



**North Carolina
Clinical Antibiotic
Stewardship Partners**

**LONG-TERM CARE COMMUNITIES
ANTIBIOTIC STEWARDSHIP
SESSION #4**

April 19, 2023

CONFLICT OF INTEREST DISCLOSURES

- ▶ The views and opinions expressed in this series are those of the speakers and do not reflect the official policy or position of any agency of the U.S. or NC government or UNC.
- ▶ Our speakers have the following financial relationships with the manufacturer(s) and/or provider(s) of commercial services discussed in this activity:
 - ▶ Dr. Kistler served as a consultant for Base10, Inc on their UTI embedded clinical support tool and received funding from Pfizer to study pneumococcal carriage.
 - ▶ Dr. Willis has performed contracted research with: Pfizer (pediatric nirmatrelvir-ritonavir and maternal RSV vaccine), Novavax (pediatric COVID-19 vaccine), and Merck (monoclonal antibody for RSV prevention)
 - ▶ Ms. Doughman owns individual Gilead stock.
- ▶ The speakers do not intend to discuss an unapproved/investigative use of a commercial product/device in this series, and all COI have been mitigated.
- ▶ These slides contain materials from a variety of colleagues, Drs. Philip Sloane and David Weber, as well as the CDC, WHO, AHRQ, etc.

OUTLINE OF TODAY'S SESSION

1. NC CLASP reminders
2. Zoom Poll and Large Group Discussion
3. CDC Core Elements: Tracking and Reporting, with a focus on surveillance for UTIs
4. Small Group Discussion
5. QI on Tracking and Reporting
6. Take-home thoughts?



SESSION REMINDERS

- ▶ This time is for you and your learning.
- ▶ Please turn on your videos!
 - ▶ Cameras on
 - ▶ Stay muted unless speaking
- ▶ Use the chat
- ▶ Let's use and share our learning, but not in a way that identifies protected information.
- ▶ If you need to get a hold of us:
 - ▶ Danielle.Doughman@unchealth.unc.edu
- ▶ Sign up for a SMART AIM slot! We want to help you!

https://docs.google.com/document/d/1uY1YarnlvCdl_e8EgLB5P7luovjlvZWFE/edit



ZOOM POLL

▶ Who reviews your antibiotic stewardship reporting? Click on all applicable.

- No one
- DON
- Medical Director
- Pharmacist
- Nursing staff
- Family/residents

How do you share your antibiotic reports with your nursing home community? Click on all applicable.

