



ED PIP: Getting Started



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Introduction to Lean

Basics of Lean operations

Beliefs of Lean

- Objective is to deliver what the patient needs and to eliminate any step that doesn't improve
- Waste leads to poor service, quality, and financial outcomes
- Waste must be eliminated

What it is

- A framework to achieve continual gains in productivity while satisfying patients' expectations for service quality

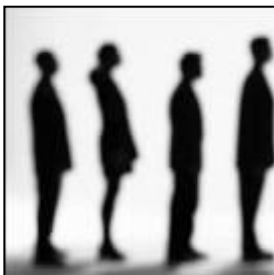
What it is not

- Making people work harder or do the same with fewer people
- A short-term project
- Limited to manufacturing plants
- Mean!!

How do you do it?

- First, identify activities which add value vs. those which are waste
- Apply Lean tools to reduce variability and redundancy in order to eliminate waste and improve service, quality, and cost

Waste affects more than just the patient



Bad patient experience

- Long waiting time for essential services
- Increased family stress
- Less time for care and education



Decreased staff morale

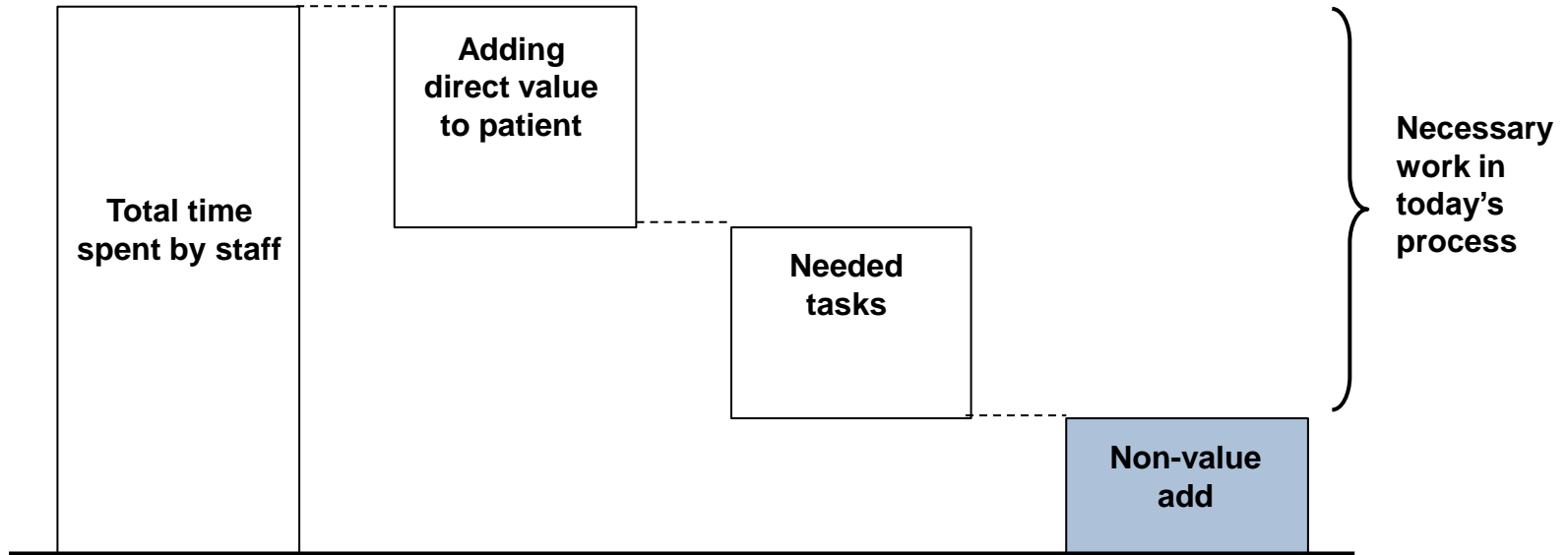
- Unpredictable/uncontrollable work schedule
- Redundant paperwork
- No time for education, psychosocial care



Operational limits (e.g. “Congestive Hospital Failure”) from lack of beds and/or staff

- Rerouting of patients to other facilities when there is a lack of available beds
- Accelerating costs from “waste” in use of physical materials

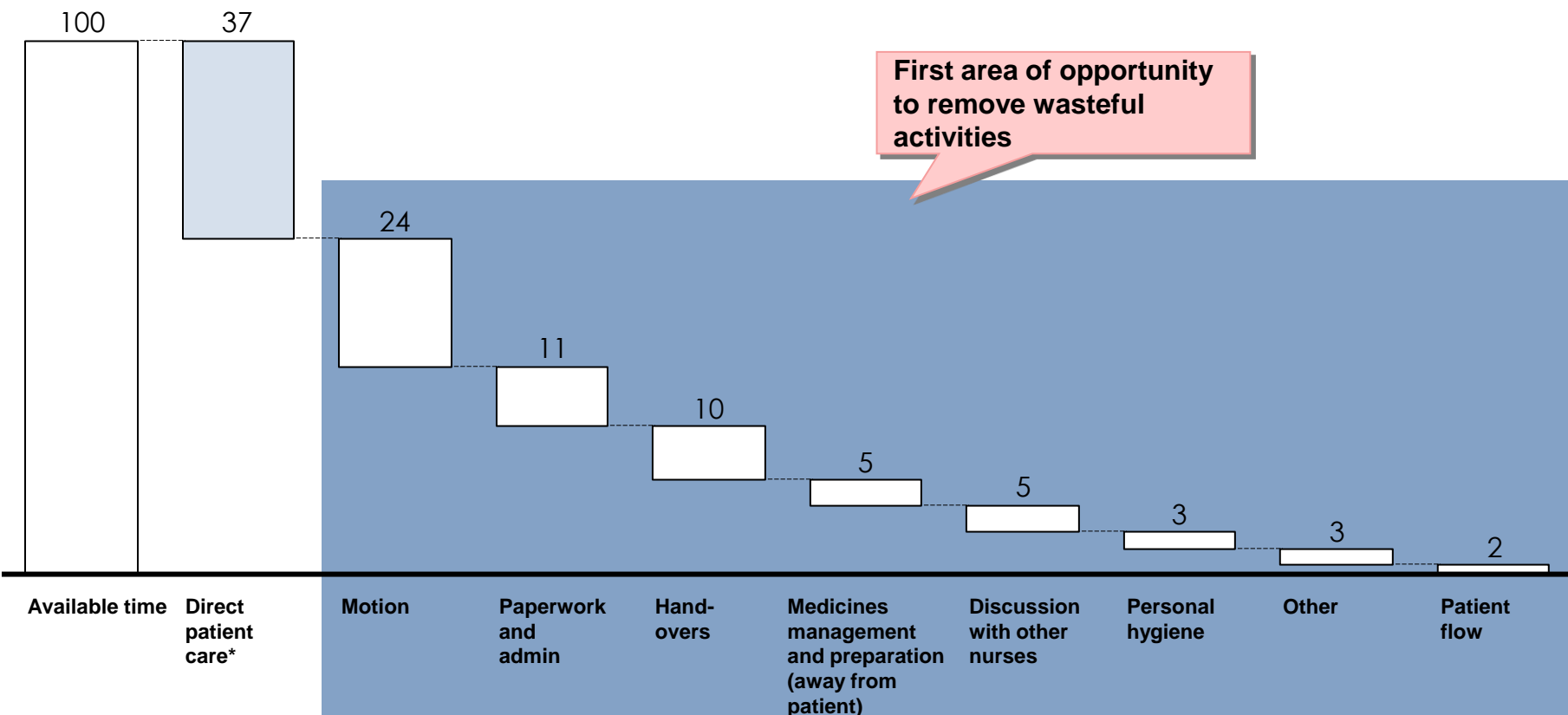
Lean thinking takes the patients' perspective to assess which activities directly enhance the patients' experience



Getting rid of “non-value adding” time makes an organization “Lean”

Lean hospital example: frontline nurses can spend as little as 37% of their time on direct patient care activities

Percent of time spent



First area of opportunity to remove wasteful activities

* Approximately equivalent to time spend within patients bedside area

Eight major inefficiencies in hospital operations... (1 of 2)

Wasted motion

- Pharmacy tech spends 20 minutes looking in multiple places for a particular medication



