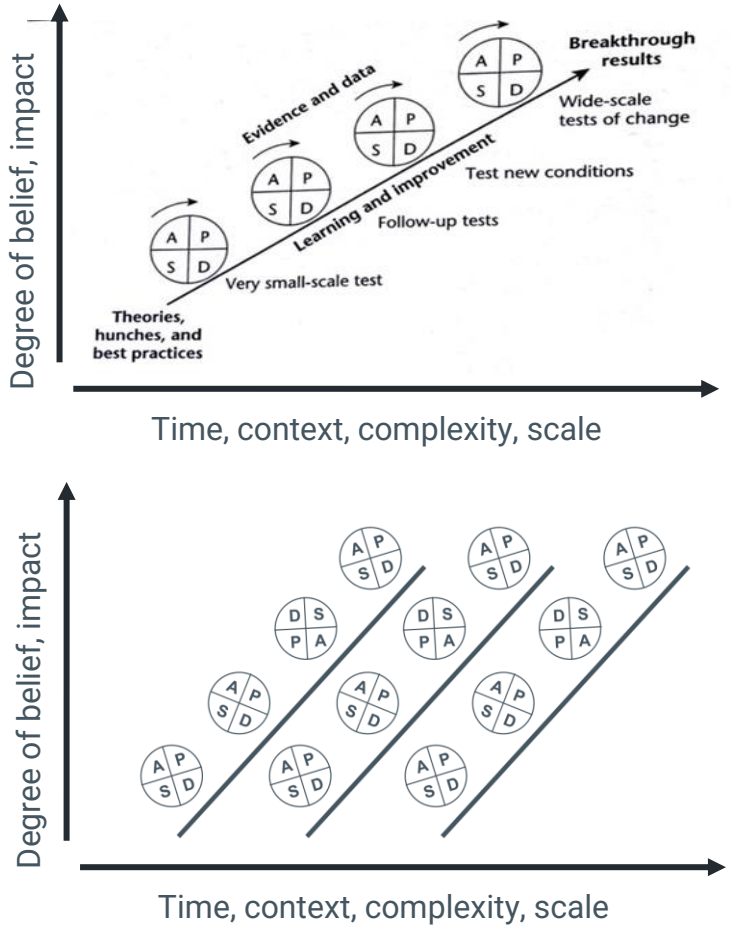
Exponential vs Linear Scale-up Thinking

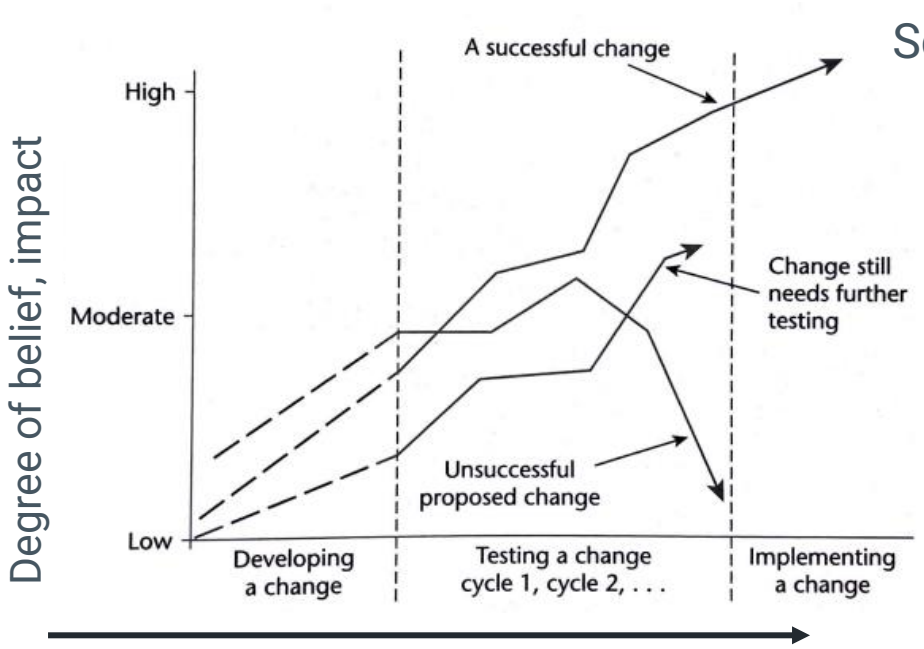


Phased Approach using Exponential Thinking



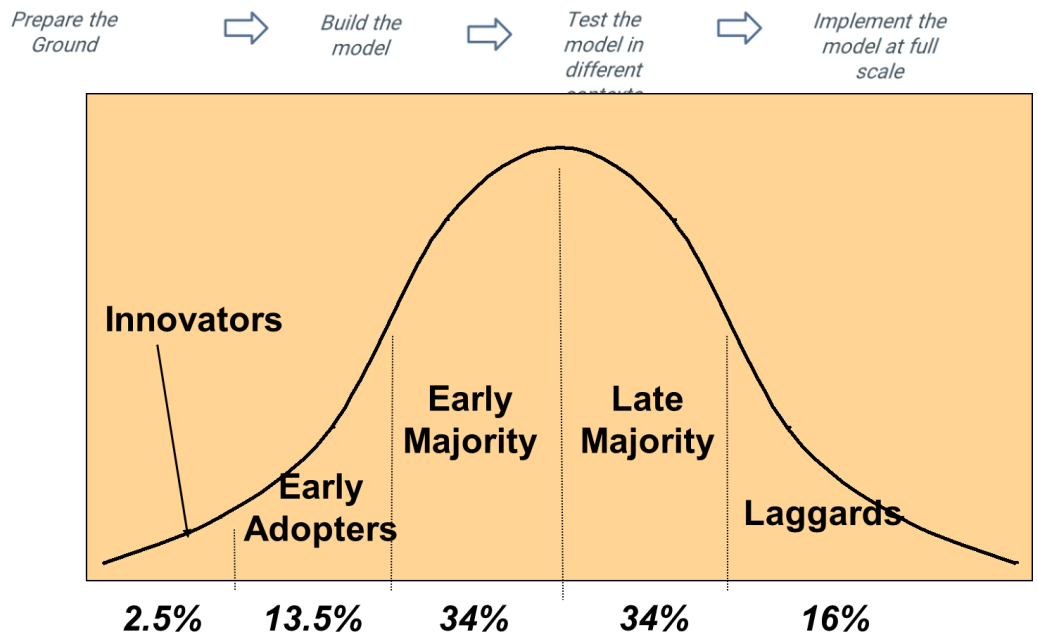
Core Concept #2: Increasing the degree of belief of ideas





