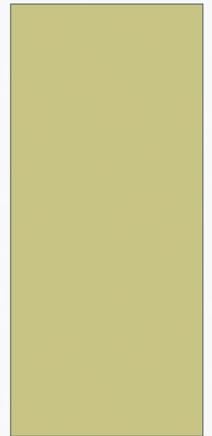


# MANAGEMENT AND COMMUNICATION

LISA TEAL, RN, BSN, CIC  
INFECTION PREVENTION UNC MEDICAL CENTER



# KEY CONCEPTS

- In this century we have seen increased attention to infection prevention due to:
  - Reduced payment for hospital-acquired conditions
  - Government interest and oversight
  - Public reporting
  - Pay-for performance



# INFECTION PREVENTION TEAM

- Core team responsible for carrying out all aspects of the infection prevention and control program:
  - Infection Preventionist
  - Chair of the infection prevention committee
  - Healthcare epidemiologist
- One person should be designated as having responsibility for the program.
- Team members should be qualified and guided by sound principles and current information.
- Teams should set goals, collect and analyze data and select interventions



# INFECTION PREVENTION COMMITTEE(IPC)

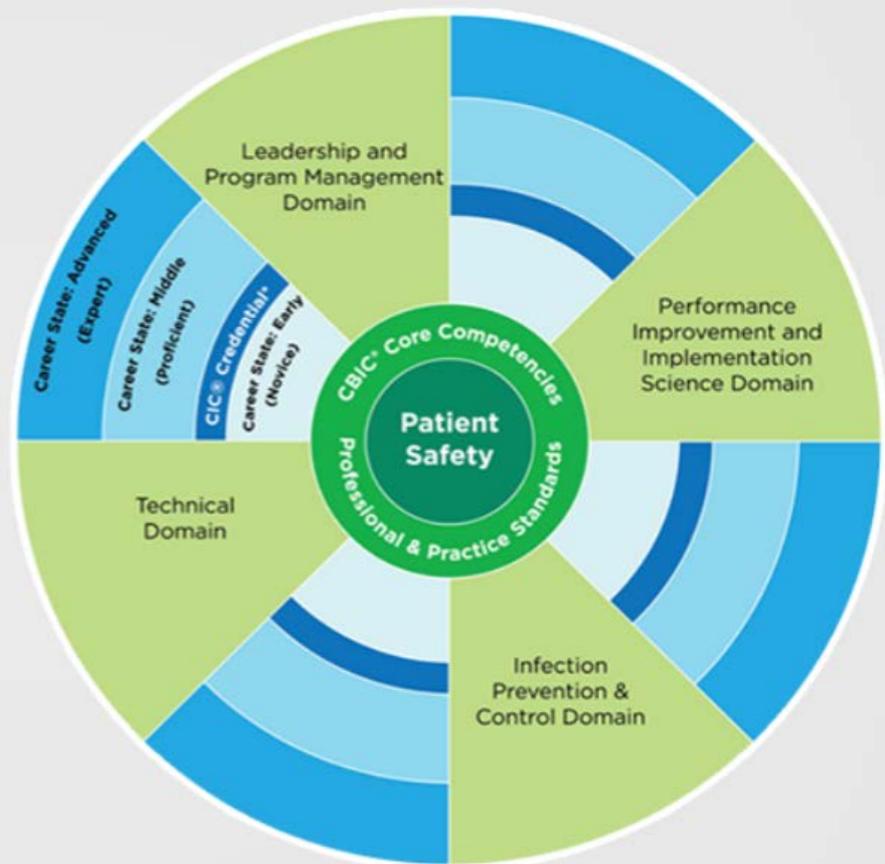
- **Function:** a central decision-making and policy making body for infection prevention.
- **Reporting:** chair person reports to the administration or the medical staff
- **Purpose:** advocate for prevention of infections in the facility provides political support that empowers the team.
- **Membership:** multidisciplinary and includes representatives from appropriate departments (i.e. nursing, administration, pharmacy, medical staff, environment services)
- **Role:** refine and ratify the ideas of the IP team and disseminate information discussed at the meeting.
- If an IPC is not used, IP teams need to develop other mechanisms to obtain multidisciplinary support for changes and actions.