Rework

- X-ray tech has to re-enter 10-20% of requests because of wrong-side indication



Over-production

- Admissions paperwork having 7 redundant pages out in the 16 page packet



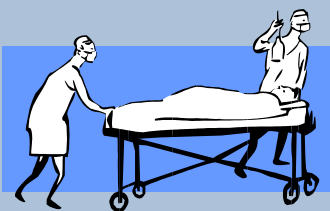
Excess inventory

- Medicines held beyond the shelf-life because of excess ordering



Wasted transportation

- 25% of patients admitted to 4M are transferred to a unit with a similar level of care within 36 hours of admission



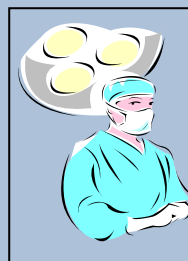
Excess processing

- Nurse records respiratory rate on 4 different forms in the chart



Waiting time

- OR team waits 20 minutes for a case to begin, and is not free to do other tasks



Wasted intellect

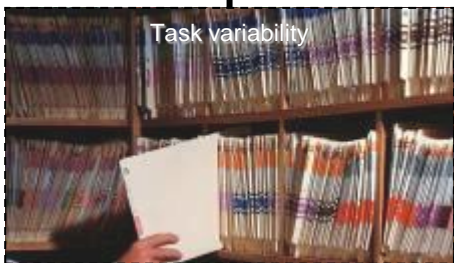
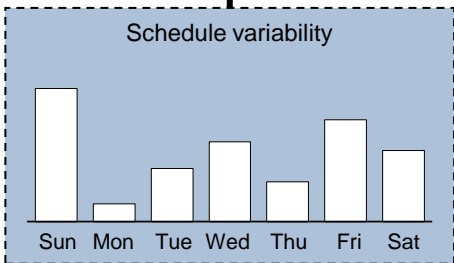
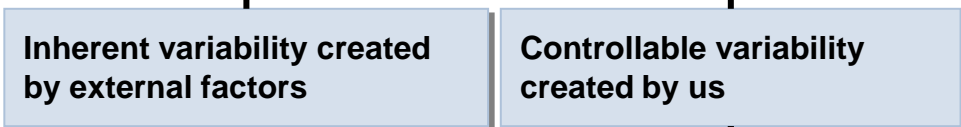
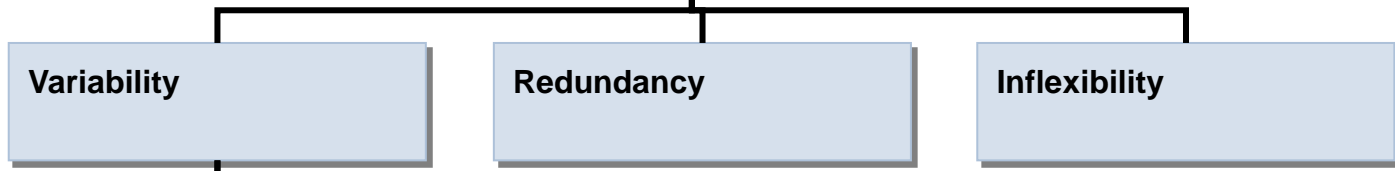
- Numerous ideas are "lost" only to be rediscovered later



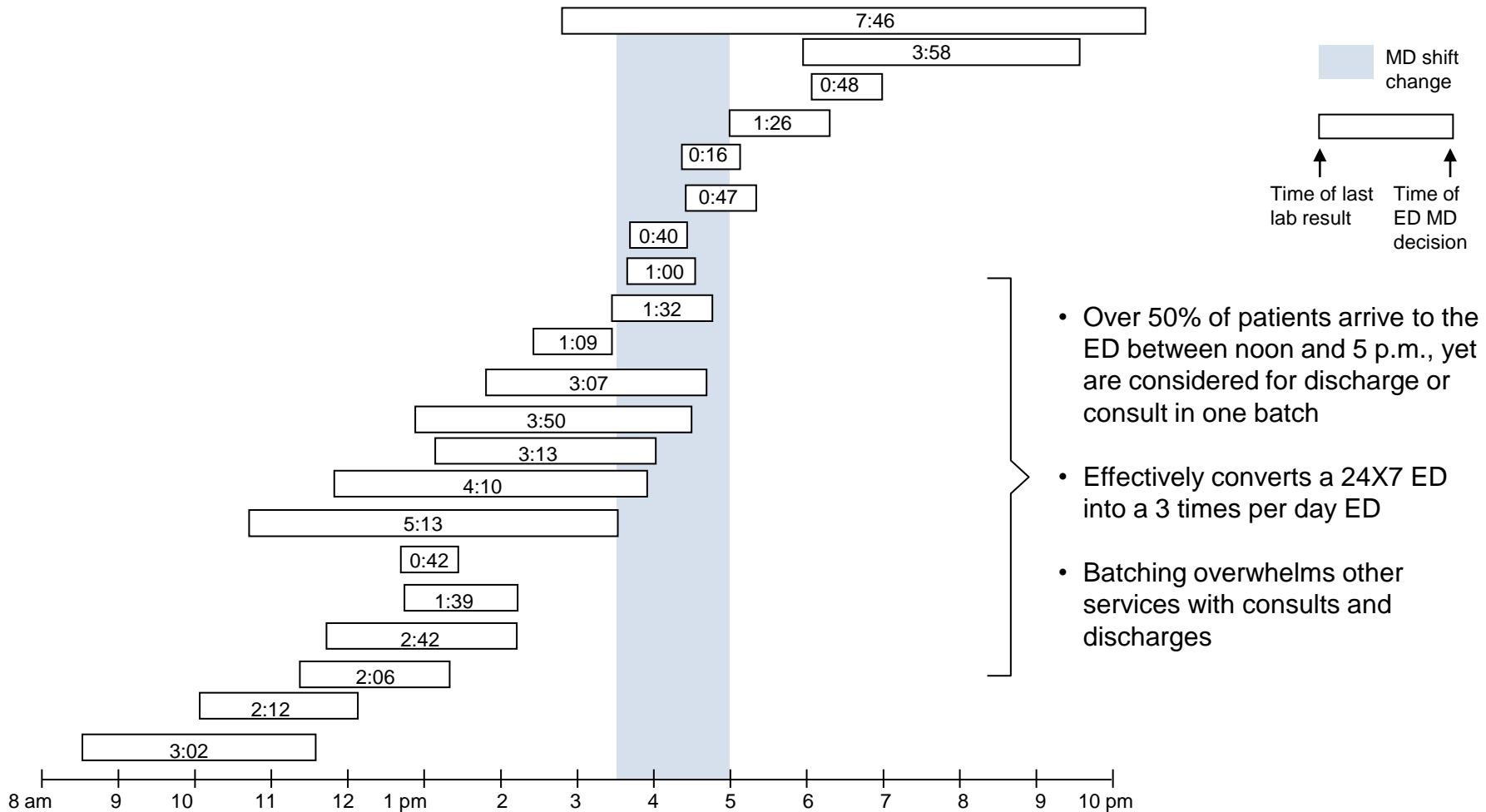
...which are driven by three root causes (2 of 2)



Wasted motion • Pharmacy tech spends 20 minutes looking in multiple places for a particular med 	Rework • X-ray tech has to reenter 10-20% of requests because of wrong side indication 	Overproduction • Admissions paperwork having 7 redundant pages put in the 18 page packet 	Excess inventory • Medicines held over the shelf-life because of excess ordering
Wasted transportation • 25% of patients admitted to AM are transferred to a unit with a similar level of care within 36 hours of admission 	Excess processing • Nurse records respiratory rate on 4 different forms in the chart 	Waiting time • OR team waits 20 minutes for a case to begin, and is not free to do other tasks 	Wasted intellect • Numerous ideas are "lost" only to be rediscovered later



Variability: Self-induced schedule variability in the conversion of ED patients delays patient care and disrupts other services