- Periodic written reports
- Periodic announcements
- Informal discussions

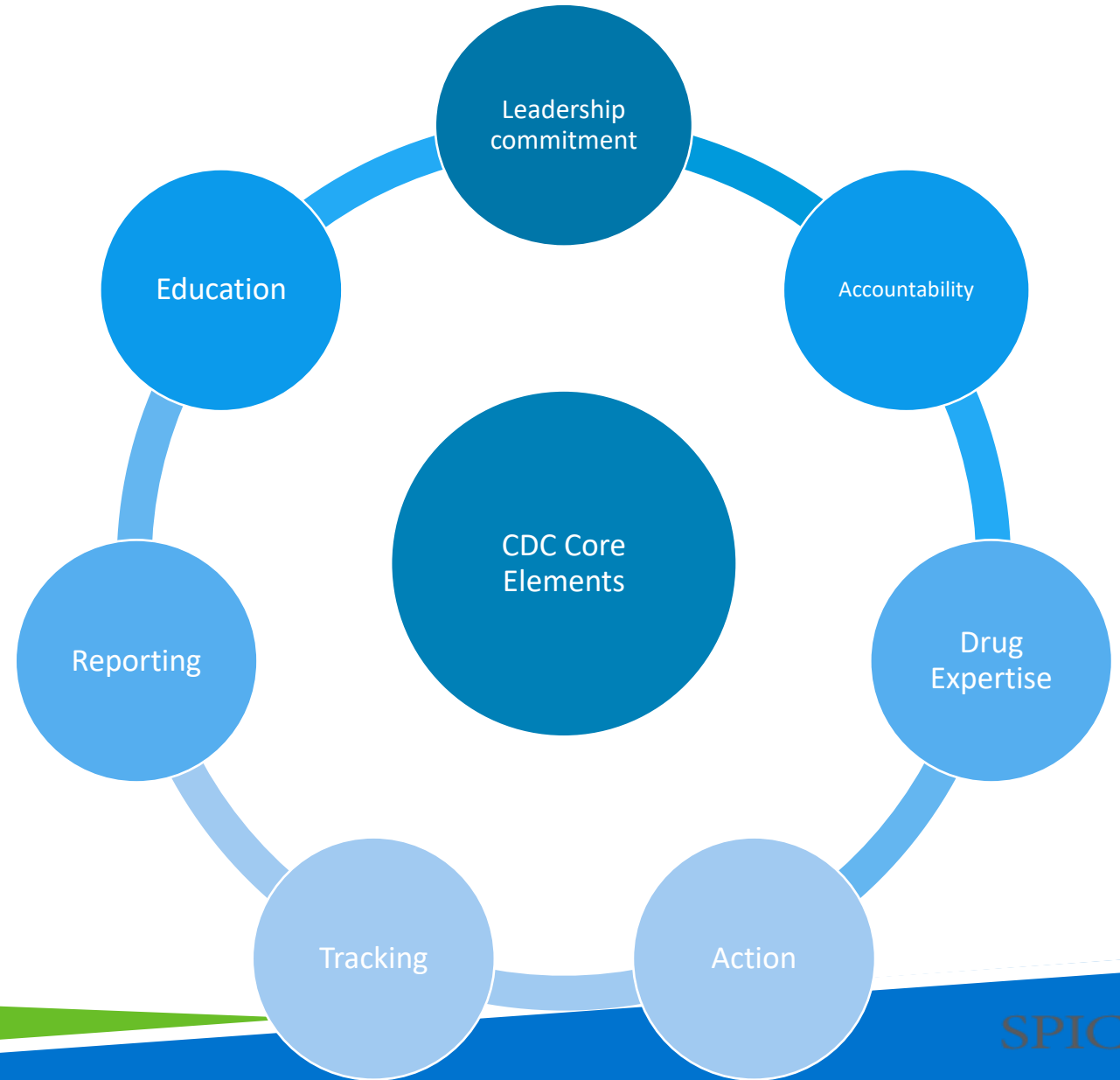
LARGE GROUP DISCUSSION ON POLL ITEMS

▶ Who reviews your antibiotic reporting?

How do you share your antibiotic reports with your nursing home community?

CDC CORE ELEMENTS: TRACKING AND REPORTING

- ▶ **Process measures: tracking how and why antibiotics are prescribed**
 - ▶ Periodic chart reviews to assess adherence to nursing home protocol for the work-up of an infection and prescribing process
 - ▶ How do you provide feedback to providers over their data? Get pharmacy to help with a medication use evaluation (MUE)?