The Improvement Guide p146, 145

Core Concept #3: Building Will



Attributes of your improvement community

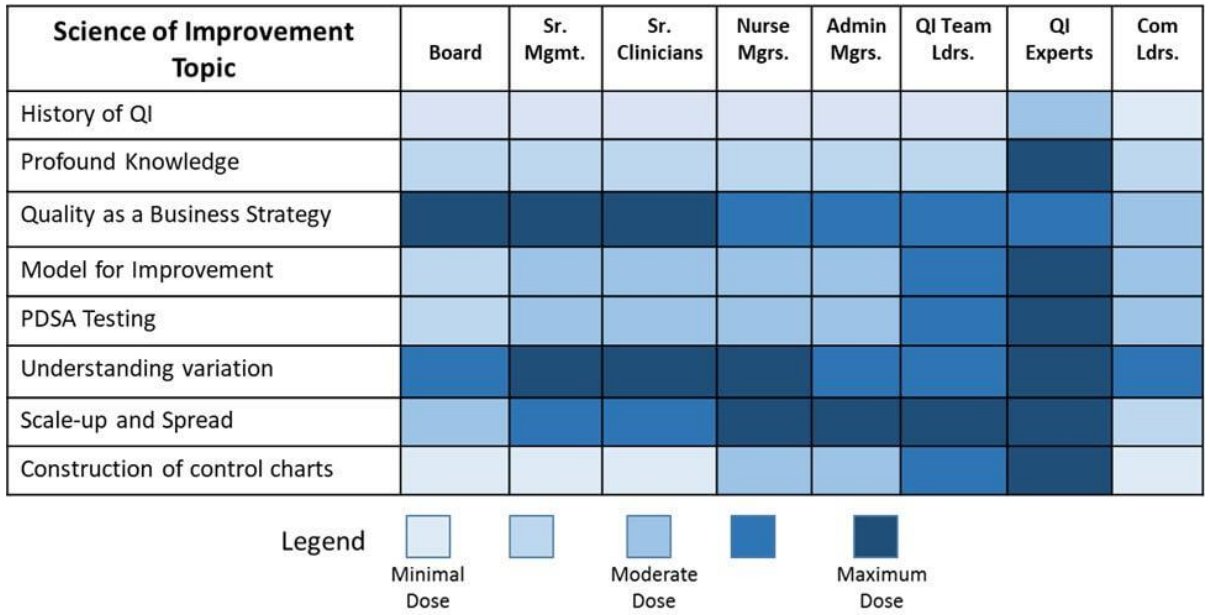
Key Role of Leadership

- Enabling environment for change
- Constancy of purpose
- Constant communication,
- Making most of social networks,
- Safe culture

Attributes of implementation

Everett Rogers. Diffusion of Innovations 2003

Core Concept #4: Building Capability, Infrastructure, Tools

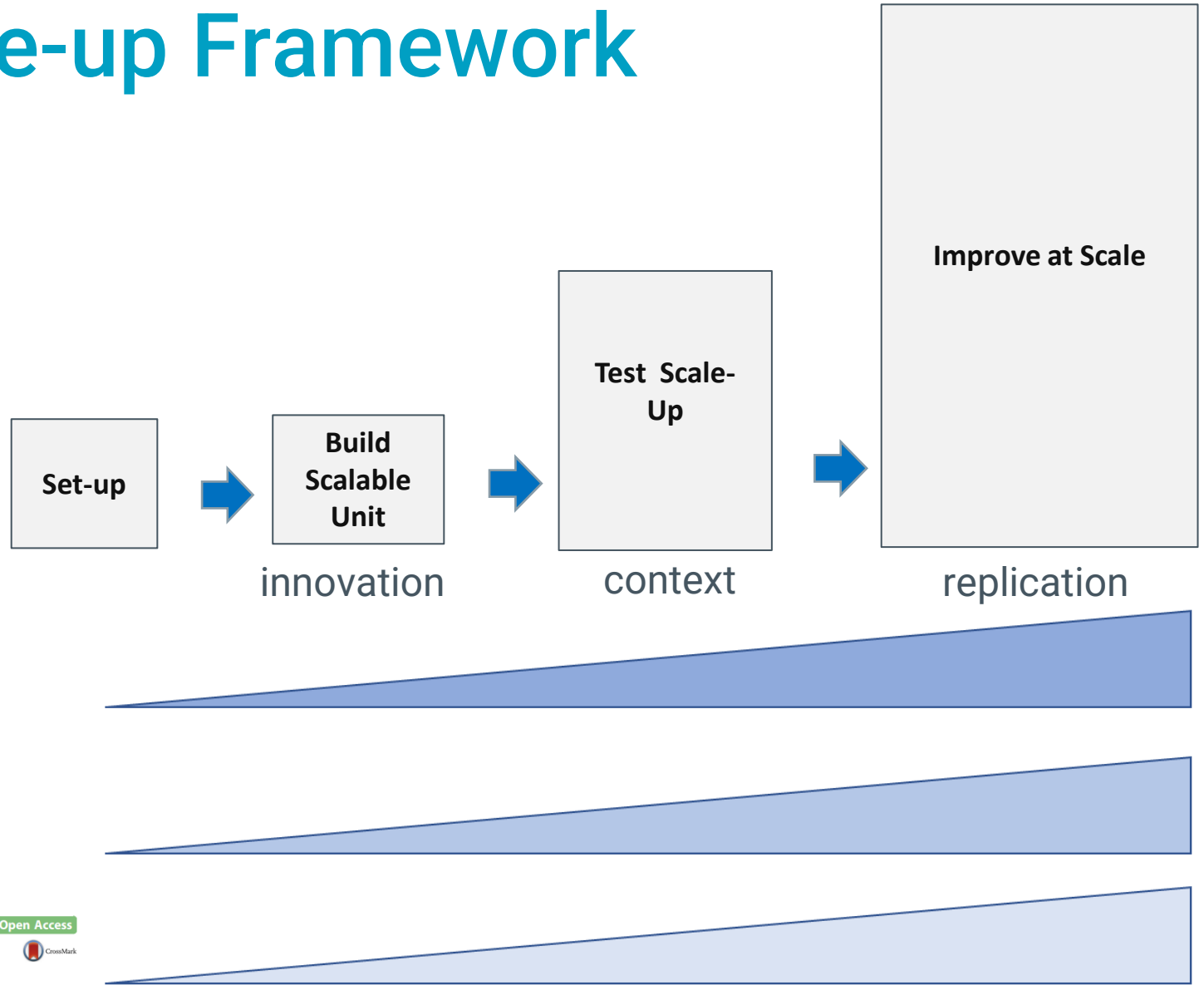


Infrastructure and Tools

- Data systems
- Learning systems
- Change packages
- Clinical bundles
- “how to” implementation guides
- Standard work

https://www.ihi.org/insights/building-improvement-capacity-and-capability-dosing-approach

IHI Scale-up Framework



1. **Phased approach** to scale-up improvement

2. Build **will** for change and spread

3. Develop credible implementation **ideas**

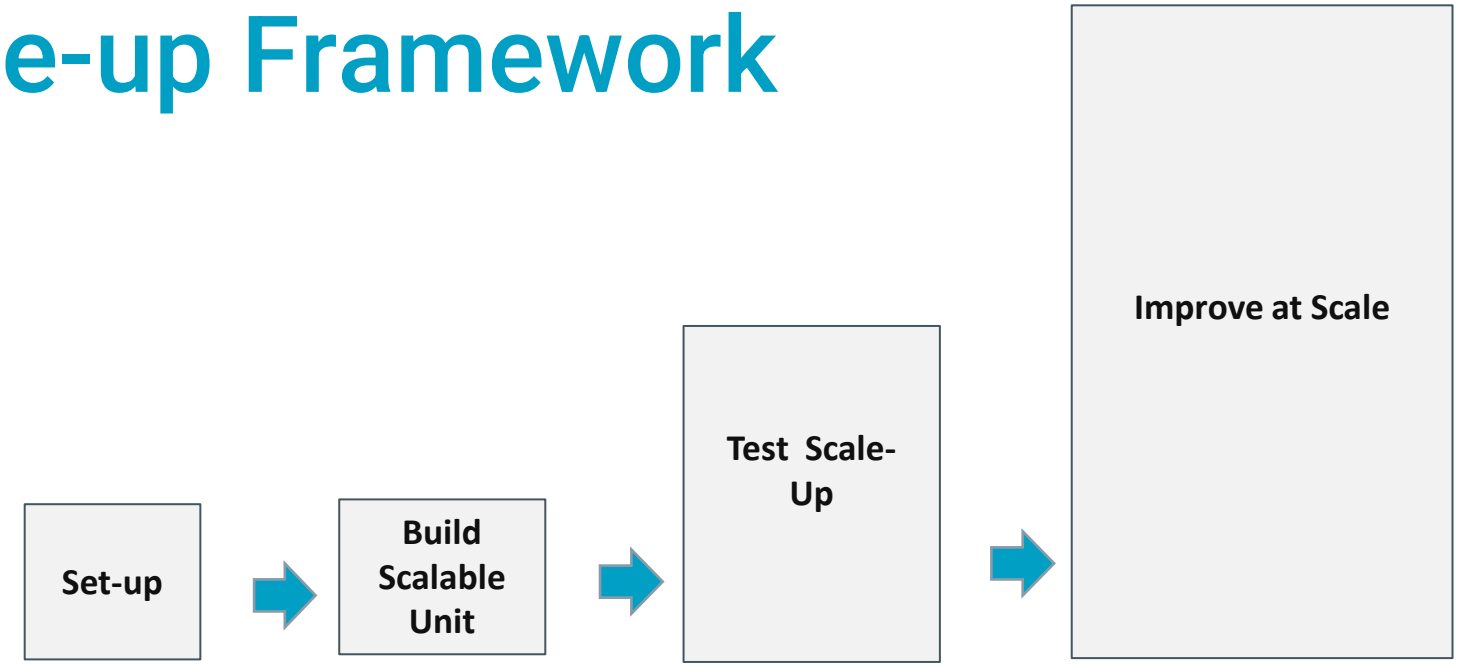
4. Build **QI capability, infrastructure and tools**