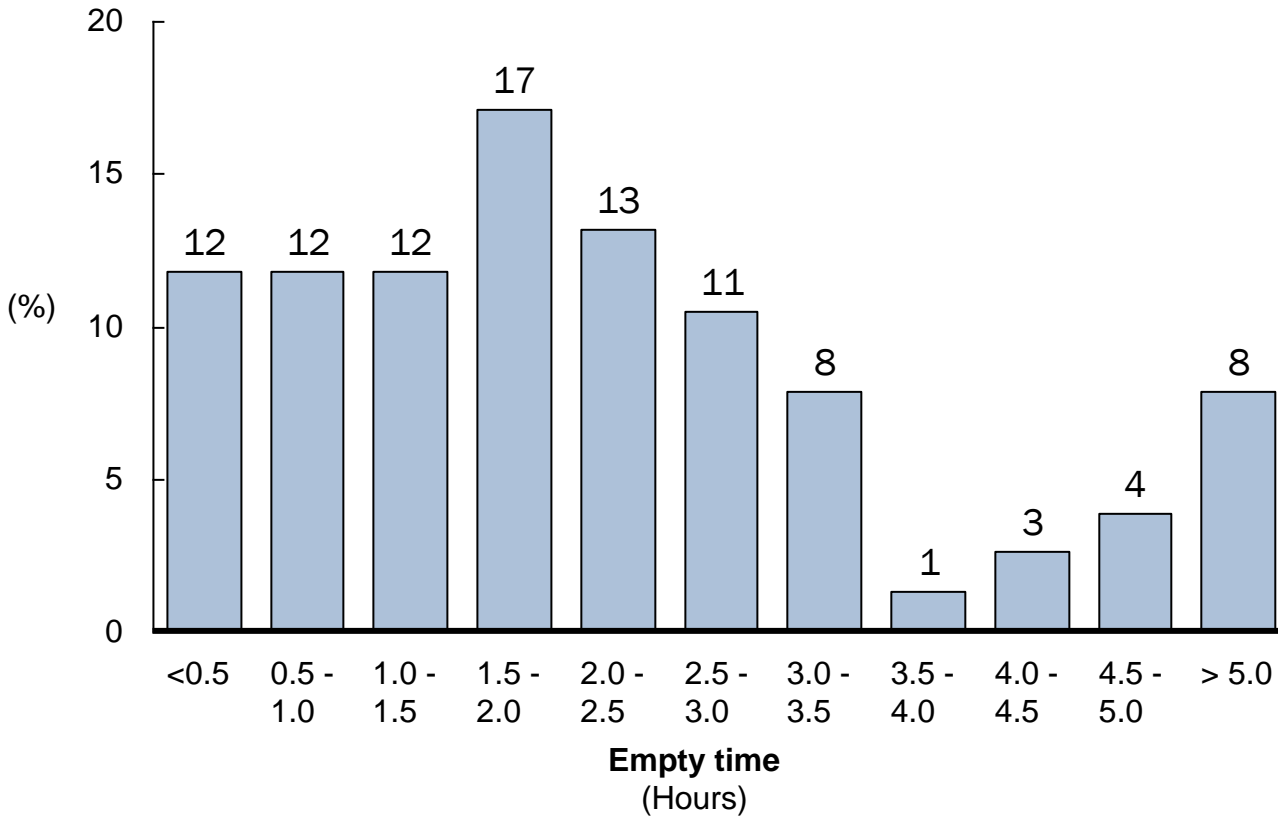


- Over 50% of patients arrive to the ED between noon and 5 p.m., yet are considered for discharge or consult in one batch
- Effectively converts a 24X7 ED into a 3 times per day ED
- Batching overwhelms other services with consults and discharges

Variability: Current transfer process results in lost bed time and longer ED wait times for admitted patients

Bed empty time on General Internal Medicine

Percent of beds by empty time



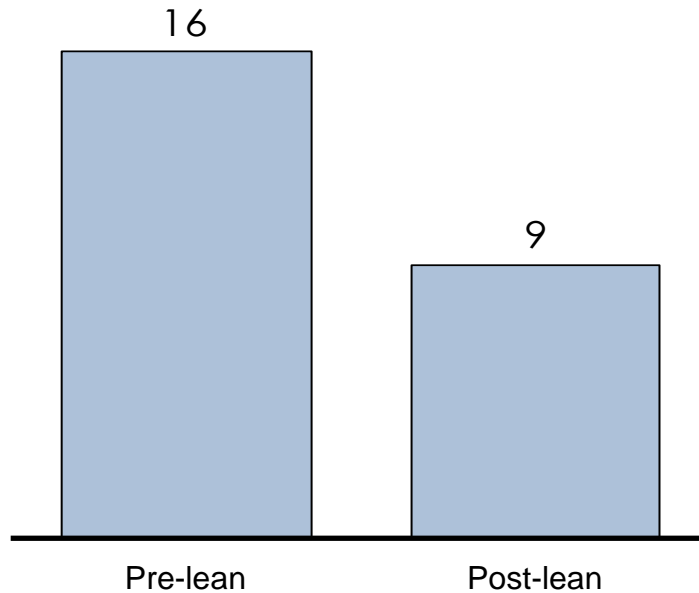
- **Bed empty time is composed of:**
 - Bed empty to bed cLeaned
 - Bed cLeaned to bed filled
- **Biggest impact will come from implementing prompts** to identify/move patients to empty beds as they are cLeaned

* Empty time is defined as the time a patient was discharged from the bed until the time the next patient left the ED for that same bed

** Sunday is longest with mid-week days (e.g., Wednesday, Thursday) being the shortest

Redundancy: Non-safety enhancing paperwork increases nurses' workload by 40 minutes per admitted patient

Nurses' admission paperwork
Number of pages



Benefits of applying Lean:

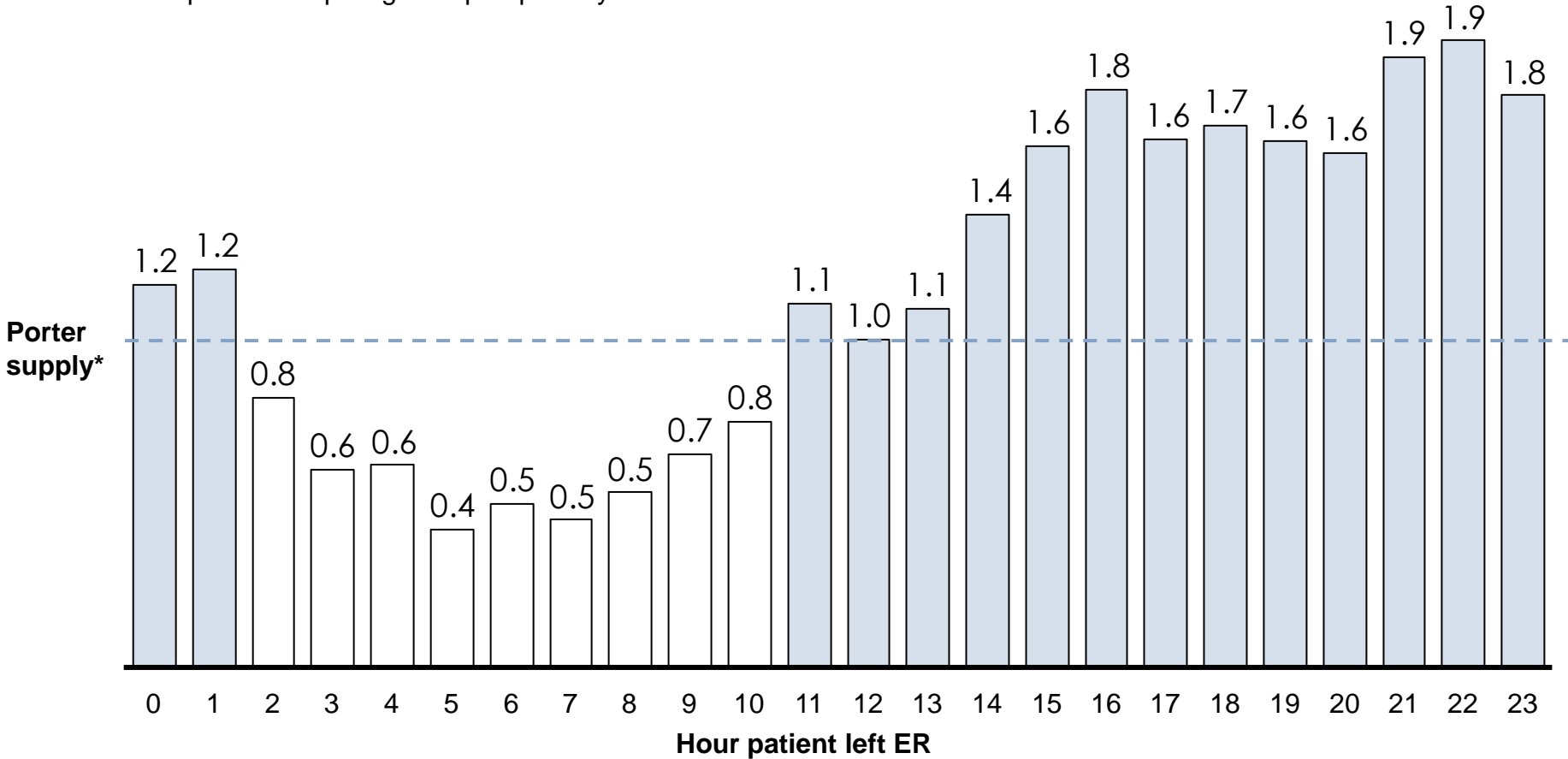
- Reduced time required to admit a patient (e.g, from 90 to 50 minutes)
- Reduced workplace frustration across the nursing staff
- Created time for nurses to spend with patients