# INFECTION PREVENTION PROFESSIONALS

- Roles and Responsibilities include
  - Collection and analysis of data
  - Evaluation of products and procedures
  - Development and review of policies
  - Consultation on infection risk assessment, prevention, and control strategies
  - Education on interventions to reduce infections
  - Implementation of changes mandated by regulatory, accrediting, and licensing agencies
  - Application of epidemiological principles, including activities directed at improving patient outcomes
  - Participation in research projects

# APIC IP COMPETENCY MODEL

- Patient safety is the core of the model
- Four spokes represent the priority areas of professional development for all IPs
- Promotes lifelong learning and skills development through competency self-assessments and professional development plan tool
- Certification in Infection Control is the bridge between novice and proficient IP



Green areas indicate critical competencies required for the expanding IP role. \* The CIC® Credential is available from CBIC®; The Certification Board of Infection Control and Epidemiology, Inc.

# IP PROFESSIONAL'S ROLE AS A LEADER/MANAGER

- Leadership: the art of influencing behavior
- Management: achieving desired results through efficient utilization of human and material resources.
- Management styles include:
  - Consultative- shares problems with subordinates: gets ideas prior to making a decision
  - Democratic- shares problems with the group and together they make decision as a team
  - Autocratic- solves problems alone



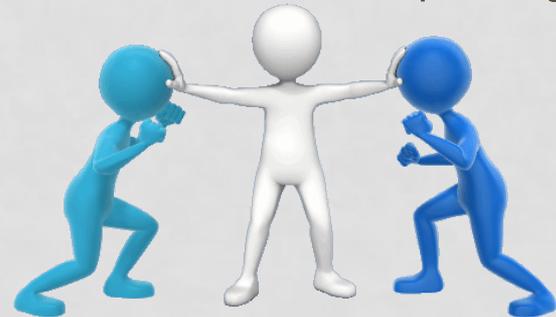
# LEADERSHIP AND PROGRAM MANAGEMENT DOMAIN



- Collaboration:
  - Infection prevention involves working with varying departments to promote infection prevention activities
  - Requires good team-building and consensus-building skills
  - Requires the ability to communicate effectively, network, market ideas, and manage relationships
- Followership:
  - Provide support for teams working on infection prevention activities
  - Requires critical thinking skills, strong commitment to the goal, active engagement, positive energy, willingness to express and accept alternative viewpoints

# LEADERSHIP AND PROGRAM MANAGEMENT DOMAIN CONT..

- Critical thinking skills:
  - Understanding scientific data
  - Translate evidence into practice
  - Create effective partnerships utilizing interpersonal skills
- Communications:
  - Understand the needs, knowledge and background of the audience
  - Provide concise, accurate and timely information
  - Recognize barriers to communications and develop ways to overcome those barriers
  - Utilize influence and persuasion



# IP PROFESSIONAL'S ROLE AS A LEADER/MANAGER

- Program Management:
  - Requires the ability to:
    - Manage everyday aspects of the infection control program
    - Respond quickly to regulatory and accreditation requirements
    - Incorporate data from emerging science into practice
    - Understand the impact of HAIs on healthcare finances
    - Carry out strategic and operational planning
- Organizational Management Styles:
  - **Functional:** A functional manager is a person who has management authority over an organizational unit—such as a department—within a business, company, or other organization.
  - **Charismatic:** Charismatic leadership is the process of encouraging certain behaviors in others via force of personality, persuasion and eloquent communication.
  - **Situational:** leadership refers to when the leader or manager of an organization must adjust his style to fit the development level of the followers he is trying to influence.
  - **Motivational:** Motivation is the word derived from the word 'motive' which means needs, desires, wants or drives within the individuals. It is the process of stimulating people to actions to accomplish the goals.