METHODOLOGY Open Access

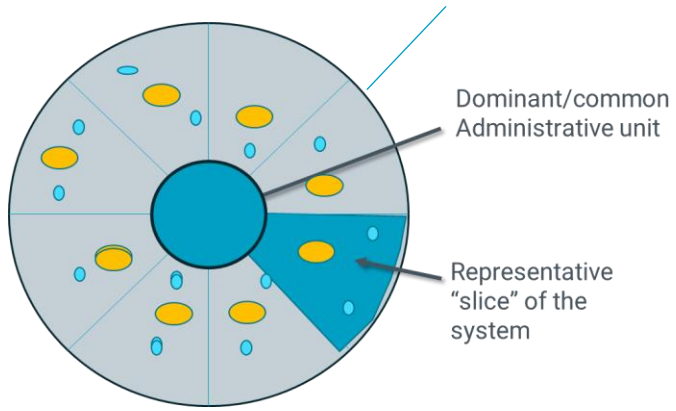
A framework for scaling up health interventions: lessons from large-scale improvement initiatives in Africa

Pierre M. Barker[1,2*], Amy Reid[1] and Marie W. Schall[1]

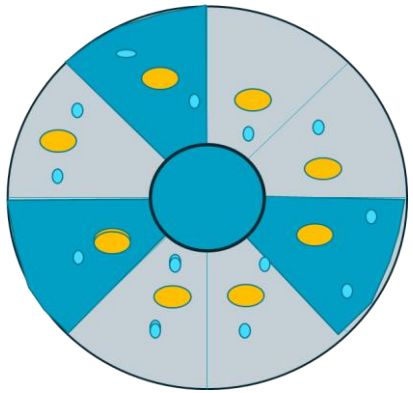
IHI Scale-up Framework



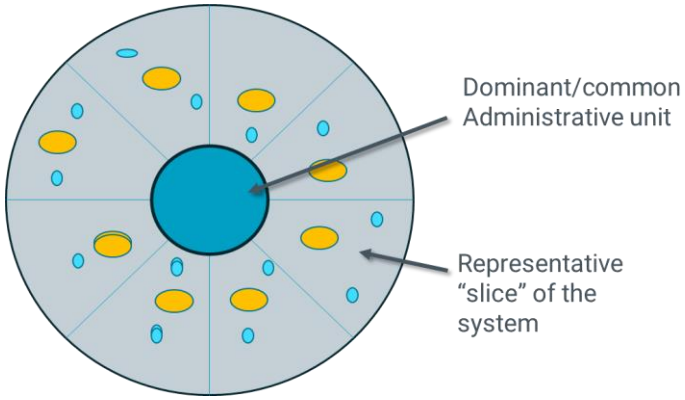
1. **Phased approach** to scale-up improvement