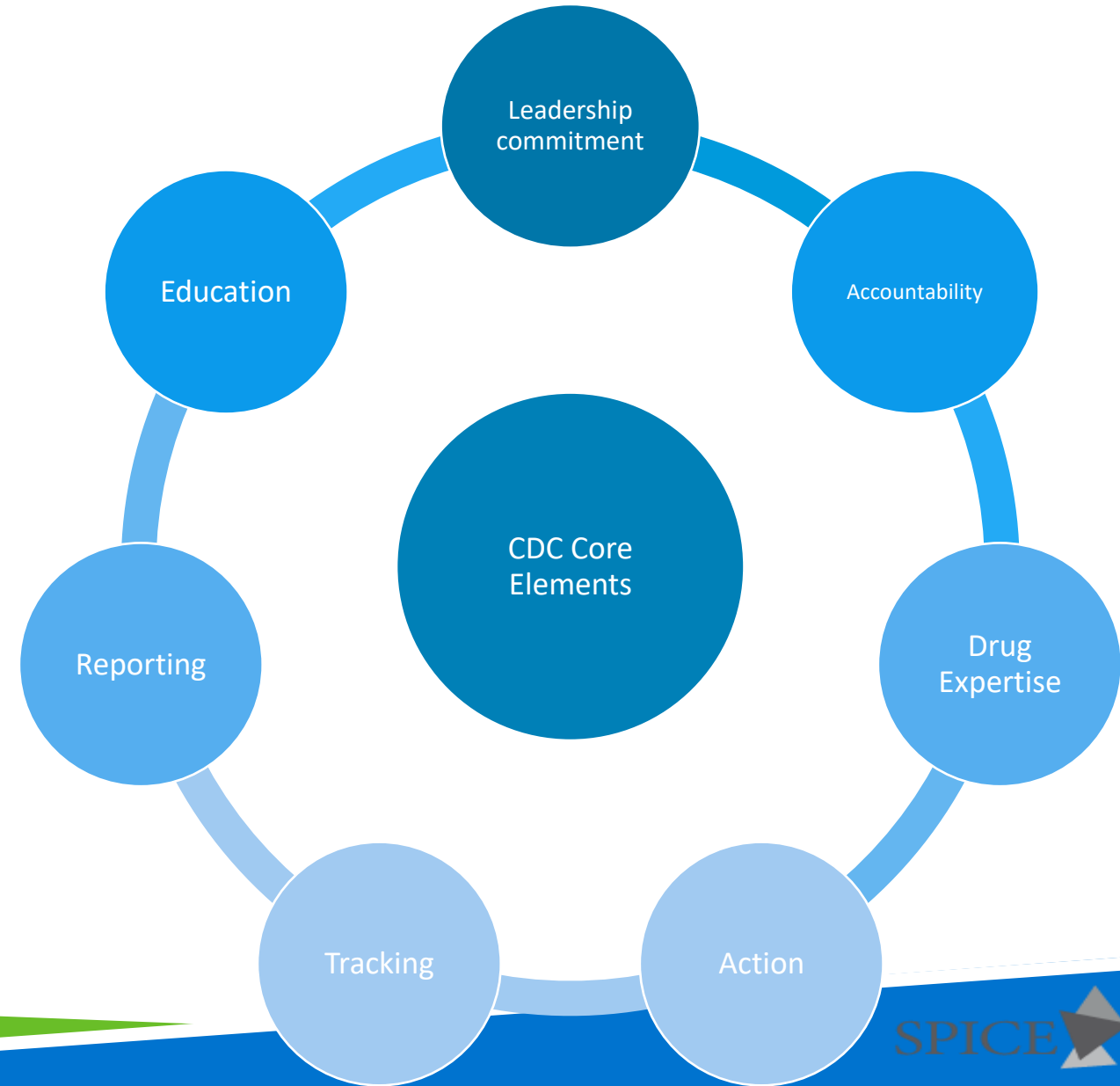
CDC CORE ELEMENTS: TRACKING AND REPORTING

▶ Antibiotic use measures:

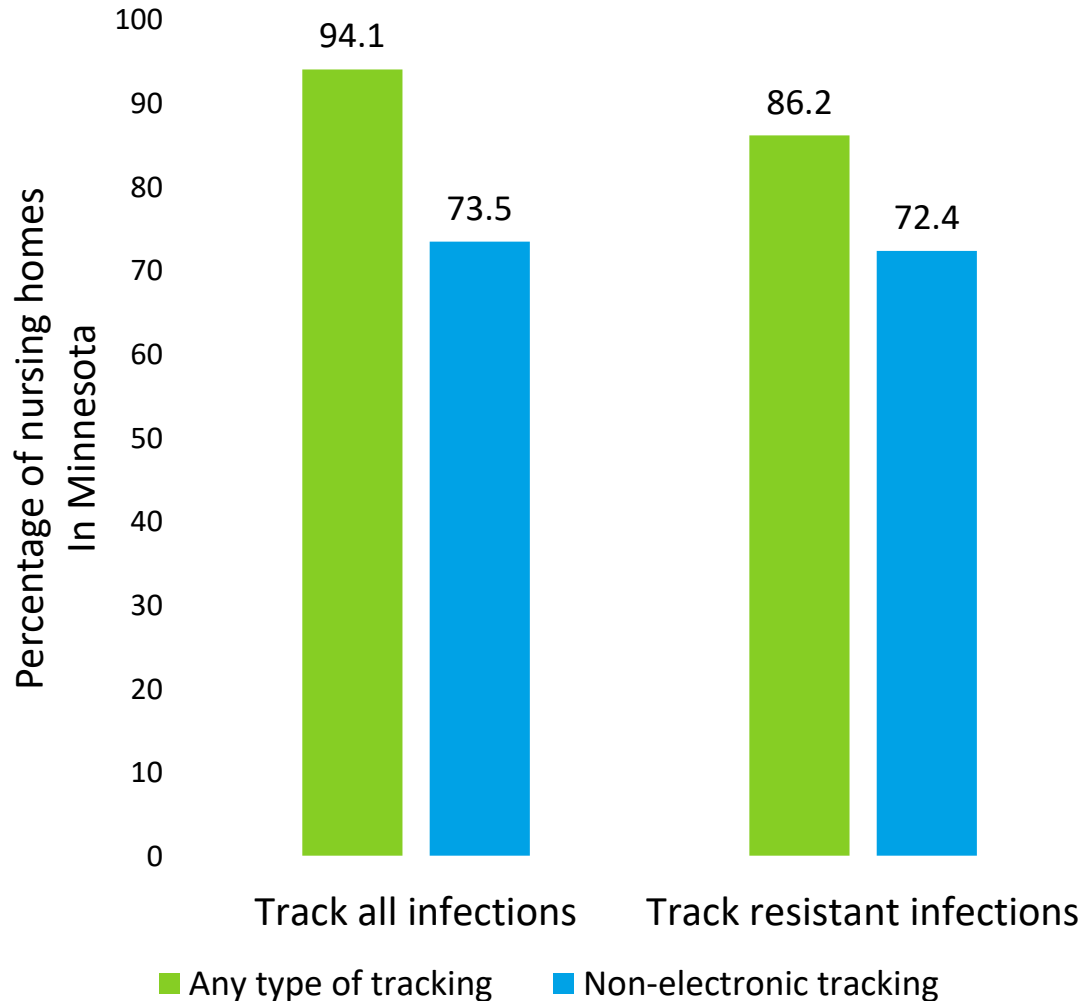
- ▶ CDC is developing an Antibiotic Use reporting options withing the NHSN (National Healthcare Safety Network)
- ▶ Standardized benchmarks are likely coming for antibiotic use: type, starts, days of therapy (DOT).
- ▶ Adherence to surveillance criteria for suspected UTIs, pneumonia, skin/soft tissue infections

▶ Antibiotic outcome measures:

- ▶ Rates of *c. diff*, MRSA, CRE, and other MDROs (multi-drug resistant organisms)