# INFECTION PREVENTION AND CONTROL DOMAIN

- Epidemiology and Surveillance
- Risk Assessment
- Risk reduction and infection prevention
- Antimicrobial stewardship
- Diagnostic tests
- Education
- Research



# TECHNICAL DOMAIN

- Information technology support
  - Access to hardware, software and databases needed for surveillance
  - Proficiency in the use of applications needed for surveillance
  - Training in the use of NHSN
- Surveillance technology
  - Collaboration with vendors
  - Ability to communicate data needs
  - An understanding of strengths and limitations of output
- Electronic medical records
  - Proficiency in EMR includes helping to select and evaluate EMR systems to assure they meet the needs of the IP program

# PERFORMANCE IMPROVEMENT AND IMPLEMENTATION SCIENCE DOMAIN

- Identify need for performance improvement
- Assemble performance improvement team
- Choose tools and methods
- Implement improvements
- Measure success



# OVERALL STRUCTURE AND FUNCTION

- Three principle goals for infection prevention and control programs:
  - Protect the Patient
  - Protect HCP, visitors, and others in the healthcare environment
  - Accomplish the previous two goals in a cost-effective manner whenever possible
- Functions of an infection prevention program:
  - Obtain and manage critical data and information, including surveillance for infections
  - Develop and recommend policies and procedures
  - Intervene directly to prevent infections and interrupt the transmission of infectious diseases
  - Educate and train HCP and patients

# JOINT COMMISSION 5 STANDARDS FOR INFECTION PREVENTION

1. Minimize the risk for development of an HAI through an organization-wide infection prevention program
2. Identify risk for the acquisition and transmission of infectious agents on an ongoing basis
3. Effective management of the infection prevention program
4. Collaboration of representatives from relevant components and functions within the organization in the implementation of the program
5. Allocation of adequate resources to the infection prevention and control program

# IMPACT OF OUTCOMES AND COST

- Cost benefit of an IP program:
  - Surveillance should be tied to specific interventions to decrease HAIs
  - Cost and revenue estimates are central to any business plan for deciding viability of a planned venture (i.e. expanding the scope of an IP program)
- Effectiveness:
  - The outcome of care
  - Can be expressed as the number of cases prevented, the number of lives saved or the number of life-years saved

Important to evaluate the impact of IP activities in ways other than cost:

Decreasing malpractice claims, protecting employees from injury/exposure, assisting in patient safety efforts, enhancing the organizations image



# QUALITY OF AN INFECTION PREVENTION PROGRAM



- Determine goals and objectives for the IP program
  - Should be based on:
    - Findings from the previous year's activities
    - Institutions strategic goals
    - Institutional data
  - An Annual Risk Assessment can assist in setting priorities and gaining support from key stakeholders
  - Infection prevention resources and data system needs of the IP program should be evaluated in the context of these goals

# QUALITY OF AN INFECTION PREVENTION PROGRAM

- Set priorities and realistic strategies by:
  - Establishing a reliable, focused surveillance system
  - Streamlining data management activities
  - Analyzing healthcare-associated infection rates
  - Aiming for zero HAIs
  - Educating staff regarding prevention techniques
  - Identifying opportunities for performance improvement
  - Taking a leadership role on performance improvement teams
  - Developing and implementing action plans that outline the steps needed to accomplish each objective

# QUALITY OF AN INFECTION PREVENTION PROGRAM

- Routinely assess the quality of the IP program by evaluating customer satisfaction, appropriateness, efficacy, timeliness, availability, effectiveness, and efficiency.
- An annual evaluation of the program should:
  - Outline achievements and activities
  - Describe support requirements
  - Emphasize the value of the program to the organization
  - Patient outcomes
  - Cost savings
  - Be widely distributed to organizational leadership

# INFECTION PREVENTION REPORTING RELATIONSHIPS

- Depending on the setting or structure in an organization, Infection Prevention may report to or be integrated with :
  - Administration
  - Nursing service
  - Quality Improvement
  - State agencies
  - Local health departments
  - Safety
  - Human resources
  - Employee Health



# KEY RELATIONSHIPS

- Employee Health:
  - Consult regarding Worker's Compensation related to infection or exposures
  - Consult regarding employee infections and illnesses
  - Integrate infection prevention and control related employee health policies
  - Assist with surveillance of employee illnesses/exposures
- Risk management:
  - Assist with investigation of patient claims or sentinel events related to HAI
  - Report cases with potential for legal action; incidents; product recalls

# INFLUENCES ON IP PROGRAMS

- Mandated reporting requirements
- Procedures, service lines, surgeries
  - Performed by facility
  - High volume, high risk, high cost
- New equipment, instruments, procedures
  - Infection prevention and infection control related risks, concerns, or benefit
- Patient demographics
  - Diseases common to patient population
  - Risk factors common to patient population
  - Socioeconomic status of the community
- Changing recommendations/requirements and new scientific literature and guidelines.