**Next step:
Lean the discharge
paperwork**

Inflexibility: Fixed porter staffing means demand outstrips supply 15 hours of the day

Demand

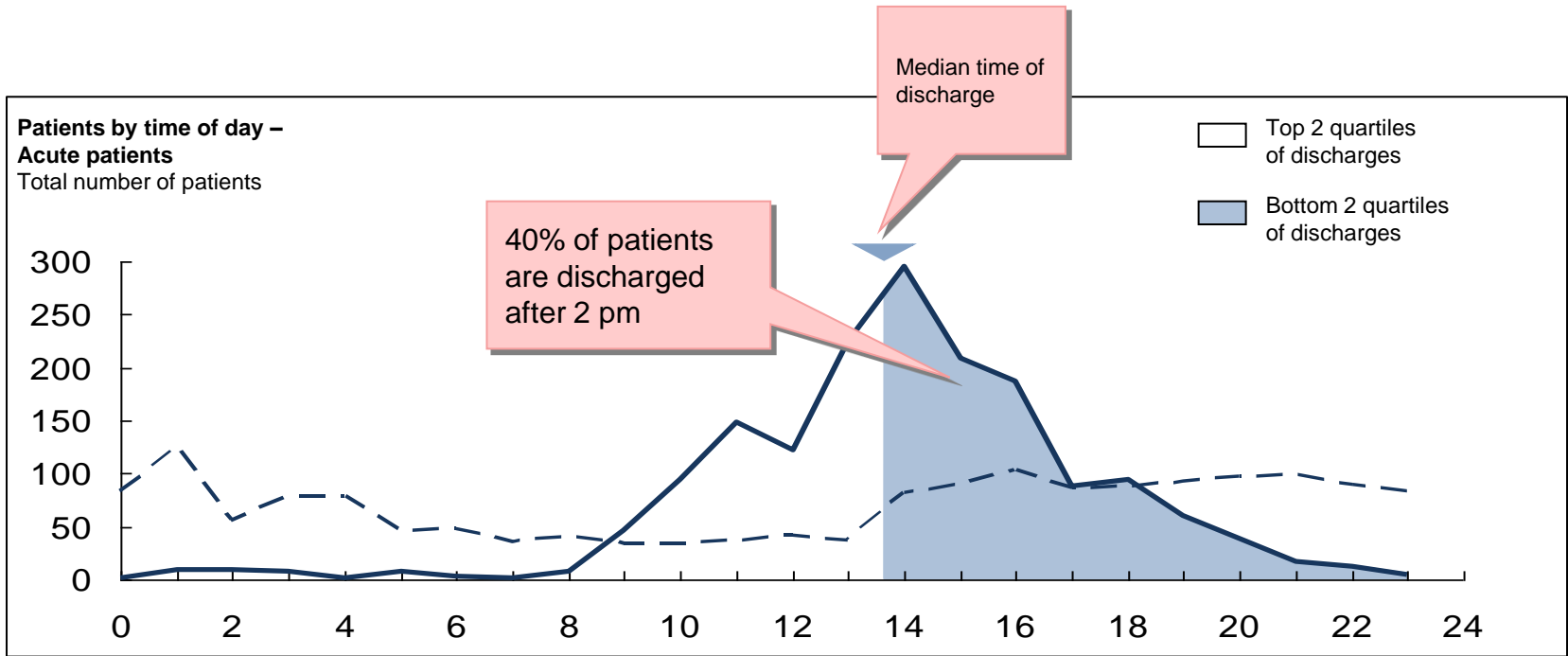
Admissions to the ward from the ER by time of day
Number of patients requiring transport per day



* Based on 2 ER porters transporting patients up to wards 25% of their time; assumes 30 minutes per transport
Source: July 2005 to April 2006 data

Inflexibility: Discharge planning process results in bottlenecks and reduced flow

— Discharges
- - Admissions



Lean includes frameworks not only for diagnosis but also treatment of waste

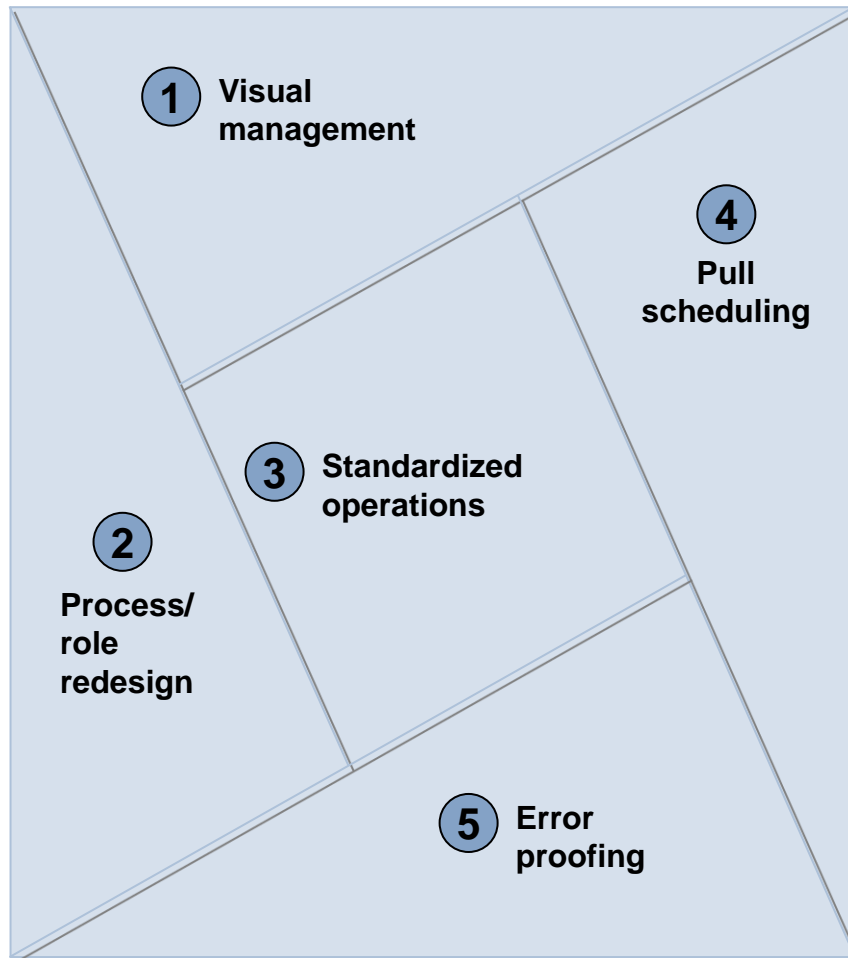
... we can apply a set of Lean levers

Now that we know the root causes of waste ...

Variability

Redundancy

Inflexibility



① Major Lean tools: visual management in the emergency department

Could this be CAP?

If so, consider treating with either:

Option 1:

Levaquin 500 mg iv qd

Option 2:

Rocephin 1 g iv qd + Zithromax 500 mg iv qd

Option 3 for life-threatening pneumonia:

Rocephin 2 g iv q12hours +
Zithromax 500 mg iv qd +
Vancomycin per pharmacy dosing

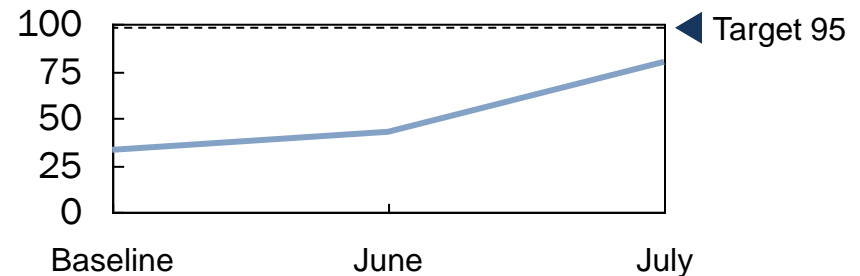
Benefits:

- Raises awareness of community acquired pneumonia and importance of timely administration of antibiotics
- Empowers nurses to ask ED physicians to consider the diagnosis of CAP
- Standardizes pharmacotherapy selection to evidence-based regimens

Results:

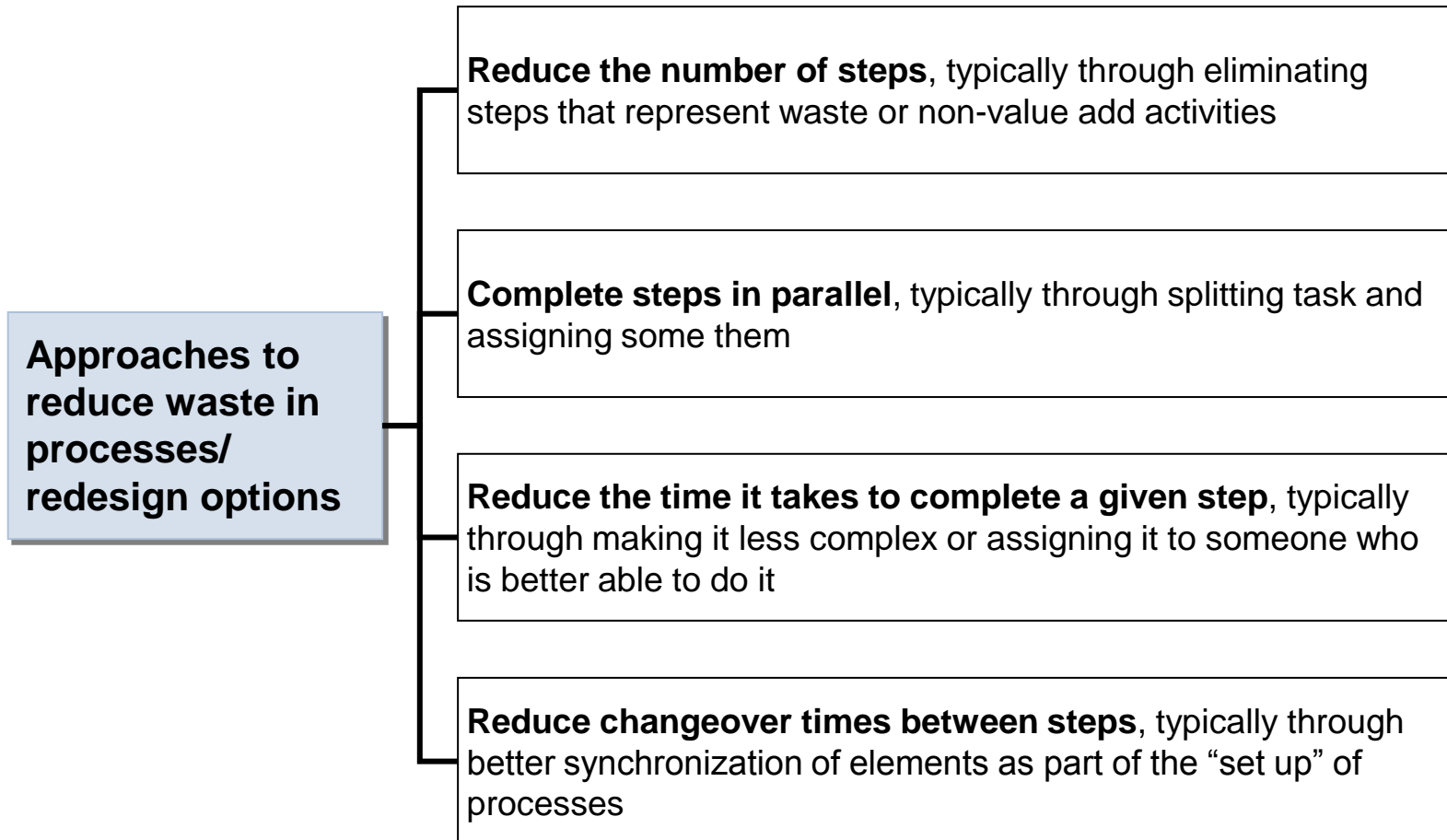
CAP patients receiving IDSA approved antibiotics

Percent



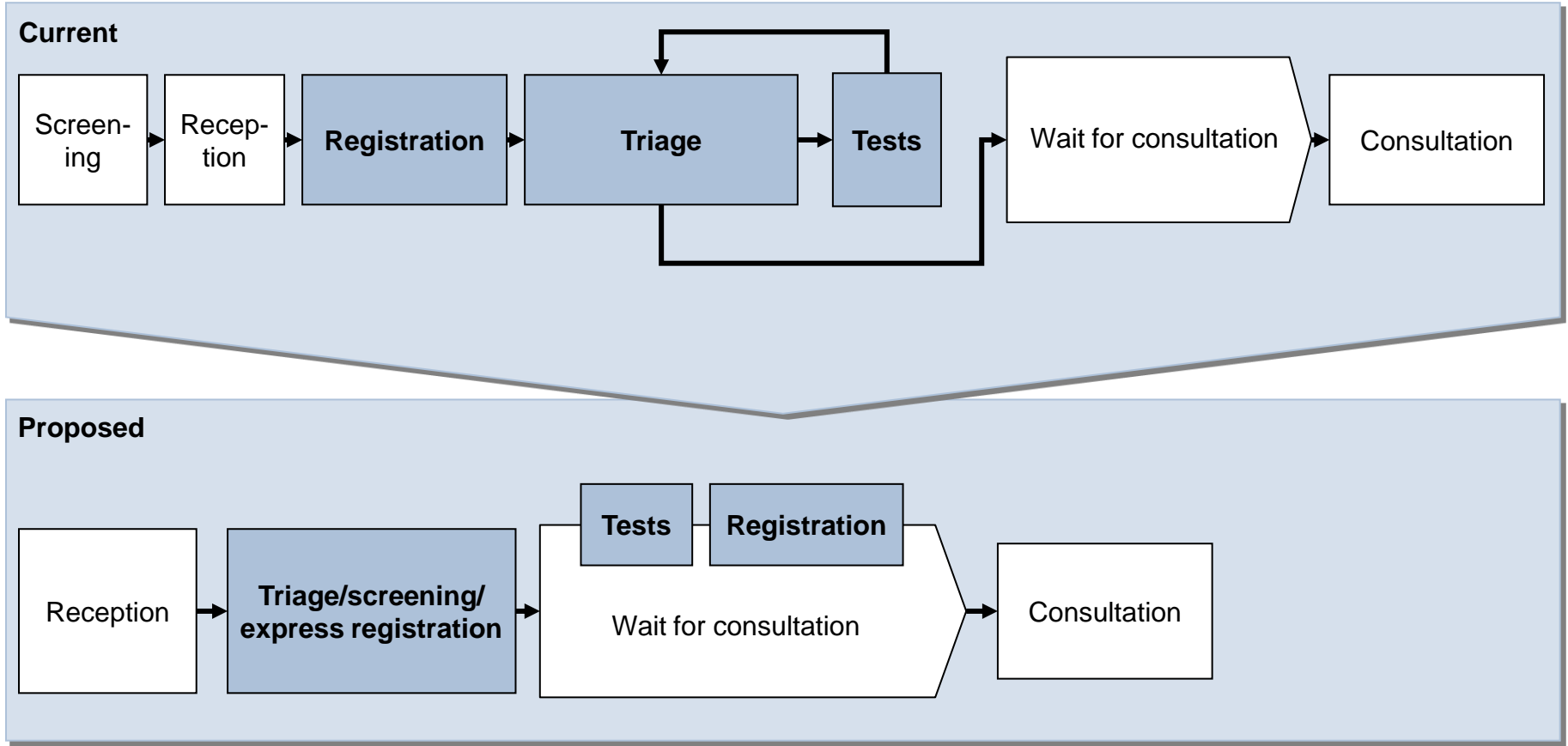
Where can you use visual management in your department?

