“Guide to Simulation Concepts in Healthcare…"

Simulation Concepts and Guidelines

- Why Simulation?
  - Builds Our Process Improvement Toolbox
  - Helps Change Management

- Step 1: Define the Problem
  - What is the Problem?
  - Project Charter
  - Scope
  - Metrics/KPIs & Accuracy – How good is good?

Simulation Concepts and Guidelines

- Step 2: Understand and Map the Process
  - How does this process work?
  - Flow charting and Early Model Building
- Step 3: Collect the Data
  - What and how much data do we need?
  - Probability and Statistics Basics – the world is NOT average
- Step 4: Enhance the Model
  - Who works with the process and how?
  - Resources & Groups

Simulation Concepts and Guidelines

- Step 5: Output Analysis
  - What do we want to know about the process?
  - Analysis and Interpretation of Results

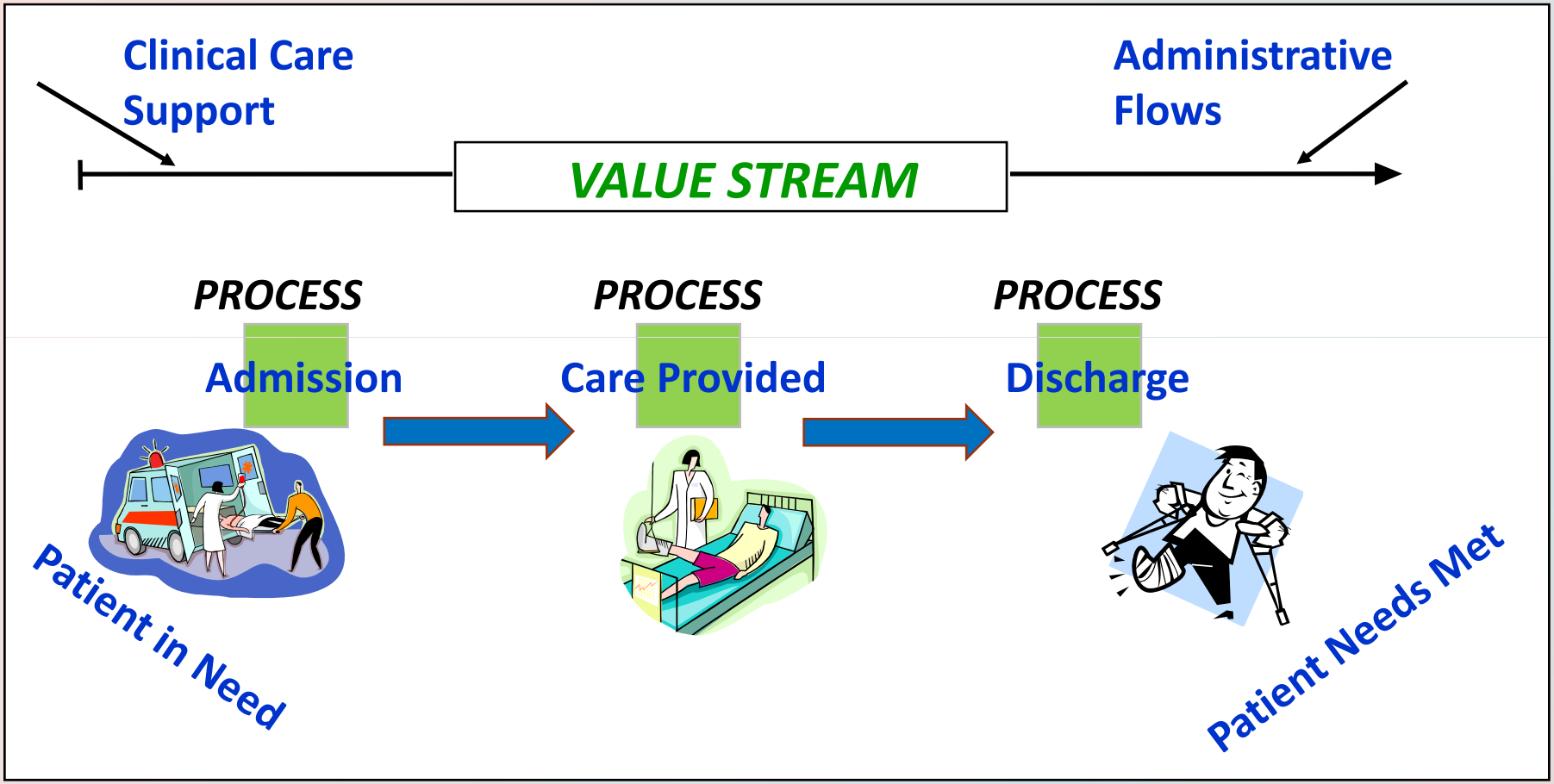
- Step 6: Verify and Validate the Model
  - Does the model work correctly?
  - Results review & debugging
  - Does the model match reality?
  - Model Documentation – assumptions
  - Validation
  - Team Review and Buy-In

Simulation Concepts and Guidelines

- Step 7: Generate and Test Potential Solutions
  - What-if – what changes and what impacts?
  - Scenario and trial management
  - Comparison of Alternatives

- Step 8: Presentation and Rollout Plan
  - How do we go about communicating and making the changes?
  - Refinements during rollout
  - Future planning and issues

What is a Traditional Healthcare Value Stream?



Value Stream = All value-added actions <u>required</u> to bring a patient through process:

- Patient in Need to Patient Needs Met

8 Wastes in Healthcare:

WASTE	DEFINITION	EXAMPLE(S)
Defects (Rework)	Work that contains errors or lacks something of value	Medication errors Rework Surgical errors
Over-production	Redundant work	Duplicate charting Multiple forms with same information
Waiting	Idle time created when people, information, equipment or materials are not at hand	Waiting for other workers at meetings, surgeries, procedures, reports Patients waiting for appointments, MD visits, procedures
Not Clear (Confusion)	People doing the work are not confident about the best way to perform tasks	Same activities being performed in different ways by different people Unclear system for indicating charges for billing

8 Wastes in Healthcare:

WASTE	DEFINITION	EXAMPLE(S)
Transporting	Required relocation/delivery of patient, materials or supplies to complete a task	Staff travel to a remote storage room to retrieve supplies
Inventory	More materials on hand than are required to do the work	Overstocked medications on units Overstocked supplies on units and in warehouses
Motion	Movement of people that does not add value	Looking for information, materials and/or people Materials, tools located far from the work
Excess Processing	Activities that do not add value from the patient/customers perspective	Clarifying orders Redundant information gathering/charting Regulatory paperwork

Benefits of Simulation

- Observe current state and observe flow over time
  - See how activity process times affect the process
  - Identify bottlenecks in action as the simulation runs
  - Identify areas of opportunity in the current state
- Develop future state in live environment
  - Change processing times and paths to see effects
  - Review potential changes to key performance metrics
  - Highlight areas of improvement opportunity
  - Increase probability of selecting best solution(s)

➢ **This can all be done while working with your project team!!!**