# INTERNAL & EXTERNAL INFLUENCES

- Internal environment:
  - Administration
  - Staffing
  - Quality Improvement
- External:
  - Competition
  - Economy
  - Technology
  - Political and Social conditions
  - Resources



# ORGANIZATIONAL INFLUENCES

- Infection prevention practice are also influenced by many organizations to include:
  - American Hospital Association (AHA)
  - Association for Professionals in Infection Control and Epidemiology (APIC)
  - Centers for Disease Control and Prevention (CDC)
  - Centers for Medicare & Medicaid Services (CMS)
  - Certification Board of Infection Control and Epidemiology (CBIC)
  - Food and Drug Administration (FDA)- safe medical device act (SMDA)
  - Health and Human Services (HHS)
  - Institute for Health Care Improvement (IHI)
  - Joint Commission (JC)
  - National Institute for Occupational Safety and Health (NIOSH)
  - Occupational Safety and Health Administration (OSHA)
  - Society for Healthcare Epidemiology of America (SHEA)

# POLICIES AND PROCEDURES

- Infection Prevention policies and procedures form the bases of the IP program and are applicable to staff in the whole facility.
- **Policies:** Give direction that helps to govern an organization or programs activities
  - must be supported scientifically
  - Development involves all disciplines impacted
  - Policies should address IP needs for the institution as a whole but also include unit/area specific policies where applicable.
- **Procedures:**
  - A particular way of accomplishing something
  - A series of steps to follow

# ADMINISTRATIVE LEADER SUPPORT

- Administrative leader support is crucial for IP programs.
- Administrative leaders should approve and support IP activities
- Infection Prevention Programs should:
  - Have regularly scheduled meetings with the administrators
  - Keep administration well-informed of the infection prevention and control activities
  - Develop annual goals and objectives based on the goals of the organization
  - Annually evaluate the infection prevention and control program to outline the achievements and activities of the program and describe support requirements
  - Emphasize the values of the IP program, patient outcomes and cost savings.

# MISSION AND VISION

- Mission: Defines the common purpose, focus, and context for all departmental activities
  - Mission statements enable a group to set boundaries for their activities, to know what is and what is not within their jurisdiction and to understand where they fit in the organization's overall improvement efforts.
  - The IPC Program mission should support the overall institutional mission
- Vision: a picture of where the infection prevention program wants the organization to go and where it wants it to be (a picture of the future).
  - Vision statements begin by identifying the IP programs strategic advantage in the organization and how they add value to others



# WHO IS THE INFECTION PREVENTION CUSTOMER?

- Anyone to whom the infection prevention and control program provides service
  - Includes patients, their families, physicians, nurses, visitors and all employees at facility
    - Internal customers: nurses, physicians, patients, patient families, facility employees
    - External customers: visitors, community, IP professionals at other facilities, regulatory agency personnel
- Important to identify customer needs
- Study all work processes and improve them based on customer needs and outcomes
- Final product or service should exceed customer expectations



# COMMUNICATION

- Regular communication should occur to various stakeholders:
  - Infection Prevention Committee Chairperson
  - Facility management
  - Medical staff
  - Nursing
  - Risk Management
  - Ancillary Clinical departments and support staff
- Communication:
  - Plan the method
  - Knowledge is power
  - Use all methods:
    - Electronic
    - Face to face
    - Written
  - SBAR



# QUALITY IMPROVEMENT

- 1 in 25 patients in the U.S. acquire HAIs each year
- @75,000 who have an HAI will die during hospitalization
- 2014 CDC report lists the most common HAI in the U.S.:
  - Pneumonia
  - SSI
  - Gastrointestinal
  - Urinary tract
  - Bloodstream
- Same report also lists top organisms causing HAIs are:
  - *Clostridium difficile*
  - *Staphylococcus*
  - *Klebsiella*
  - *Escherichia coli*
  - *Enterococcus*
  - *Pseudomonas*

# QUALITY PERFORMANCE IMPROVEMENT AND PATIENT SAFETY

- Quality improvement uses interdisciplinary teams to enact changes and improvements.
- Front line staff knowledge, skills, and expertise are valued in a quality focused culture
- Performance Improvement is a continuous cycle that focuses on patient clinical outcomes, customer satisfaction, and service.