② Redesigning processes includes 4 approaches to gain faster and more efficient throughput



② ED process redesign: shorten, combine, and move in parallel

Value stream mapping



③ There are 3 methods for standardizing operations

A. Make timing constant

Takes the guessing and the waste out of “when” an event will occur



B. Make roles constant

Takes the guessing and the waste out of “who” will do what during an event



C. Make materials and information constant

Takes the guessing and the waste out of materials and information needed to implement an event

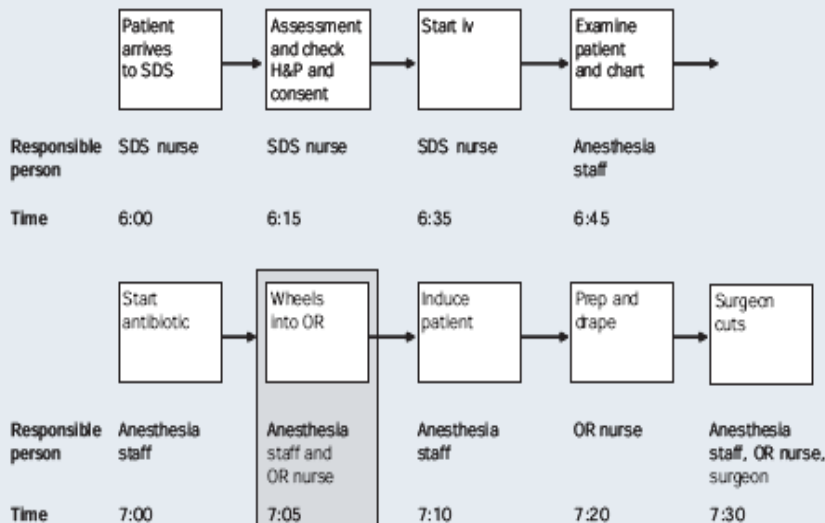


③ Major Lean tools: standardize operations and process/role redesign in the operating room

WHERE DO YOU FIT INTO MAKING A 7:30 INCISION TIME HAPPEN?

□ Area of interest

Wheels In Time for General Anesthetic is 7:05

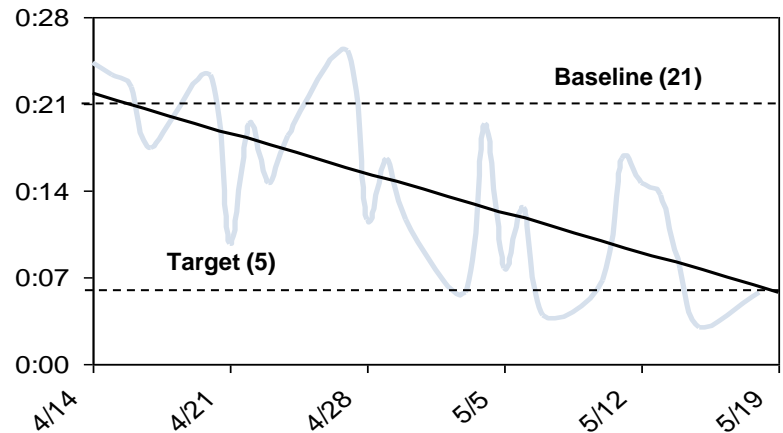


Benefits:

- Sets expectation of “start time = cut time”
- Choreographs each person’s role throughout the process
- Enables earlier recognition of delays and prompts corrective action

Results:

Average first case delay
Minutes



Where can you use visual management in your department?

④ Pull scheduling helps reduces waste caused by waiting



Features of a traditional “push” system

(Patient from the ED is ready for a medicine bed)

- Trigger for patient movement is completion of task, not available capacity in upstream area
- Morale suffers because nurses from the two area have differing interests
- System encourages hiding of GIM beds



Features of a “pull” system

(Medicine is ready for an ED patient)

- Patients pulled to next area when capacity is available
- Trigger for patient movement is capability to serve patient
- Aligns interests and creates tighter linkages between the two areas

④ Hospital benefits of pull scheduling

1. Improved discipline and **control over patient flow**
2. **Smoother leveling of tasks** by managing input from controllable sources (e.g. scheduled cases) to avoid peaks and valleys
3. Potential **elimination of “crisis state”** when we need to find empty beds for patients “pushed” from ED or ICU
4. Closer **matching of nursing** and other capacity **to anticipated demand**
5. More consistent delivery of **higher service levels** (e.g. less wait time with lower variability)

5 “Error proofing” is a set of actions designed to promote quality in activities and outcomes

“Error proofing” solutions:

Why do adverse outcomes happen?

Error prevention via task simplification

- Tasks are difficult, creating a higher likelihood that something will not be done properly

Error prevention via task standardization

- Tasks have no guidelines or guides to promote correct actions in a consistent manner

Error early detection via automated feedback

- Tasks have no feedback mechanisms to alert the human user that an error is “in progress”

Error mitigation via reduction of consequences

- Tasks have no means of preventing an adverse outcome from an error

⑤ Error proofing designs

Everyday example



Fueling area of car has 3 mistake-proofing devices:

- Filling pipe insert keeps larger, leaded-fuel nozzle from being inserted
- Gas cap tether does not allow the motorist to drive off without the cap
- Gas cap is fitted with ratchet to signal proper tightness and prevent over-tightening

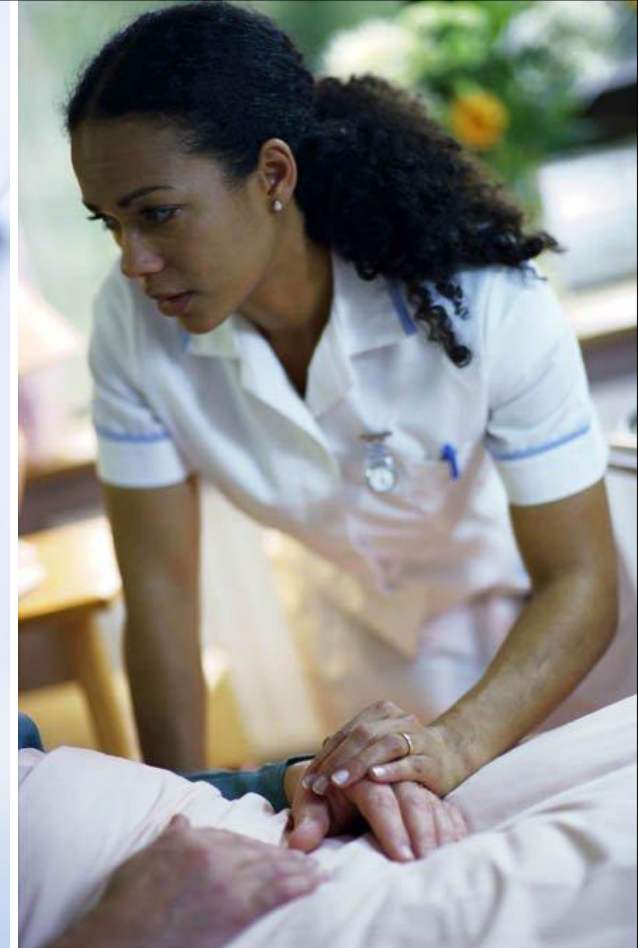
Medical example



Needle-injury prevention:

- The needle is withdrawn into the barrel of the syringe upon retraction of the plunger
- The sharp container is a 1-way container with locking cap





ED PIP: Getting Started Communication

Communication

Outcome	<ul style="list-style-type: none"> ■ All stakeholders will participate in achieving the project outcomes and positively contribute to the project momentum ■ A well developed and executed communication strategy will bring positive publicity to the project's efforts
Definition: 'What is it?'	<ul style="list-style-type: none"> ■ Communication is the process of conveying information or ideas from a sender to a receiver using a process in which the communicated material is understood by both sender and receiver*
Objectives: 'What is it used for?'	<ul style="list-style-type: none"> ■ The goal of communication is to: <ul style="list-style-type: none"> - Engage key stakeholders throughout the entire project - Create understanding and commitment to the project and its purpose - Help staff understand the roles they play in achieving the organizational goals - Make explicit the support that will be available to the staff - Learn from stakeholders how to improve the processes
Benefits:	<ul style="list-style-type: none"> ■ Healthy communication is the underpinning for all successful systems, particularly during times of change ■ A well executed communication strategy will highlight successes that can be leveraged in the future to secure resources for other organizational priorities
When to use	<ul style="list-style-type: none"> ■ Before, during and after each phase of the project

Developing a communications strategy

Who

Who is the most appropriate individual or group to deliver your message?

What

What message should each stakeholder receive?

How

How should you deliver the message?

When

When and how often should you deliver your message?

Feedback

What is the most appropriate mechanism to receive **feedback** on your message?

Time and Effort

Allocate the resources so that project leaders can put forth the right **time and effort** to make communications a priority

Developing a communications strategy

What

Who

How

When

Feedback

Time and Effort

What message should each stakeholder receive?



Tell the stakeholder what they can expect (i.e. project goals and progress towards them) – focus on the “what’s in it for me” for that stakeholder



Deliver on your promises!



Tell the stakeholder what we need them to do: champion the project, remove barriers, contribute ideas



Use real stories (patient experiences) to engage your audience. What has the experience been for some of your patients? How could it be better?