Building the Scalable Unit

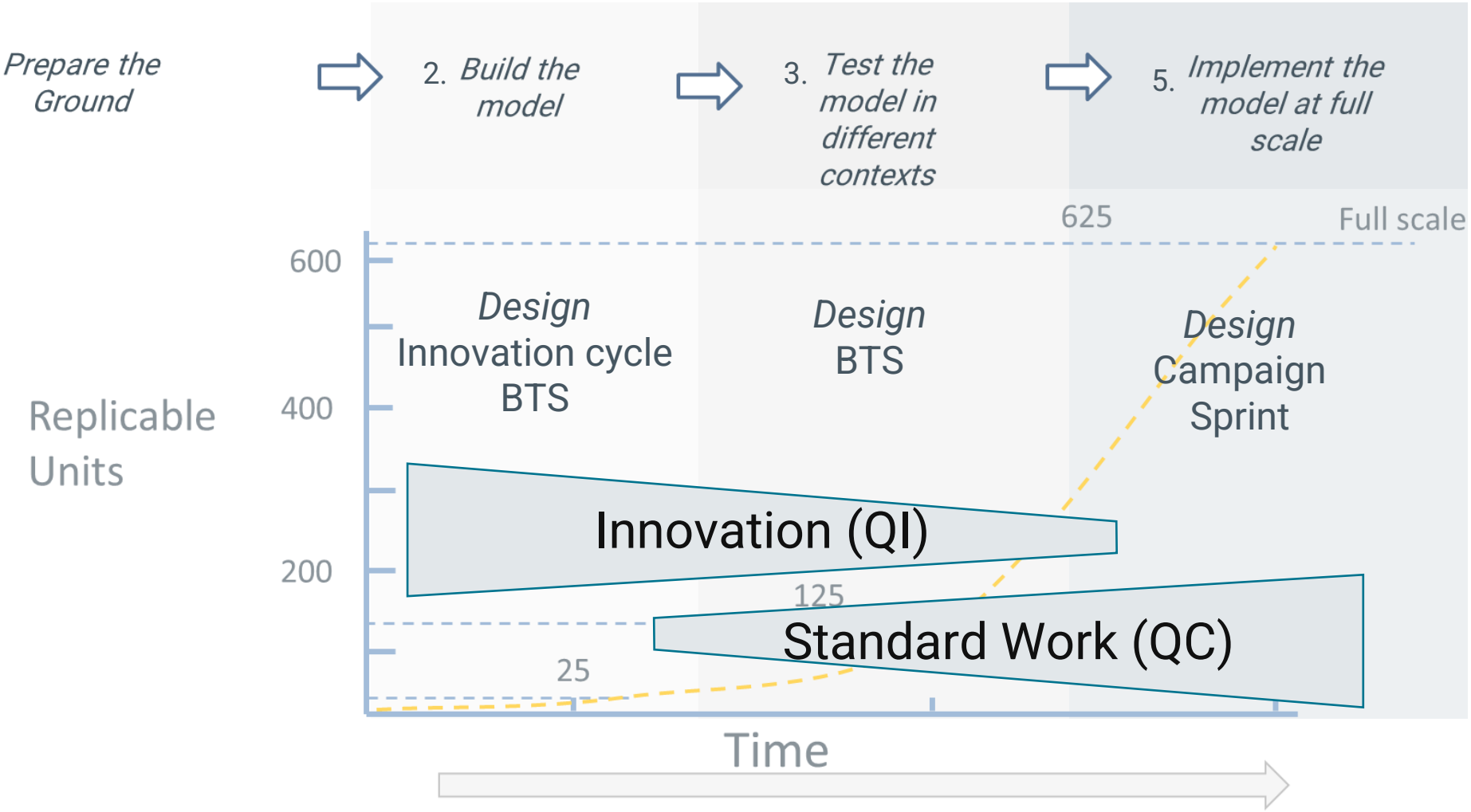


Testing and Adapting the Scalable Unit in Contexts

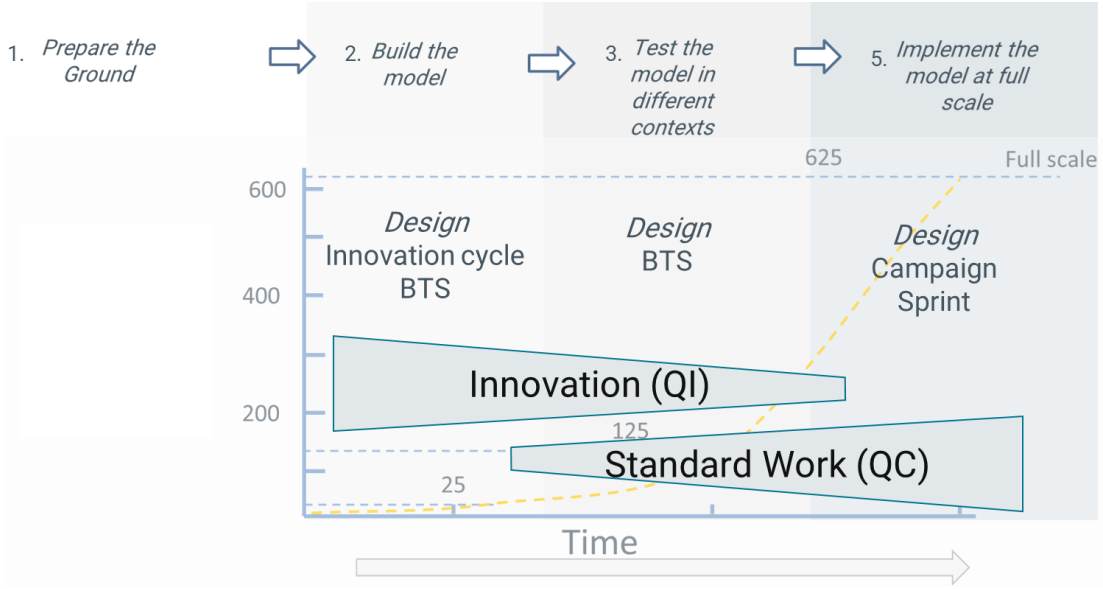


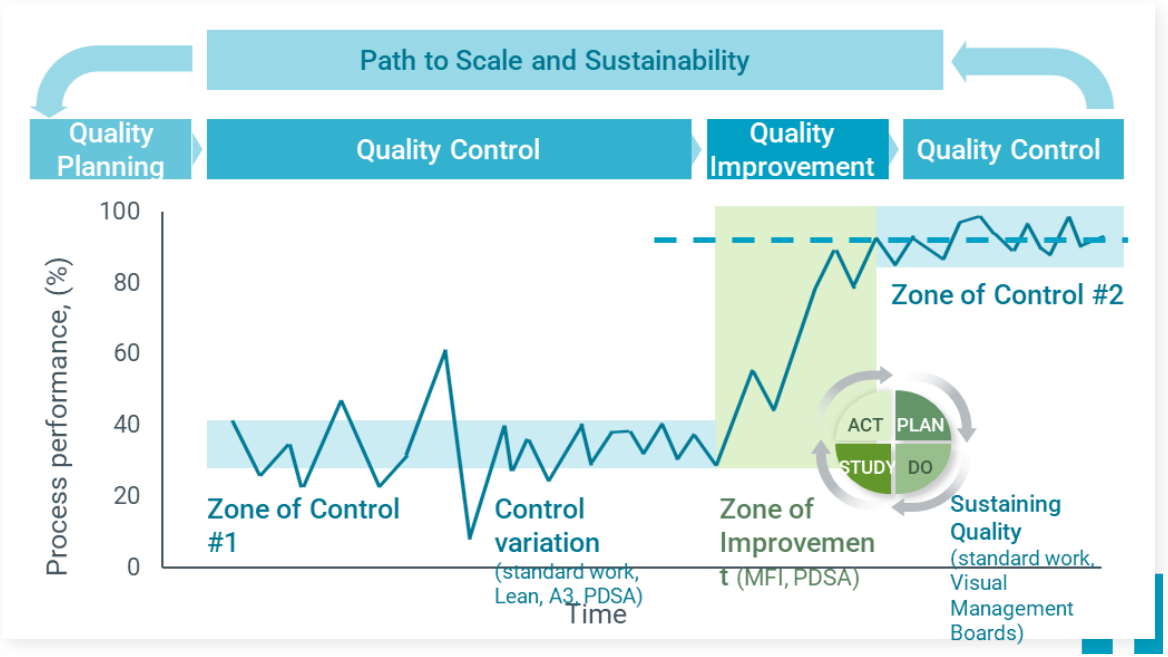
Spreading across the Multiple Units of the System

IHI's Scale-up Model:
Moving from Innovation to Standard Work

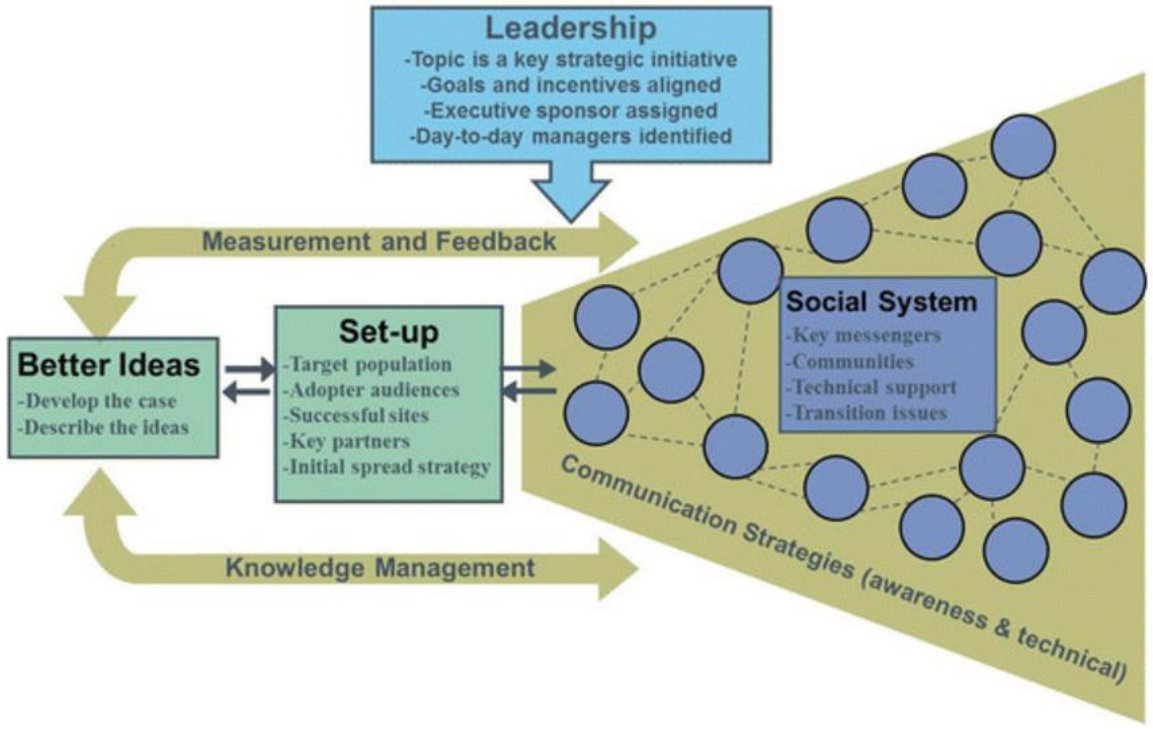


Linking Scale and Spread to Juran's QP, QI and QC thinking

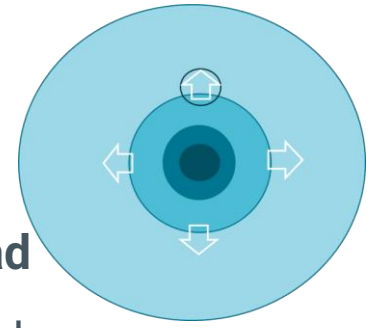




IHI Theory of Spread



https://www.ihi.org/resources/white-papers/framework-spread-local-improvements-system-wide-change#downloads