Determine IP quality projects by assessing processes/procedures which are:

- High risk
- High volume
- Problem prone
- New



# QUALITY TOOLBOX

- Strategic planning: used to determine the direction a program is headed.
- A strategic plan per Joint Commission should:
  - Prioritize the risk for acquiring and transmitting infections
  - Set goals to limit:
    - Unprotected exposure to pathogens
    - The transmission of infection associated with procedures
    - The transmission of infections associated with the use of medical devices, equipment and supplies
  - Describe activities to minimize, reduce or eliminate the risk of infection
  - Describe the process to evaluate the IP program

# QUALITY TOOLBOX



- The Team:
  - Most valuable tool to foster the quality focused culture and process
  - Multidisciplinary to include a leader, facilitator, and an array of team members with fundamental knowledge of the process.
- Multi-voting:
  - Process for prioritizing (risk assessment)
- Goal-directed checklists:
  - Contain evidence-based criteria
  - Help with memory recall and make expected steps explicit
- Statistical Process Control:
  - To ensure that each process is performed consistently and correctly within predetermined parameters.
  - Focuses on process and is based on the principle of random variation
  - Used to monitor outcomes or to monitor the process

# TYPES OF ANALYSIS



- Gap analysis
  - Technique to determine the steps necessary to move from a current state to a desired future state, based on identified gaps in processes
- Root cause analysis
  - Takes a retrospective look at adverse outcomes
  - Determines what happened and why it happened,
  - Used to investigate major incidents, sentinel events, and errors
  - Strategies to prevent reoccurrence
  - Avoids individual blame



“To address this mistake we must use root-cause analysis. I’ll begin by saying it’s not my fault.”

# ADVERSE/SENTINEL EVENTS

- **Adverse event:** an unintended consequence of health care or service that results in a negative patient outcome (HAI)
- **Sentinel event:** an unexpected occurrence involving death or serious physical or psychological injury not related to the natural course of the patient's illness or underlying causes
- Human factor limitations that lead to errors:
  - Limited memory capacity
  - Overdependence on multitasking skills
  - Negative influence of fatigue and sensory overload
  - Stress, fatigue, and sensory overload

# TYPE OF ANALYSIS CONT...

- Failure mode effect analysis (FMEA)
  - Proactive, preventive approach to identify potential failures and opportunities for error
  - **Mode** is the way of operating or using a system or process, or a way or manner in which a thing is done.
  - A **failure mode** is a way in which something can fail
  - Components of this method
    - Determine a process or topic to study; should carry risk for harm
    - Convene a team of process or content experts
    - Develop a flow diagram to clearly identify steps of the process and any sub processes
    - Brainstorm possible reasons for failure; rate these based on severity and probability of occurrence
    - Determine appropriate actions to eliminate the failure or redesign the process
    - Identify outcome measures to test the redesigned process
- Strengths, Weaknesses, Opportunities, Threats Analysis (SWOT)
  - Investigate public health issues and improve healthcare outcomes
  - Points out what the organization should plan for and how to use resources to guide efforts