A sincere thank you

Developing a communications strategy

What

Who

How

When

Feedback

Time and Effort

Who is the most appropriate individual or group to deliver the message? Who is your target audience?



Who delivers the message **depends upon**

- **The message**
- **The target audience**
- e.g., Corporate kick-off – message should come from the CEO



Responsibility for communications should be **built into the roles** of specific individuals e.g., Project Sponsor, Team Leader



Peer Groups: People are better able to understand a message if it is delivered by someone who “thinks like they do”

Developing a communications strategy

What

Who

How

When

Feedback

Time and Effort

How should you deliver the message?



Select the most appropriate communication channel e.g., face-to-face, telephone, voice mail, e-mail, letter, video, poster, bulletin



Person to person (preferred method)

- Project sponsor rounding
- Team leader rounding
- Team member check-ins with colleagues



Explore other creative options:

- Team meetings: Make the project a standing agenda item
- Intranet sites
- Regular organization newsletter
- Team huddles
- E-mail
- Visual management: white boards, posters



Communication is critical in the transfer of knowledge. Use a variety of methods and communicate frequently.

Developing a communications strategy

What

Who

How

When

Feedback

Time and Effort

When and how often should you deliver your message?



Event driven communications:

- Ensure that there is clear information prior to any change initiative. Remember all the stakeholders!
- Communicate immediately when you have the outcomes of tests of change ideas



Routine communications:

- Develop a routine of scheduled communications e.g., every Thursday send out a project update. The audience will anticipate and look for the update if it is predictable
- DART data: Daily review and discussion of the findings of the previous day's information

Developing a communications strategy

What

Who

How

When

Feedback

Time and Effort

What is the most appropriate mechanism to receive **feedback** on your message?



Provide a variety of mechanisms for people to provide feedback on your message



The people who are doing the job are in an ideal position to suggest improvements in the process. Encourage them to tell you how they think they could do their job better. What gets in their way?



Develop forums for people to share their “bright ideas”

Developing a communications strategy

What

Who

How

When

Feedback

Time and Effort

Allocate resources so that project leaders can put forth the right **time and effort** to make communications a priority



Formalize routine communications in the project plan e.g., include the change initiative/project as a column in monthly hospital newsletter



Those responsible for specific aspects of communications should schedule time in their calendars each day/week/month to complete this task



When asked what they would do differently if they were to do this project again, every project leader said “I would have taken the time to communicate more often.”

Weekly Communication Templates

Suggested Communication mediums

Communication Medium	Topics	Completed
Email	<ul style="list-style-type: none"> • Thank you to the team members (related to project goals) • Change in metrics and why • Key deliverables achieved • Upcoming objectives • Response to questions/issues raised 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
One on One	<ul style="list-style-type: none"> • Knowing how team members like to receive feedback use this time as an opportunity to provide: <ul style="list-style-type: none"> • <i>Positive reinforcement related to the work of the team</i> • <i>Queries re: learning needs/support required</i> 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Thank you notes	<ul style="list-style-type: none"> • 1 – 2 per week as people grow and shine in their team roles 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Team Lead Walk-about	<ul style="list-style-type: none"> • Opportunity to see staff in action and provide feedback 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Team conversations	<ul style="list-style-type: none"> • Bolster enthusiasm • Review work plan for the week, next week • Objectives, Goals, Milestones • Barriers and how the team can mitigate 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>



ED PIP: Getting Started

Sustainability

Sustainability

What does “sustainability” mean?

- There is not regression back to the old process or level of performance and ideally the new process continues to evolve and improve over time in response to changes in context and to reach even better levels of performance
- Sustainability has been achieved “when new ways of working become the norm”
- In other words, the new process has become a mainstream way of working rather than something ‘added on’

Sustainability must be a consideration from the outset

There are many reasons why improvements are often not sustained...

- The change is seen as an isolated project that is not aligned with other organizational strategies/improvement efforts (or the alignment has not been clearly articulated)
- Sustainability is seen as something you do after the initiative is complete; it is an afterthought rather than something that must be considered from the outset of the improvement effort
- Not all stakeholders understand and own the benefits of the change
- There is a lack of infrastructure to support ongoing sustainability
- The change has not been implemented with a whole system view
- Insufficient training and development of new skills for staff

Source: Improvement leaders' guide - Measurement for improvement. NHS Institute for Innovation & Improvement

Sustainability...ongoing attention and continuous improvement



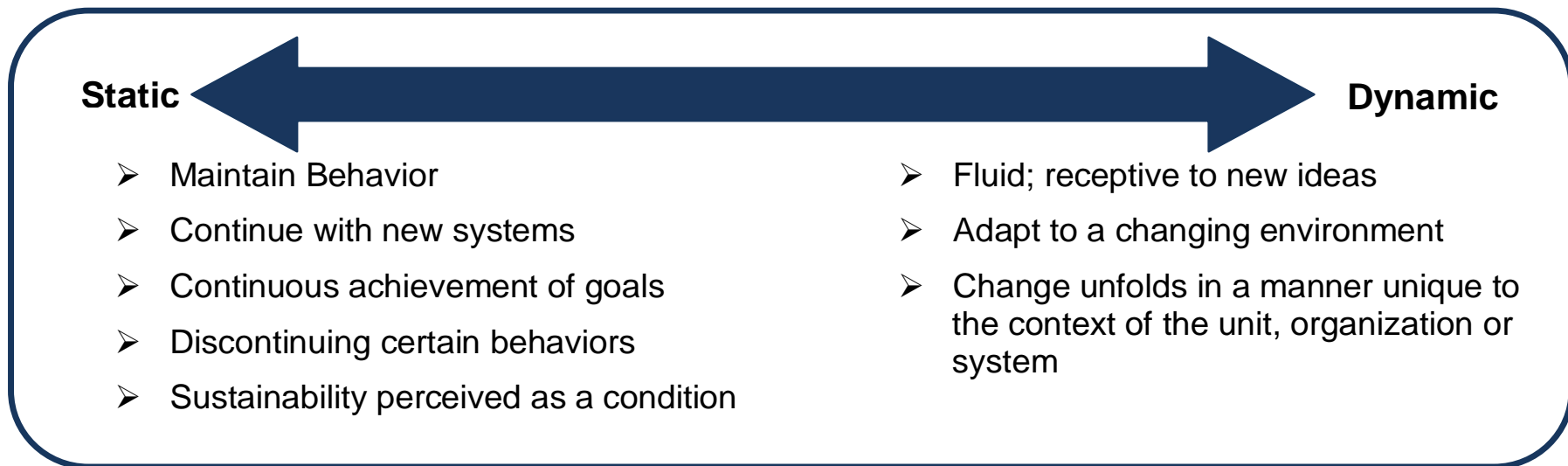
“Sustainability is not a ‘project’ with an end-point. It is rather a constant effort to embed a change into the fabric of daily work.”

“We do not actually want completely sustainable change because today’s sustained change becomes tomorrow’s resistance to change. Instead we want change that sustains itself until a better idea or a context-shift occurs – but not longer than that.”