Key Tasks for Successful Spread

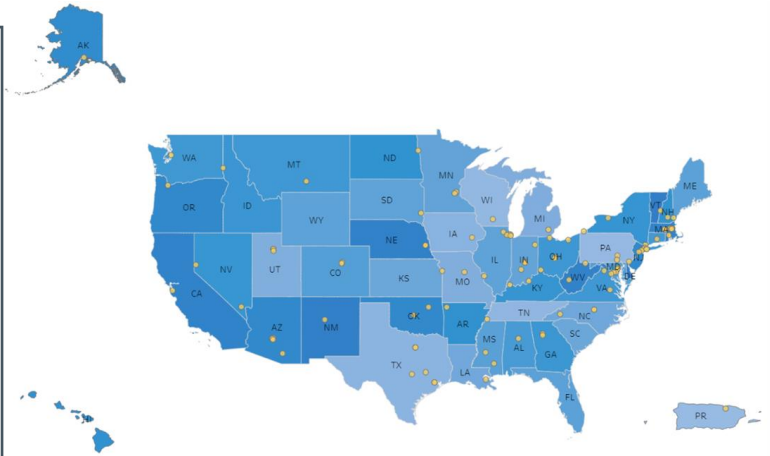
- Do you have “spread ready” ideas, engagement, tools?
- Identify key roles of leadership (alignment, resources, motivation)
- Use the existing structures and social systems where possible to facilitate spread
- Facilitate infrastructure changes if needed to speed the adoption of the improvements
- Transition from improvement to operational mindset

Examples of Spread

100,000 Lives Campaign

- >3000 hospitals signed on over 15 months
- 5 core bundles
- Goal 100,000 lives saved from hospital harm

IHI-ECHO Nursing Home intervention during COVID



- 9,017 out of approximately 15,000 eligible nursing homes reached within 6 months
- All 50 states, DC, and Puerto Rico

- >3000 facilities recognized as “Age Friendly” over 6 years
- Each facility commits to using “4Ms” to care for aging population

South Africa: Scale up and Spread of Effective HIV care for Mothers and Newborns

- Population 55 million
- Health systems: Government 85%, For profit (15%)

National Priority/Concerns

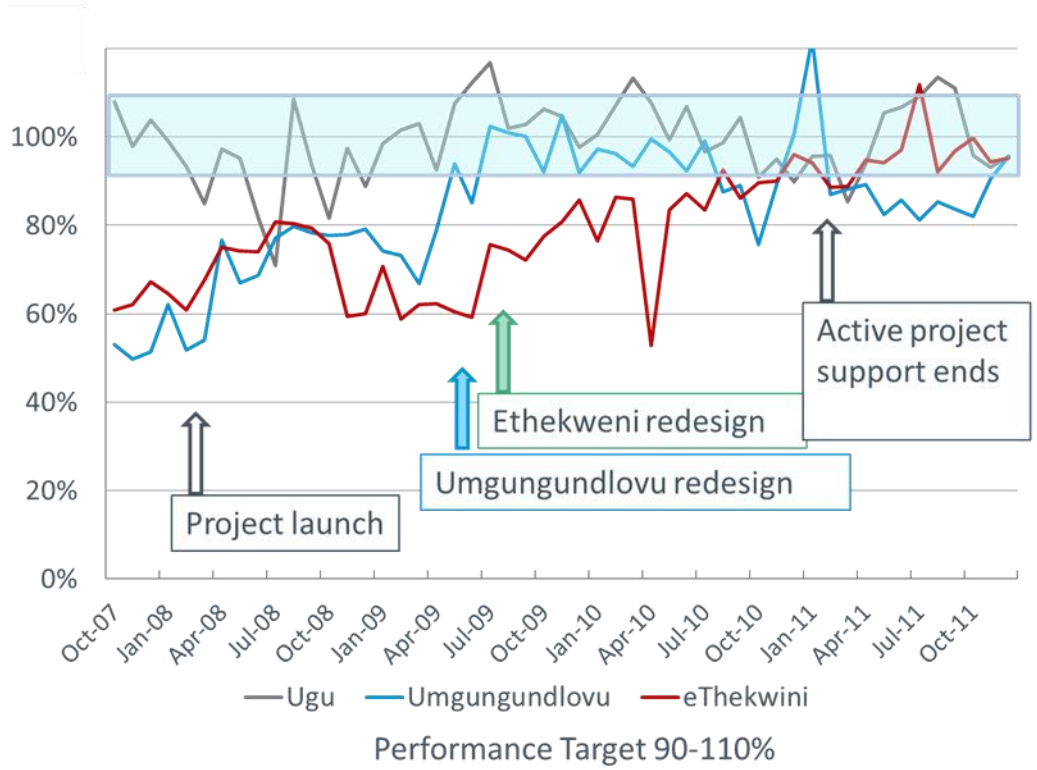
- Largest HIV epidemic in the world (15% of population infected
- U5 mortality rates increased 1995 – 2005 (due to HIV)

Intervention

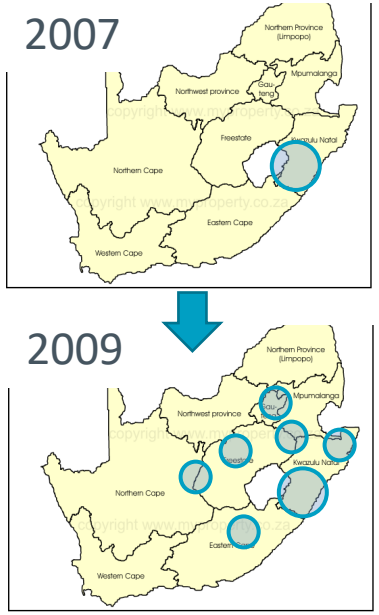
- QI program delivered through government health program.

National Scale-up and Spread of Prevention of Mother to Child Transmission (PMTCT) program

