

## ED PIP: Diagnostic Phase

Tools: Identification of 8 Wastes

# Identification of 8 Wastes – Overview

<b>Outcome</b>	<ul style="list-style-type: none"> <li>Learn to see waste that inhibits the provider’s and organization’s ability to deliver high quality services and products</li> </ul>
<b>Definition: ‘What is it?’</b>	<ul style="list-style-type: none"> <li>Identification of 8 types of waste which do not advance quality or productivity and strategies to eliminate it</li> </ul>
<b>Objectives: ‘What is it used for?’</b>	<ul style="list-style-type: none"> <li>Before waste can be eliminated, it must be seen</li> <li>A variety of tools can be used to discover waste and generate potential ways to eliminate it</li> </ul>
<b>Benefits:</b>	<ul style="list-style-type: none"> <li>Waste is the opposite of value for the customer and provider</li> <li>There is tremendous opportunity to improve productivity, quality, cost, delivery time, safety and the work environment, and staff morale by eliminating the stress, inefficiencies and harm that results from waste</li> <li>Quality, cost and access can improve substantially through waste removal and streamlining all aspects of work and work areas</li> </ul>
<b>When to use</b>	<ul style="list-style-type: none"> <li>Anytime you see:             <ul style="list-style-type: none"> <li>People or things waiting (piling up), clutter, excess walking or transport time, complex processes, duplication, defects, the need for fire fighting, injuries, sick time, etc</li> </ul> </li> <li>Continual evaluation of the existence of waste</li> </ul>

**Tip for integrating Lean principles into healthcare:**

- Part of successfully implementing Lean in healthcare is adopting common language that may have originated in manufacturing and internalizing how it is used in a healthcare environment
- This section focuses on helping to teach how to see waste in any given process. In other words, you can think of waste as the steps that don’t add value

# Efficient organizations should be focused on delivering value to the customer (or patient)

## Objectives of efficient organizations

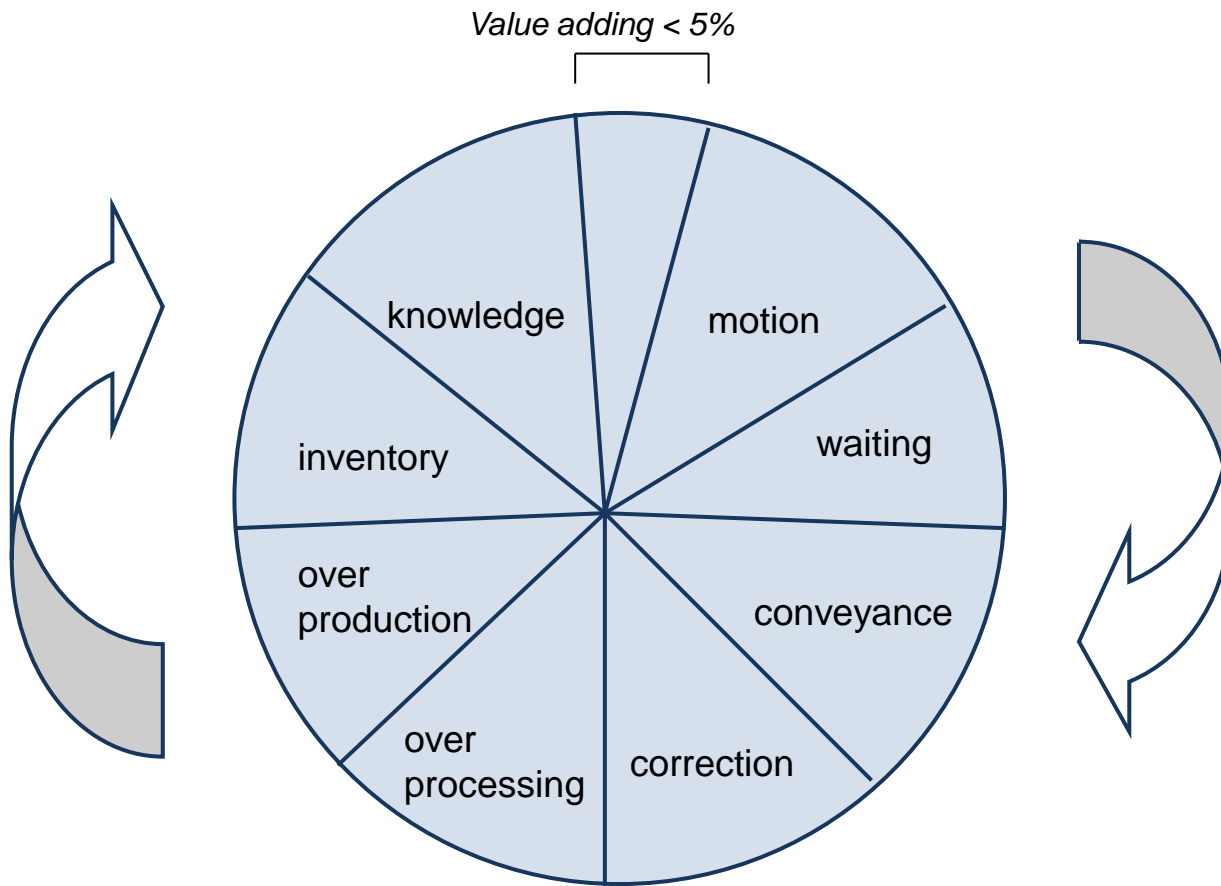
- Provide high quality services and products at the lowest cost and in the shortest time by continually eliminating waste
- Confirm on a daily basis that activities and products are creating value for the patient (customer)