Sustained changes must undergo continuous development

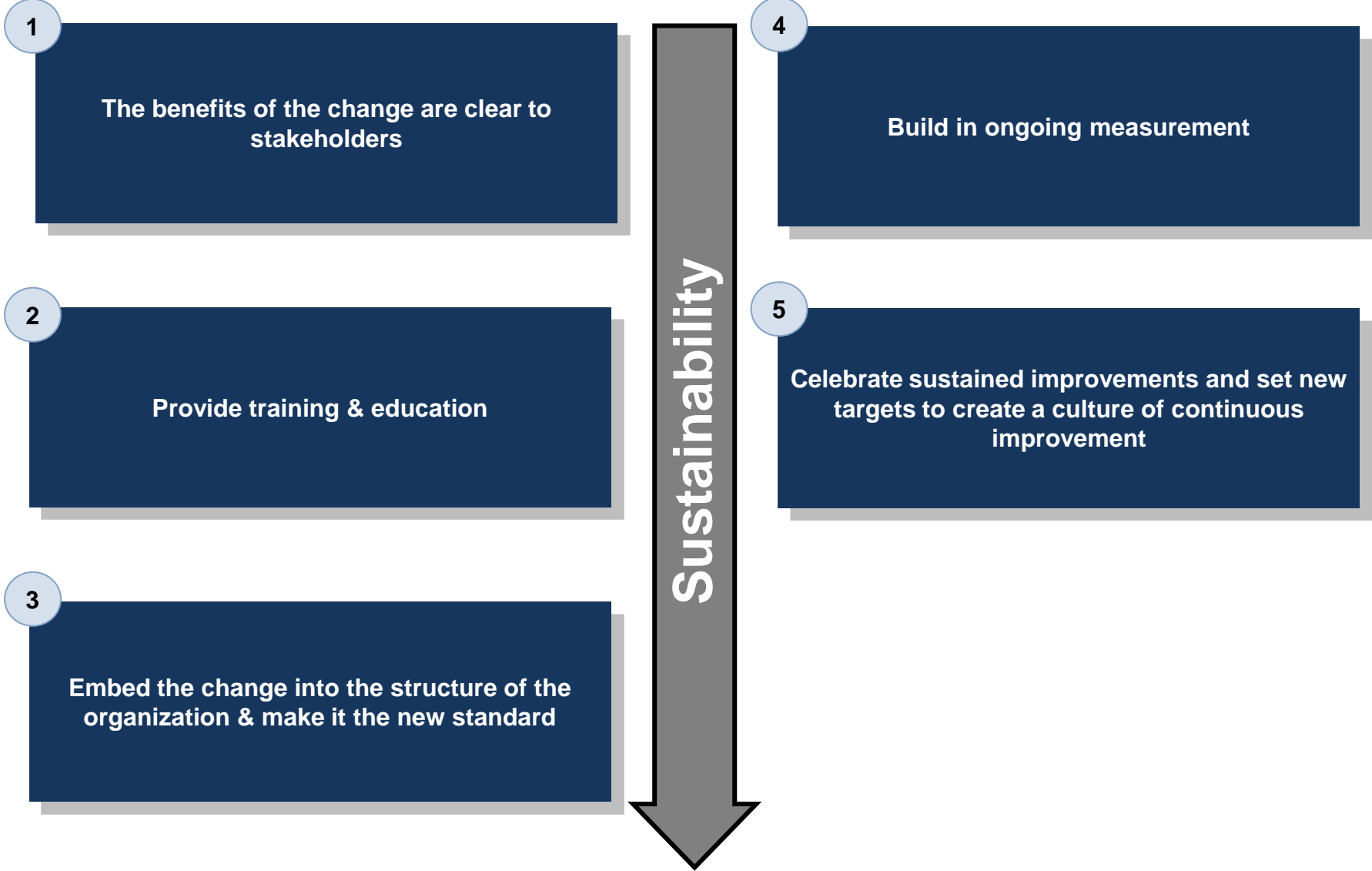
Although the aim is sustainable solutions, evolution will be required...

- The process needs to adapt to internal and external changes
- A solid performance management system with clear accountabilities will help to ensure that the effectiveness of the change is continually re-evaluated
- Ideally a culture of continuous improvement and the necessary improvement skills will be embedded in the unit/program/organization
- Organizations should strive to have a more “dynamic” view of sustainability



Source: Complexity of sustaining healthcare improvements: What have we learned so far? NHS Modernisation Agency

How can we maximize the potential for sustainable change?



1 Benefits are clear to stakeholders

- The change should address root causes and produce measurable benefits that meet the needs of all stakeholders (patients, front-line staff, and leaders)
- Each stakeholder should be able to answer 'what's in it for me?' for themselves

How to strengthen this factor:

- Identify key stakeholders from the outset and use a variety of methods (observation, conversation, focus groups) to understand the issues from their perspective; stakeholders should eventually own the changes
- There should be widespread stakeholder involvement in the identification of problems **and** design of solutions
- Emphasize the unique 'what's in it for me' characteristics in targeted communication to different stakeholders; there should be clear evidence that solutions address the root causes of real issues
- The pilot process (PDSA cycles) is helpful in demonstrating how the improvement can benefit both patients and staff at a comfortable pace; the Improvement Team must have permission to try small tests of change

2 Provide training and education

- This is not a 'once and done' exercise but rather an ongoing process
- Continual support and evaluation of the needs of those working within the changed process are required

How to strengthen this factor:

- Develop a plan to address future skills and training needs
- Consider selecting a small number of staff who can be trained as 'trainers'
- All new and rotating staff need to understand how to work within the changed process and expectations should be set during the orientation process (either hospital-wide, profession, or unit-specific orientation)
- Reinforce the new process through visual management
- Training content/method must be evaluated regularly to ensure it remains useful and relevant
- In addition to training related to the new process, consider a quality improvement capability building program

3 Make it the new standard

- Ensure the new process has been embedded into the daily work and systems of the organization
- The new process should be reflected within the policies and procedures of an organization or department

How to strengthen this factor:

- Modify roles and responsibilities, standards and policies as needed as the solution moves out of the Pilot phase and into the Control & Roll-out phase
- Ensure that new policies reflect the new way of working but are not so rigid that they stifle ongoing improvement
- Update job descriptions to reflect altered roles
- Consider completely removing the old way of doing things
- Ensure the necessary facilities, supplies, and equipment are in place to support the new process
- Communicate to staff how ED-PIP is helping to achieve the organization's strategic priorities

4 Build in ongoing measurement

- Establishment of a measurement system and a standardized way of communicating results reinforces that the change is important to the organization
- A mechanism to identify slippage will allow the organization to take the necessary action to resolve issues

How to strengthen this factor:

- Select a small number of measures that capture what the improvements are
- Build these measures into the organization's existing performance management system
- Develop a feedback loop through staff meetings and formal reports
- Slippage should be acknowledged/communicated and trigger an escalation process

5 Celebrate, renew and set the bar higher

- It is common for organizations to celebrate initial improvement; however, it is just as important to celebrate when an indicator has stayed at an improved level over time
- Once targets have been achieved and maintained it is critical to take the time to set new targets to drive further improvements

How to strengthen this factor:

- Make plans in advance to celebrate continued success and to reflect on progress
- Never settle into simply a maintenance level; constantly question how you can take improvements to a new level
- Create a culture of continuous improvement by setting new targets

Key activities impacting sustainability by phase

Evolution/Continuous
Improvement

Key Activities:

- ✓ Embedding a performance management system including an escalation process which is responsive to degradation in performance
- ✓ *Actively* responding to changes in the internal / external environment which affects performance of the change and continually seeking further improvement

Implementation
(Control/Roll-out)

Key Activities:

- ✓ Ensuring solutions have been tested under a variety of conditions and project measurements are demonstrating real improvement
- ✓ Implementing a *permanent* measurement system to monitor ongoing performance
- ✓ Providing necessary resources and infrastructure to sustain the improvement beyond the active project lifecycle

Active Planning & Testing
(Solution Design/Pilot)

Key Activities:

- ✓ Involving front-line staff in the development of solutions
- ✓ Ensuring the change has improved efficiency or made jobs easier
- ✓ Aligning project objectives to the priorities and/or strategy of the organization
- ✓ Engaging the organizations' leadership team in the project

Sustainability Checklist - Solution Design Phase



Solutions address the root cause of real issues



Solutions have been co-designed with key stakeholders



The new processes are designed to make the work of unit staff easier by removing non-value added work



The relationship between the improvement project and the organization's strategy has been documented and communicated

Sustainability Checklist - Pilot Phase



The change idea was tested in a variety of conditions



The users of the process actively participated in the pilot process and had the opportunity to provide input and feedback



The improvement team or designate collected baseline data and ongoing real-time measurements for key metrics



The impact of significant organizational change on the improvement has been examined by the team



Implementation is either led, or done jointly with, existing managers of the unit (an initial step towards transitioning ownership from the team)



Key stakeholders understand the link between change initiative and the organization's overall strategy

Sustainability Checklist - Control and Roll-out Phase



- There is evidence that improvement targets or goals have been achieved
- A front-line change champion has been identified to support successful implementation
- All staff on all shifts have been adequately trained to carry out the new process
- Roles and responsibilities have been altered and included in unit-level job descriptions
- As applicable, organizational policies and procedures have been updated to reflect the new process(es)
- All barriers or threats to the sustainability of the improvement have been removed (this may or may not have resource implications)

Sustainability Checklist - Control and Roll-out Phase



The new way of doing business has been communicated to the organization



A small, but representative set of measures has been identified to monitor performance of the change over time; individuals have been assigned responsibility for monitoring performance and a plan has been developed for communicating the results to front-line staff and leaders within the organization



An individual has been assigned responsibility and protected time for conducting scheduled audits to ensure that new process is being consistently used, and if not, investigates reasons why



If performance declines, accountabilities have been identified to address the situation (there is an escalation process in place)



An individual(s) has been assigned to provide organizational leadership and is accountable for ongoing Performance Management