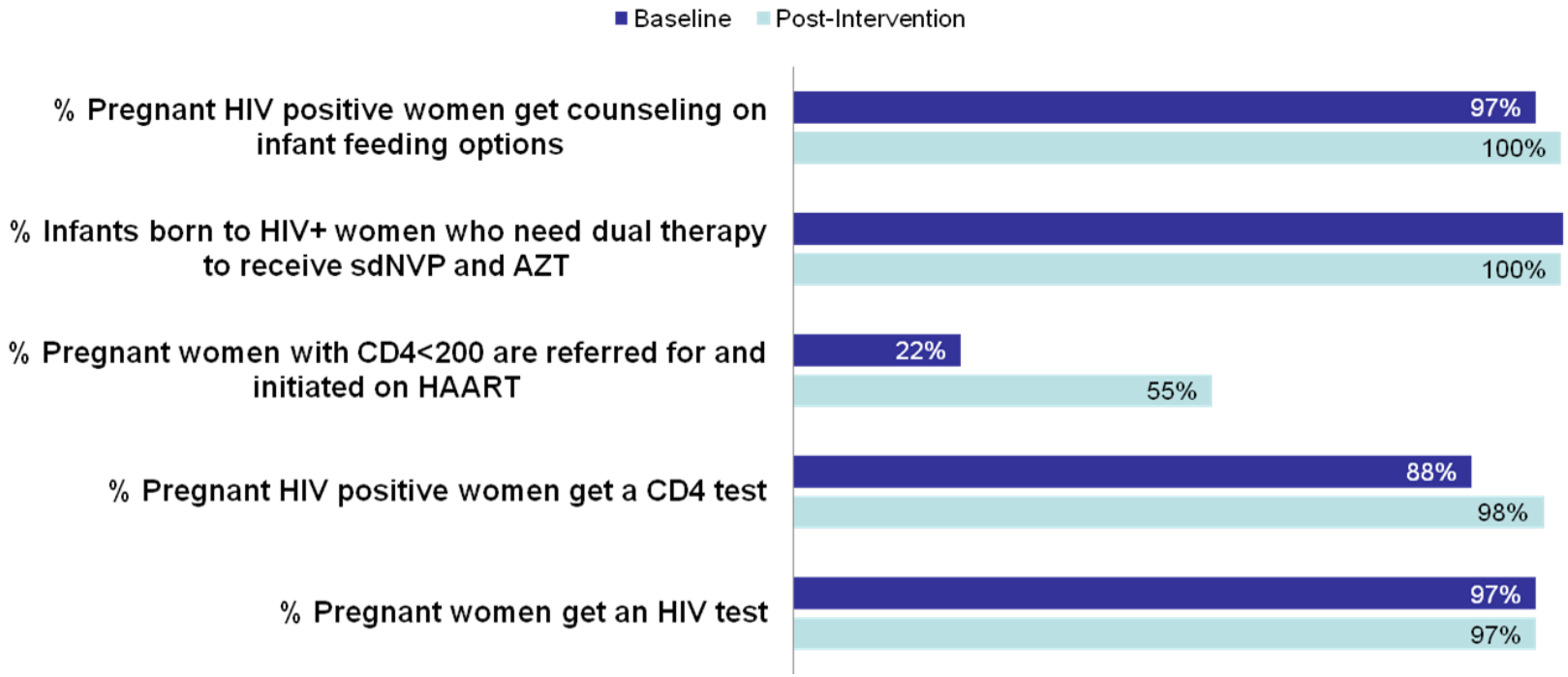
Step 1: Demonstration and learning in the administrative unit (District) that would be scaled



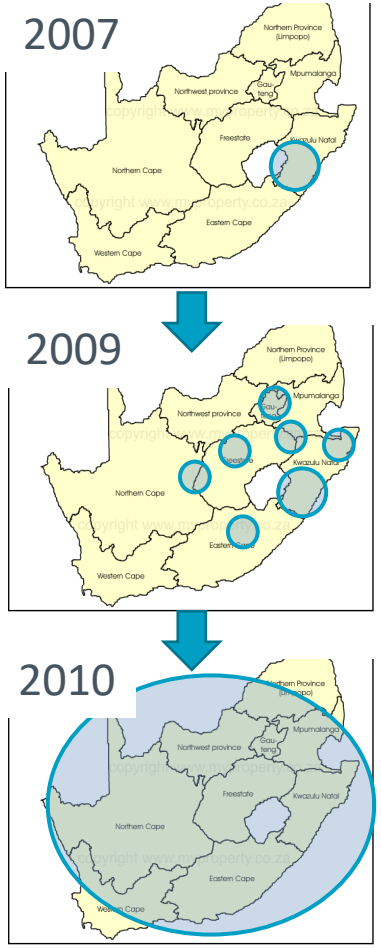
National Scale-up and Spread of Prevention of Mother to Child Transmission (PMTCT) program



Test of Scale-up: 5 provinces, 7 Districts, 161 facilities

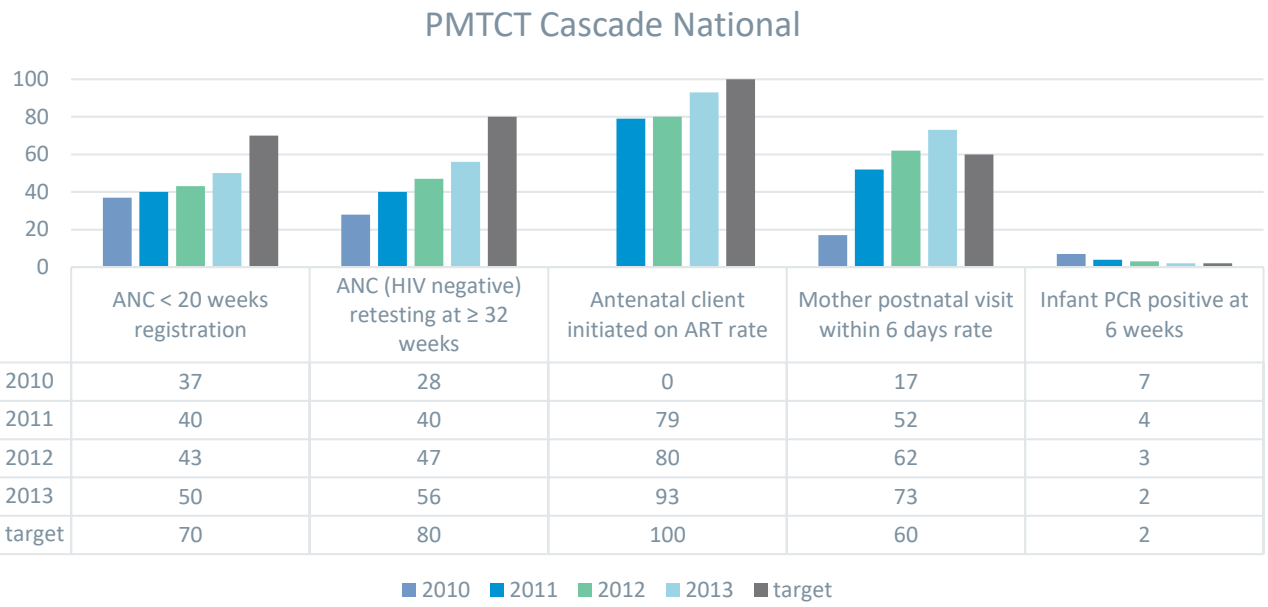


National Scale-up and Spread of Prevention of Mother to Child Transmission (PMTCT) program



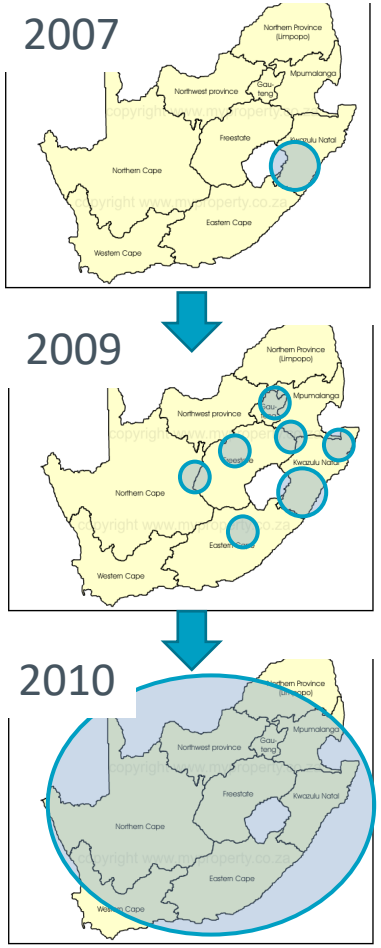
Spread Phase: Going to Full Scale: 12 provinces, 52 Districts, 4,200 health facilities

Replication of Standard work



	ANC < 20 weeks registration	ANC (HIV negative) retesting at ≥ 32 weeks	Antenatal client initiated on ART rate	Mother postnatal visit within 6 days rate	Infant PCR positive at 6 weeks
2010	37	28	0	17	7
2011	40	40	79	52	4
2012	43	47	80	62	3
2013	50	56	93	73	2
target	70	80	100	60	2

National Scale-up of Prevention of Mother to Child transmission program



QI interventions

National Action Framework (20) — Policy

National Scale(17) — QC

Test of scale (12,17) — QI

QI demonstration projects (14,15,16,27) — QI

1998
2002
2006
2010
2014

MSF demo projects

Pilot PMTCT (12 Districts)