**Failure Is The Key To  
Success!**



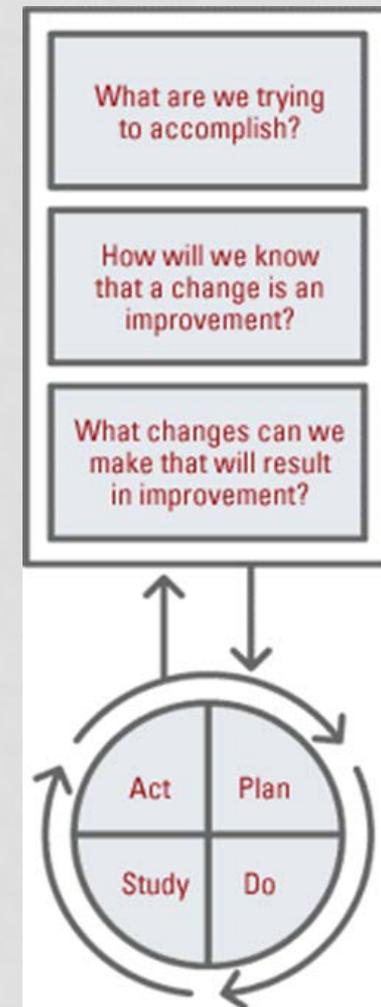
# SIX SIGMA AND LEAN APPROACH

- Precision and accuracy that leads to data-driven decisions
  - Speed, efficiency and the elimination of 'waste'
  - Value stream mapping used to
    - Visualize flow of materials and information
    - Identify barriers, and waste
  - Sigma Six and Lean principles use a DMAIC format (Define, Improve, Measure, Control, and Analyze)
- 
- **Define** the customer, project boundaries, and improvement process
  - **Measure** the performance of the process involved
  - **Analyze** the data collected and map the process to determine root causes and improvement opportunities
  - **Improve** the target process by designing creative solutions to fix and prevent problems
  - **Control** the improvement to keep the process on the new course



# THE IHI MODEL FOR IMPROVEMENT

- Two part model designed to accelerate improvement
- **1<sup>st</sup> part:**
  - setting aims, establishing measure and selecting changes
- **2<sup>nd</sup> Part**
  - Testing the selected changes in a PDSA cycle
    - **Plan:** identify responsibilities of the program, resources, risks, and goals
    - **Do:** Implement strategies specified in the plan to achieve goals
    - **Study:** Collect and display data about goal achievement
    - **Act:** Continual change in order to achieve goals and stay abreast of new developments



# PERFORMANCE MEASURES

- Focus on outcomes or processes used for internal improvement purposes, intra and inter organizational comparison, and decisions about care
- Quality of measure:
  - Valid – the extent to which a measure accurately reflects the concept or construct it is intended to measure.
  - Reliable- ability of an indicator to accurately and consistently identify the events it was designed to identify.
- Outcome measure:
  - Indicates the result of the performance of a function or a process
- Process measure:
  - Focus on a process or the steps in a process that lead to specific outcomes.

# SELECTING PERFORMANCE MEASURES

- Must establish clear priorities for measurement and improvement before selecting performance measures.
- External priorities:
  - Federal and state regulations
  - Accreditation
  - Payer/Purchaser expectations
  - Areas of interest to the patient community served
- Internal priorities:
  - Services in need of improvement
  - Medical staff concerns
  - Clinical care representing the high-risk or high volume services
- Performance measures selection for specific HAIs should focus on measures that:
  - Have clearly defined definitions
  - Provide precise and usable information
  - Are supported by previous studies
  - Can be readily applied in most settings.

# DETERMINING THE PATIENT POPULATION TO MEASURE



- Do the patients characteristics contribute to the likelihood that the outcome will occur.
- Is risk adjustment or stratification necessary?
  - Risk potential: ASA score, wound contamination classification, duration of surgical procedure
- The volume of patients in the population of interest.
  - Sampling may be appropriate with a large volume of patients
  - Sample approach to data collection may be an acceptable way to minimize resources and still obtain valid data
    - Common sampling methods
      - General random sample
      - Stratified random samples (i.e. every third surgery)
  - May require measurement of the entire population at risk as small sample sizes can limit data analysis

# DATA COLLECTION

- Data analysis:
  - Use risk adjustment and stratification when necessary
  - Be clear about how the data will be used
- Evaluate existing performance measures:
  - Determine if the measure adequately defines the event and patient population of interest
- Develop Performance Measures
  - Collect and report data in a timely manner
  - Ensure accuracy and completeness of data collection
  - Increase feasibility and ease of data collection