## We can define value in several ways

- Value is always defined by the patient or customer
- Customer value added (CVA):
  - Activities performed to meet customer requirements:
    - it is important for the customer
    - it changes the thing going through the process
    - it is done right the first time.
- Business value added (BVA):
  - Legal, fiscal, fiduciary, compliance, human resource, communication, and environmental activities
  - Contributes to running the enterprise and is indirectly providing value to the customer. We want to minimize the time it takes to do BVA activities
- Non-value add (NVA):
  - Activities that do not contribute to meeting patient's or customer's needs
  - Could be eliminated without compromising process or product functionality

There are 8 different ways to look at waste. Although some may seem intuitive, we need to teach ourselves “how” to see waste

### Learning to see waste



# There are Eight major inefficiencies (waste) in hospital operations

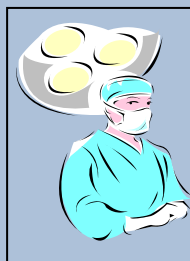
## Wasted motion

- Pharmacy technician spends 20 minutes looking in multiple places for a particular med



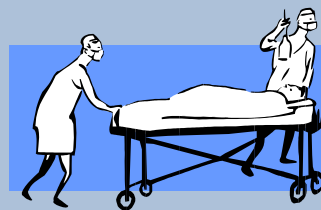
## Waiting time

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



## Wasted transportation

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



## Rework

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



## Excess processing

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



## Over-production

- Admissions paperwork has 7 redundant pages out of 16 in the package



## Excess inventory

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



## Wasted knowledge

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



## 8 Wastes – Instructions for use (1/8)

### Motion

- § Waste of motion comprises both the human and mechanical elements
- § Wasted human motion is primarily related to ergonomics:
  - Unnecessary walking, reaching, twisting
  - Posture, force needed to complete task, repetition
  - Huge impact on quality, safety and productivity
  - Contribute to numerous workplace injuries and lost time
- § Wasted machine motion:
  - Equipment and materials needed are not readily available in immediate workspace
  - Equipment and materials are placed unnecessarily far from one another or the point of service
  - Equipment and materials are not placed in a logical order



#### Principles for eliminating waste:

- Standardize wherever possible
- Organize layout of workplace using 5S
- Introduce one-stop access at point of care
- Introduce visual management