National PMTCT initiated

Accelerated Plan

National Strategic Plan

AZT/NVP protocol change

Nurse initiated ART

National PMTCT framework

"Option B" of PMTCT introduced

Non- QI interventions

Institute for Healthcare Improvement

Scale Up and Spread : Case Study Discussion with Amar Shah ELFT

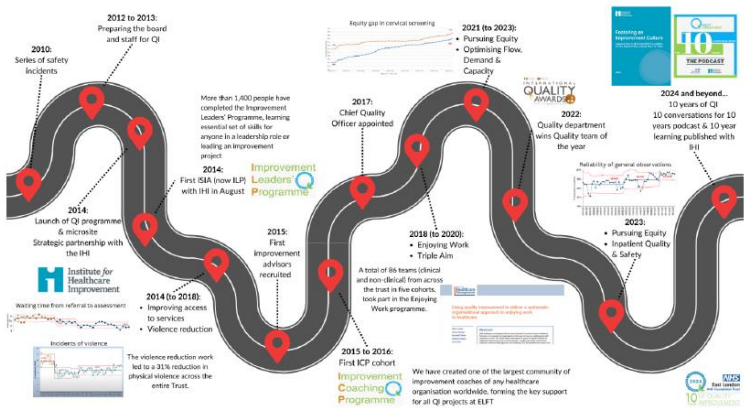
Nana Twum-Danso
Amar Shah

10 April 2024

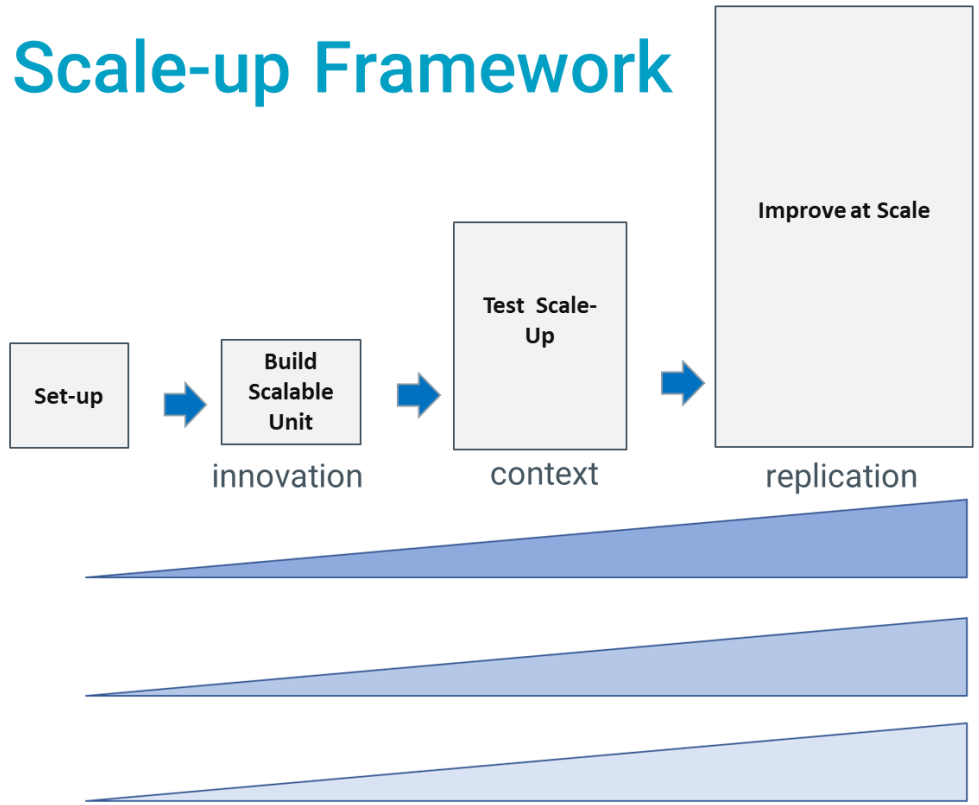
International Forum on Quality & Safety in Health Care | London

Session M6

Figure 1. 10 Years of Quality Improvement at East London NHS Foundation Trust



IHI Scale-up Framework



1. Phased approach to scale-up improvement

2. Build **will** for change and spread

3. Develop credible implementation **ideas**

4. Build **QI capability, infrastructure and tools**

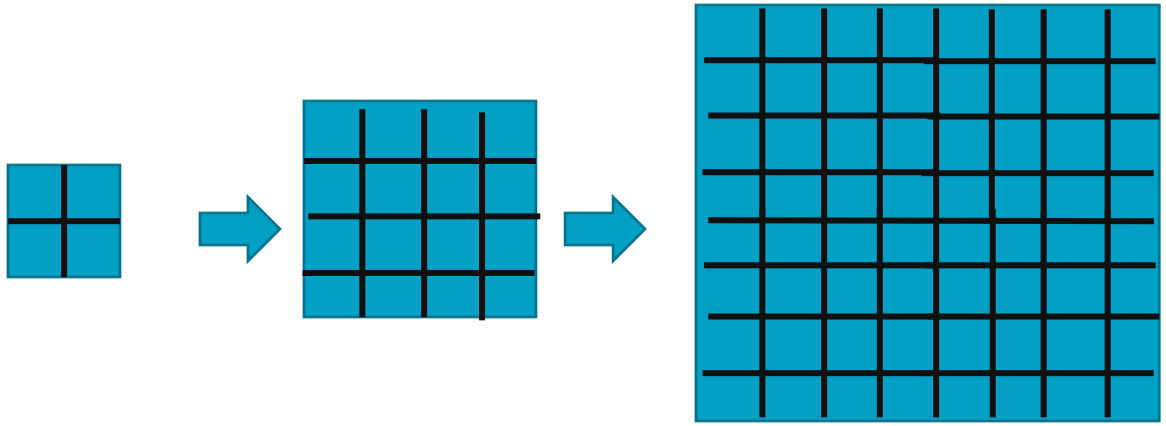
Institute for Healthcare Improvement

Your Turn!

Hands-on building of a scale-up or spread programme

Designing your Scale or Spread initiative

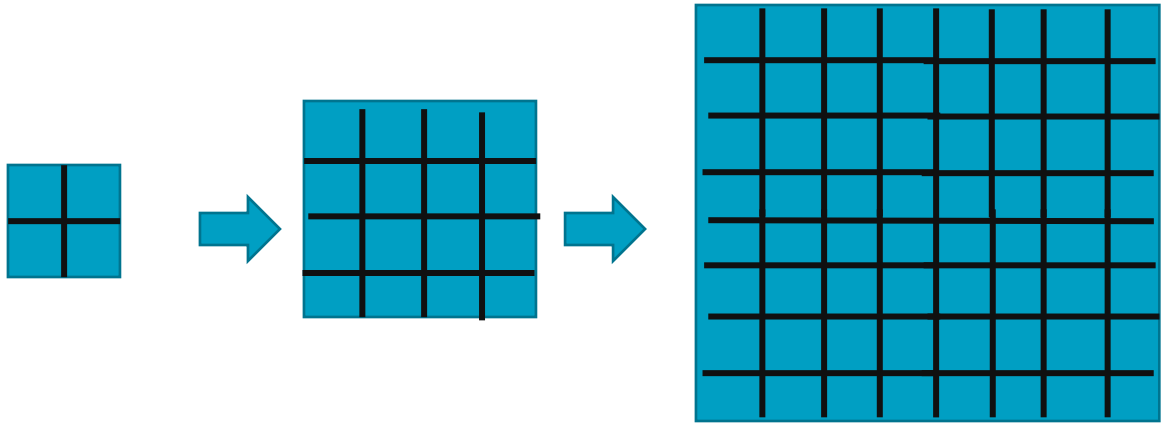
Step 1: Defining scale in terms of Aim, Scale, Unit of Scale, timeframe



- What is the outcome you are seeking?
- How ambitious? (size of change, scale of change)
- What does full scale mean (in terms of population reach)?