# MEASUREMENT TOOLS

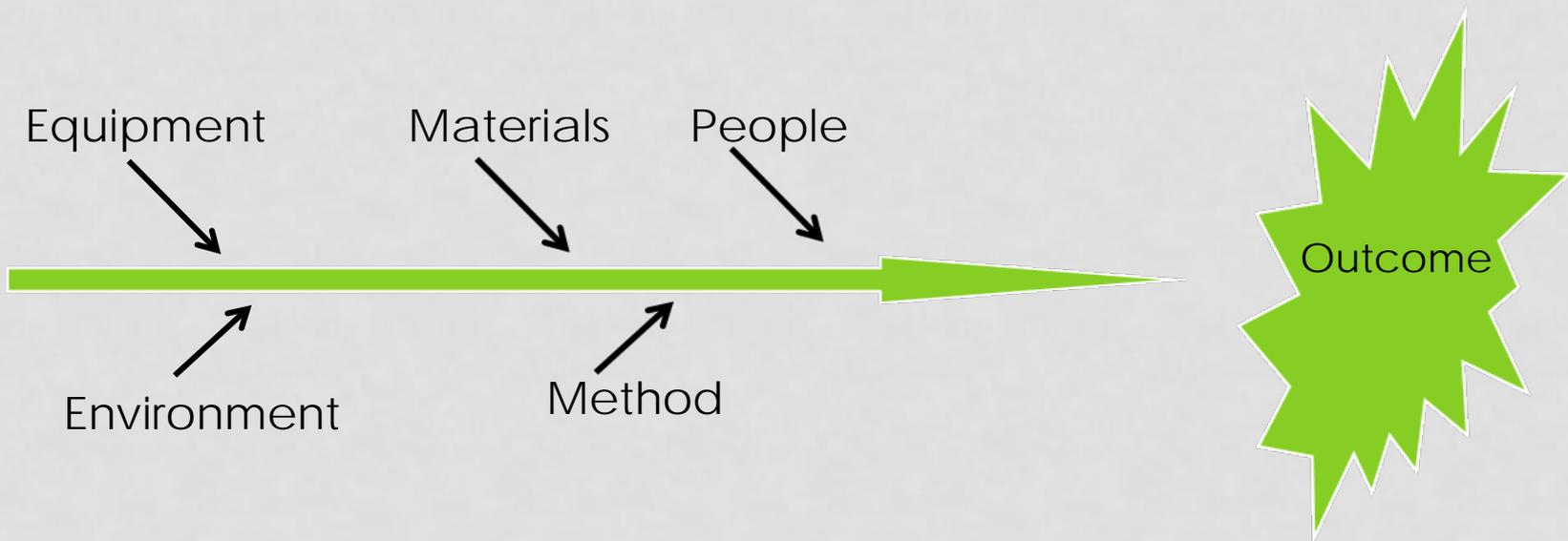
- Check sheets
  - Use when data is to be observed and collected repeatedly
  - Checklists provide an organized way to incorporate best practice
  - Bundles can create standardized and simplified processes and procedures.
  - Implementing a formalized process reduces errors

UNC Central Venous Catheter Placement Checklist

Identify indications/contraindications to procedure?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Obtain informed consent?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Perform procedure time-out?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Position patient in Trendelenburg position?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Explain each step to patient and ensure patient's comfort?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Ensure a member of nursing staff is in the room and available for entire procedure?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Select the linear array probe to identify internal jugular vein and carotid artery? Demonstrate compressibility of the vein throughout course in neck?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Measure from skin to target vessel?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Demonstrate maximal sterile barrier precautions in prepping and draping patient and probe? (Wash hands, prep with chlorhexidine + alcohol for 2 minutes, gown, gloves, cap, mask, full drape, sterile probe cover & gel)	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Flush all lumens of catheter with sterile saline and clamp or attach claves?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Anesthetize skin, being careful not to inject in a vessel?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Introduce needle into vein under direct ultrasound guidance? (Most experienced operator in room takes over after 2 unsuccessful sticks)	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Confirm non-pulsatile bleeding? Attach manometry tubing to angio cath to confirm venous placement?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Insert no more than 20 cm of guidewire and retain control of guidewire at all times while threading wire and removing angio cath/needle?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Visualize guidewire in vein with ultrasound in transverse and longitudinal view before dilating and threading the catheter? Document with ultrasound image.	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Ensure all ports aspirate and flush freely?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Place Biopatch and then suture line?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Place sterile dressing?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Safely dispose of all sharps/contaminated equipment?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Confirm placement with CXR?	<input type="checkbox"/> YES	<input type="checkbox"/> NO

# FISHBONE DIAGRAM

- Commonly used to identify potential factors causing an overall effect or breaks in a process
- Work backwards from an event
- Organizes idea in a clear manner



# MEASUREMENT TOOLS

- Graphs and charts condense large amounts of information
  - Easy to understand formats
  - Clearly and effectively communicate important points

**A Picture is  
Worth a  
Thousand Words!**



# CHARTS AND GRAPHS

- Run Charts
  - Graphs to display observed data in a time sequence
  - Useful to find anomalies in data that suggest a shift in process over time or evaluate special factors that may be influencing variability of a process
- Histograms
  - Graphical representation showing a visual impression of the distribution of data
- Statistical process control charts
  - Used to determine whether or not a process is in a state of control
- Pareto charts
  - Contain both bars and a line graph, with individual values represented in descending order by bars and the cumulative total represented by the line
  - Used to highlight the most important among a set of factors