## 8 Wastes – Instructions for use (2/8)

### Waiting

- Waiting waste involves patients, staff, equipment and information
- Wherever you find "waiting, you can be sure that it is "hiding" another source of waste – the key is to uncover the hidden waste and eliminate it, thus removing the need to wait
- It often occurs when there is excessive work-in-progress (e.g. charting or seeing patients in batches)
- Delays increase the lead time (e.g. time between placing and receiving an order)
- Waiting does not add value. In fact, waiting adds to the cost of operations by occupying space (waiting rooms, occupied beds, discharge lounges, empty beds) and additional manpower to manage the waiting
- Waiting decreases quality over time as patients and customers who are waiting can experience negative health effects (de-conditioning, miscommunication) or defects (iatrogenic infections) while they wait. Information and materials can be misplaced or misdirected if stored and/or sent in batches due to waiting

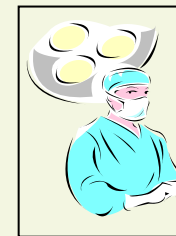
#### Sources of waiting waste:

- Multiple handoffs
- Waste of motion
- Demand and capacity mismatch
- Communication problems
- Poor Processes
- Lack of visual management

#### Principles for eliminating waits:



- Ensure there is point of care, one touch information access
- Implement visual management tools
- Utilize capable and available equipment and materials
- Minimize handoffs of information, people and materials
- Match demand and capacity



## 8 Wastes – Instructions for use (3/8)

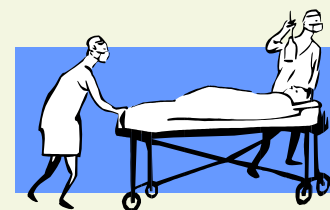
### Transportation

- Large scale waste due to inefficient workplace layout, overly large or numerous pieces of equipment, long distances between people or places
- Batching of services or materials creates waste because larger batches must be moved from one place to another
- Multiple handoffs of patients, equipment and information
- Conveyance, waste of motion and waiting are often interrelated
- A certain amount of conveyance is necessary waste because patients, equipment and information must be moved through a unit or organization (the goal is to minimize it if it is significant)

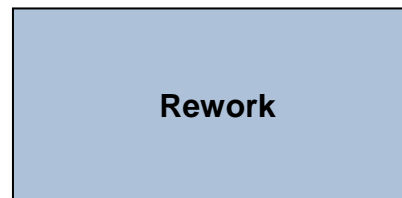
#### Principles for eliminating transportation:



- Ensure there are tight points of connection
- Minimize handoffs
- Establish point of care service and equipment
- Eliminate batching by providing just in time services
- Simplify processes



## 8 Wastes – Instructions for use (4/8)

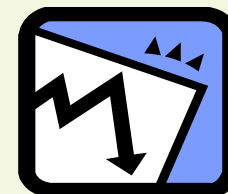


- Waste of correction (rework) includes the time, material, energy and cost required to fix defects
- Rework to repair products or services that do not meet patient or customer specification or cause dissatisfaction
- Defects occur because of a lack of standards and error proofing, work-arounds, 'winging it' and politics
- Defects may cause harm to patients and rework involves diagnosing and treating new and existing issues (e.g. ventilator acquired pneumonia, medication errors), understanding and fixing the defect (e.g. committee), following up with patients and staff (paperwork)...and likely more waste
- Excessive design changes or time spent developing a project (red tape and bureaucracy, forms committee)

### Principles for eliminating correction :



- Develop quality standards
- Utilize standard work
- Develop error proofing techniques
- Adopt PDSA methodologies (rapid cycle testing)
- Simplify processes



## 8 Wastes – Instructions for use (5/8)

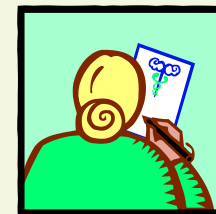
### Over processing

- Waste of over processing often occurs by doing more than the patient or customer needs or expects
- In healthcare, over processing often occurs due to a lack of synchronization and includes:
  - Charting vital signs in several different places, numerous forms to convey similar information
  - Patients being asked the same questions by different professions
  - Numerous signatures or approvals
  - Redundant processes that do not improve service or prevent defects
- Over processing also occurs when patients and customers are provided services that they did not ask for and do not need
  - Ordering unnecessary tests or treatments
  - Highest technical option for testing or treatment
  - Specialist care when primary care required

#### Principles for eliminating over processing :



- Establish standards and systems
- Implement 5S and visual management
- Develop error proofing techniques
- Adopt PDSA methodologies (rapid cycle testing)
- Simplify processes