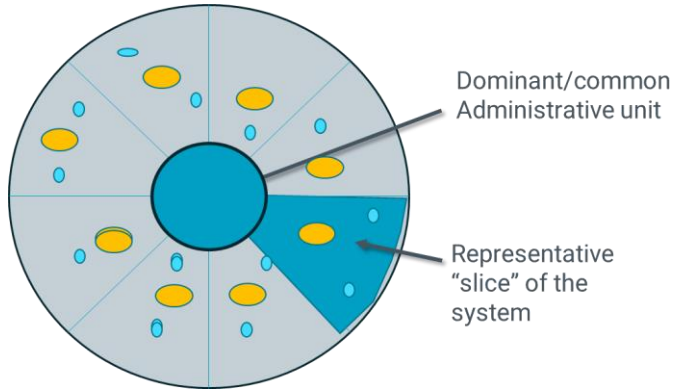
The Scalable Unit

Step 2: Define your unit of Scale

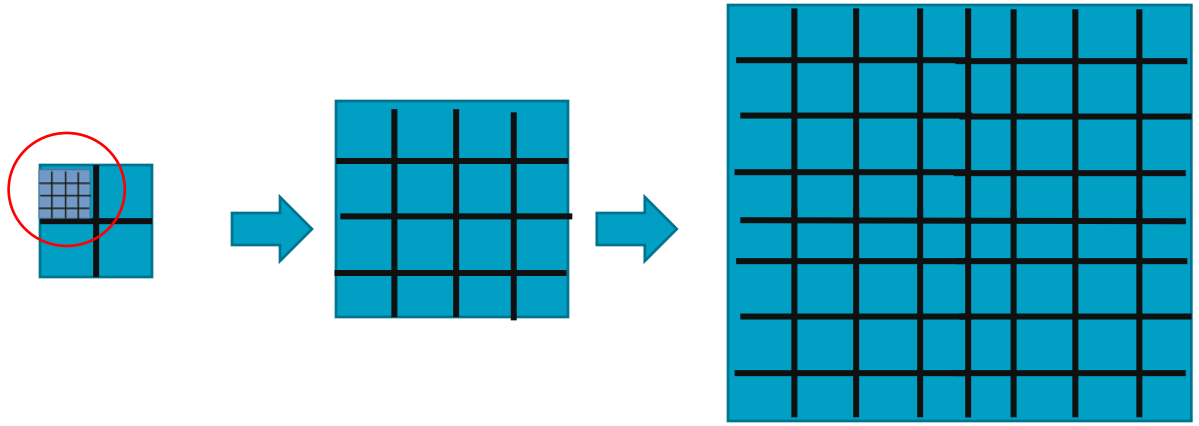


The Scalable Unit: “the smallest administrative unit that will take you to full scale”

- A ward
- A hospital
- A county
- A hospital, primary care units, communities
- Primary care unit plus its community



The Scalable Unit



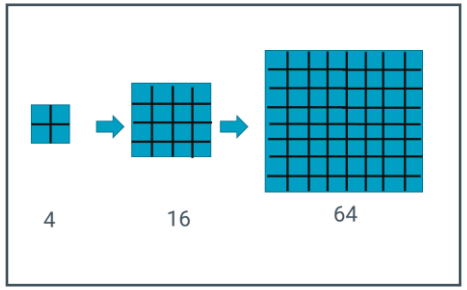
1. Exponential phased approach to get to full scale

May be a complex scalable unit

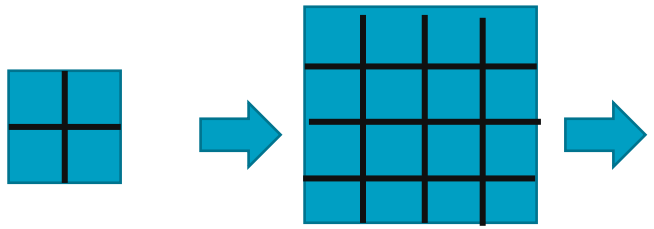
- Hospital with many wards
- Referral unit plus primary care units and communities

Designing your Scale or Spread initiative

Step 3: Where are you on your journey to scale?

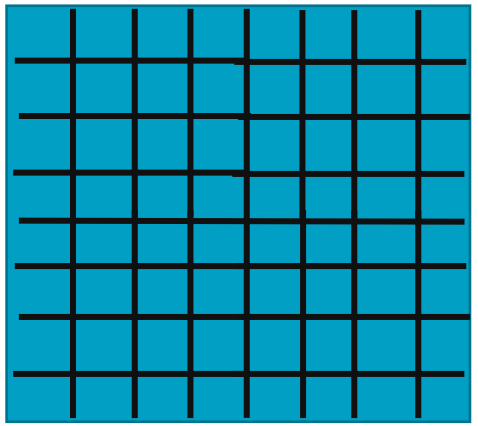


Set up – Planning and preparing for scale up project



Demonstration – building the scalable model

Testing Scale – Testing the scalable model in broader contexts



Spread – Taking a well-tested model to full scale

Designing your Scale or Spread initiative

Step 4: Are you ready for scale up or spread?

#1 Will

Alignment with Scale-Up Model	Question/Prompt	Strongly Disagree to Strongly Agree (1-5)	Alignment with Will, Ideas, Execution Model
Adoption Mechanism	Compared to other programs and initiatives, the community that we are planning to scale-up into (adopter community) regards the improvement initiative as a top priority.		Will
	The adopter community shares a sense of urgency in closing the gap in performance or outcomes around our main aim.		
	The adopter community/organization recognizes the benefits of participating in this improvement initiative.		
	The adopter community believes the approach we are advocating will reach our goals faster relative to other initatives.		
	The adopter community understands that the approach we are advocating is simple to understand, easy to try out and easy to measure.		
	The improvement approach we are advocating aligns with the culture and values of our community/organization.		
	Leaders and champions of the adopter community have been identified and have shown a willingness to advocate for the improvement intiative in their community.		
	TOTAL Adoption Mechanism Score		

Designing your Scale or Spread initiative

Step 3: Are you ready for scale up or spread?

#2 Ideas

Question/Prompt	Strongly Disagree to Strongly Agree (1-5)	Alignment with Will, Ideas, Execution Model
We have a set of best practices or tested change ideas that are ready test or spread to the sites of the next phase of work.		Ideas
We have a compelling theory of change.		
We can show the evidence base for our theory from previous studies and/or we have results that show how the theory has been applied to our own improvement work.		
If we are testing scale or going to full scale, improvement has been sustained in the sites where we are currently testing or implementing changes.		
We have identified test/implementation sites most likely to adopt a new approach for the next phase of the work.		
TOTAL Next Phase of Scale-up Score		

Designing your Scale or Spread initiative

Step 3: Are you ready for scale up or spread?

#3 Implementation

Alignment with Scale-Up Model	Question/Prompt	Strongly Disagree to Strongly Agree (1-5)	Alignment with Will, Ideas, Execution Model
Adoption Mechanism	Compared to other programs and initiatives, the community that we are planning to scale-up into (adopter community) regards the improvement initiative as a top priority.		Will
	The adopter community shares a sense of urgency in closing the gap in performance or outcomes around our main aim.		
	The adopter community/organization recognizes the benefits of participating in this improvement initiative.		
	The adopter community believes the approach we are advocating will reach our goals faster relative to other initatives.		
	The adopter community understands that the approach we are advocating is simple to understand, easy to try out and easy to measure.		
	The improvement approach we are advocating aligns with the culture and values of our community/organization.		
	Leaders and champions of the adopter community have been identified and have shown a willingness to advocate for the improvement intiative in their community.		
	TOTAL Adoption Mechanism Score		

Wrap up and Reflections

- What resonated the most?
- What practical idea can you apply to your own scale up/spread project?
- What is still unclear to you?
- Hands up if you can tell the difference between scale up and spread!!