# OTHER TOOLS

- **Dashboards** – Snapshot of current organizational statistics and trends
- **Scorecards** – Status check of progress of key strategic objectives or initiatives – often have graphics such as red light, yellow light or green light to quickly show where the organization “stands” on an indicator or mea

Cumulative Fiscal Year 2013 To Date -- Catheter-Associated Urinary Tract Infection (CA-UTI)  
Rate by Nursing Unit

GOAL: 0.65 CAUTI per 1000 patient days  
--OR-- 2.51 CAUTI per 1000 FC days

Nursing Unit	Number of CAUTIs	Number of Foley Catheter Days	Number of Patient Days	Device Utilization Ratio (# Foley Days/# Patient Days)	CAUTI Rate Per 1000 Foley Catheter Days
3AD/ICCU	1	888	7888	0.11	1.13
3WH	1	365	2746	0.13	2.74
3WST	3	886	8780	0.10	3.39
4ADN	4	2033	6557	0.31	1.97
4ADS/CTSU	1	1666	4723	0.35	0.60
4LD	1	2837	2837	1.00	0.35
4ONC	6	837	11122	0.08	7.17
5AD	6	1743	4471	0.39	3.44
5BT	5	2552	8776	0.29	1.96
5CH	0	204	4833	0.04	0.00
5EST	2	410	4691	0.09	4.88
5WH	0	904	6157	0.15	0.00
5WST	2	1244	4585	0.27	1.61
6BT	1	848	9240	0.09	1.18
6CH	0	89	7110	0.01	0.00
6EST	1	671	2608	0.26	1.49
6NSH/STPU	6	1191	9796	0.12	5.04
6WH	3	1790	4955	0.36	1.68
6WST	0	510	4806	0.11	0.00
7CH	1	889	6706	0.13	1.12
7NSH	6	1845	6327	0.29	3.25
8BT	2	1229	9965	0.12	1.63
8MTU	0	269	5379	0.05	0.00
BURN/BICU	11	4061	7184	0.57	2.71
CICC	0	35	2244	0.02	0.00
CICU	7	2388	3909	0.61	2.93
ISCU	2	3244	5719	0.57	0.62
MICU	16	5410	5961	0.91	2.96
MPCU	3	1848	4060	0.46	0.00
NBN	0	0	6233	0.00	0.00
NCCC	0	364	17948	0.02	0.00
NSIU	20	3403	4878	0.70	5.88
PICU	4	1573	5143	0.31	2.54
REHB	2	938	8777	0.11	2.13
SICU	16	4758	4848	0.98	3.36
TICU	5	3050	3050	1.00	1.64
<b>Total</b>	<b>138</b>	<b>56972</b>	<b>224992</b>	<b>0.25</b>	<b>2.42</b>

\*Per 1000 Foley Catheter Days

	< 2.51 per 1000 FC days
	2.51 to 2.76 per 1000 FC days
	> 2.76 per 1000 FC days

# DATA ANALYSIS

- Method of calculation:
  - Performance measures should include a numerator and a denominator
    - Numerator: event being measured
    - Denominator: population at risk
  - Can be calculated as a rate, continuous variable, or ratio.
  - There must be clear definitions of the event and population of interest (for example: CLABSI/per 1000 Central Line days)
- Risk adjustment and Stratification:
  - Risk adjustment is a statistical process for reducing, removing, or clarifying the influences of confounding factors that differ among comparison groups. It is used most frequently with outcome measures.
  - Stratification is a form of risk adjustment that involves classifying data into subgroups based on one or more characteristics. Examples include gender, age, or birth weight.

# USING DATA TO DRIVE IMPROVEMENT

- Internal data tracking and comparisons
  - to compare over time to drive improvement
- External data tracking and comparisons
  - to compare data between institutions; requires data to be collected by the same methodologies, in all institutions including training of data collectors, definitions used, and resources used to make determinations
- Relation to quality improvement and patient safety
  - there must be a link between the collection of infection data and the organization's continuous improvement strategy

QUESTIONS?