## 8 Wastes – Instructions for use (6/8)

### Overproduction

- Waste of overproduction often results from the quest to always be prepared; we stay ahead of schedule or over utilize equipment (e.g. utilize MRI suite 100% of time, opening extra suture kits just in case, more information/ forms than required in an assessment)
- Overproduction wastes energy, people resources, time, materials
- Overproduction generates additional opportunities for waste:
  - Inventory (and more space to house it)
  - Motion (people doing things that aren't needed or wanted)
  - Conveyance (additional personnel to manage it, and more transportation to move it)
  - Defects (and the associated risks)
- Of all the types of waste, overproduction has the greatest impact on PSCDSM because:
  - gives people a false sense of security
  - may cover up a number of problems
  - may obscure information that can provide clues for improvement



#### Principles for eliminating over production :

- Establish standards
- Implement 5S and visual management (eliminate need to have too much on hand – just in case)
- Regulate workflow with simple triggers (orders)
- Simplify processes



\*Source: Dennis, P. Lean Production Simplified. 2<sup>nd</sup> edition. Productivity Press. New York. 2007

± Source: Imai, M. Gemba Kaizen. McGraw-Hill. 1997

## 8 Wastes – Instructions for use (7/8)

### Inventory

- Patients or materials that have been fully treated or processed, are undergoing treatment or processing, but are waiting for the next step in the process (ALC, waiting to be admitted or discharged)
- Wherever you find inventory, you can be sure that it is “hiding” another source of waste – the key is to uncover the hidden waste and eliminate it, thus freeing up the need for the inventory
- Inventory does not add value. In fact, inventory adds to the cost of operations by occupying space (waiting rooms, occupied beds, discharge lounges, empty beds) and additional manpower to manage the inventory
- Inventory decreases quality over time as patients and customers who are waiting can experience negative health effects (de-conditioning, miscommunication) or defects (iatrogenic infections) while they wait. Information and materials can be misplaced or misdirected if stored and/or sent in batches
- Inventory results from over production of an upstream process. For example, an upstream process (triage) is completed faster than the next process (registration) resulting in an inventory of patients waiting to be registered
- Inventory also results from a mismatch in service time between different steps in the process or a mismatch between push (patient ready for next step) and pull (next step ready for patient)

#### Principles for eliminating inventory:



- Minimize overproduction
- Synchronize work flows
- Implement visual system for easy and quick prioritization of work and patients
- Implement downstream triggers to signal need for work or processing



## 8 Wastes – Instructions for use (8/8)

### Wasted knowledge

- Wasted knowledge often results from a disconnect between different levels, professions, programs or services in an organization and the customers they serve
- Inhibits the flow of knowledge, ideas, creativity and creates frustration and missed opportunities for improvement
- Negatively impacts productivity, quality, cost, safety and environment, delivery of service, and morale
- Leads to disengagement of staff, increasing sick time or injuries, worsening staff morale and satisfaction
- Leads to poor patient and customer satisfaction

#### Principles for eliminating wasted knowledge:



- Focus on the voice of the customer
- Establish capable processes for sharing knowledge and information
- Establish cross functional teams at all levels of the organization
- Listen and act on ideas generated by staff at all levels
- Communicate, communicate, communicate



# Tips & tricks: Identification and elimination of waste

- Remember: Value is always defined by the patient or customer
- Waste does not add value. Rather, it adds to the cost of operations
- Wherever you see waiting, you can be sure that it is “hiding” another source of waste – the key is to uncover the hidden waste and eliminate it, thus removing the need to wait
- Overproduction is considered to be the worst type of waste because it gives people a false sense of security and covers up a number of problems
- Overproduction is the root cause of other types of waste; if overproduction can be minimized or eliminated, great strides can be made toward improvement goals
- Wherever you see inventory, you can be sure that it is “hiding” another source of waste – the key is to uncover the hidden waste and eliminate it, thus freeing up the need for the inventory

- ***“If overproduction is a crime, inventory is the enemy that should be destroyed”***  
*Masaaki Imai – Gemba kaizen (1997). Page 77.*