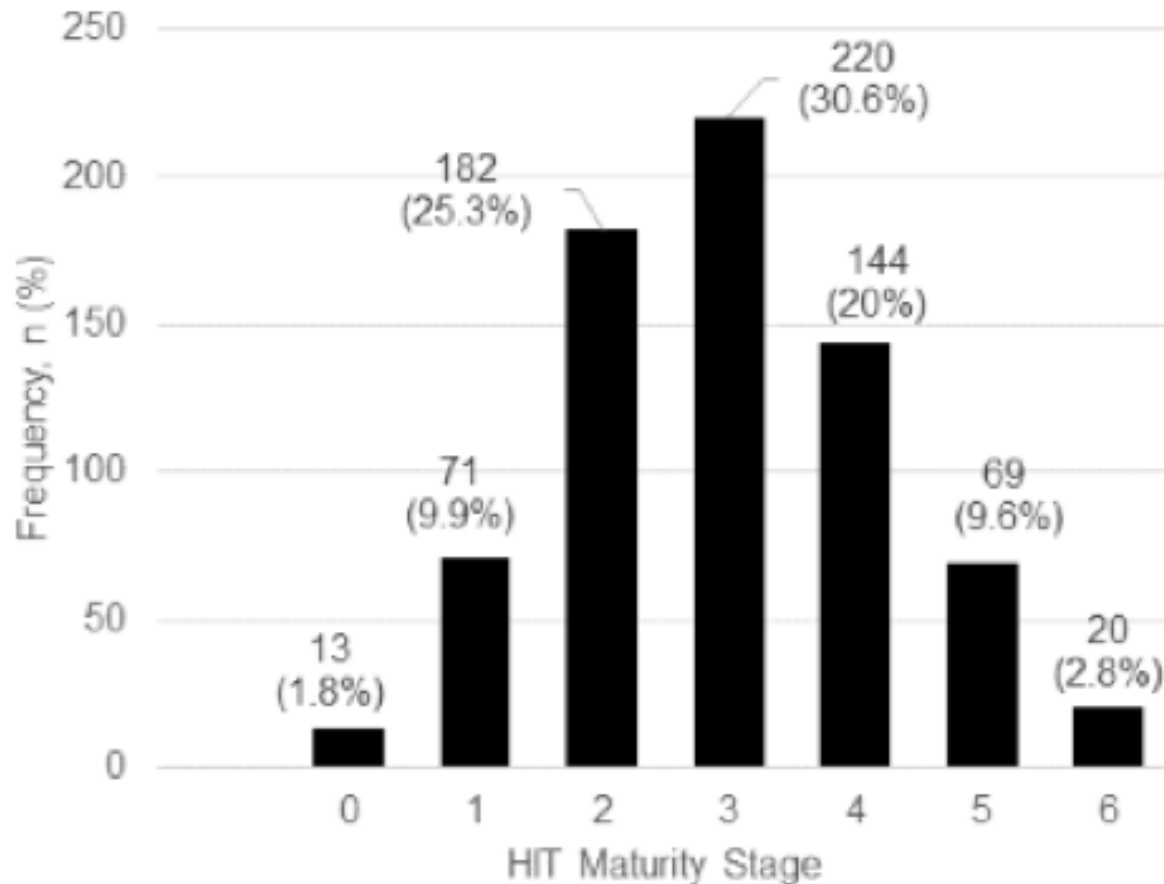
TRACKING AND REPORTING IN NURSING HOMES



- ▶ Only 1/3 of clinicians were informed of antibiotic use trends
- ▶ 2/3rds described their systems as “not” or “somewhat” effective at optimizing appropriate antibiotic use
- ▶ In 42% of nursing homes, the infection preventionist spent <5 hours per month on stewardship activities.

O’Fallon et al JAGS 2007.

TRACKING AND REPORTING IN NURSING HOMES



- ▶ A recent study of 719 nursing homes from all 50 states and DC.
- ▶ The majority (61%) had stage 3 IT systems or less.
- ▶ Small rural nursing homes had less mature IT systems.
- ▶ 0 represents no system in place, and 6 is “representative to generate clinical data and drive self-management”

Alexander GL et al JMIR Aging 2022 Aug.
<https://aging.jmir.org/2022/3/e37482/>

TRACKING AND REPORTING FOR UTI

Syndrome	McGeer Surveillance Criteria	
If NO culture, STOP, infection does not meet UTI surveillance definitions		
<p>UTI without indwelling catheter (Must fulfill both 1 AND 2)</p>	<p>At least ONE of the following signs/symptoms:</p> <ul style="list-style-type: none"> ➤ Acute dysuria or pain, swelling, or tenderness of testes, epididymis, or prostate ➤ Fever or leukocytosis and ≥1 of the following: <ul style="list-style-type: none"> • Acute costovertebral angle pain or tenderness • Suprapubic pain • Gross hematuria • New or marked increase in incontinence • New or marked increase in urgency • New or marked increase in frequency ➤ If no fever or leukocytosis, then ≥2 or the following: <ul style="list-style-type: none"> • Suprapubic pain • Gross hematuria • New or marked increase in incontinence • New or marked increase in urgency • New or marked increase in frequency 	<p>At least ONE of the following microbiological criteria:</p> <ul style="list-style-type: none"> ➤ ≥10⁵ cfu/mL of no more than 2 species of organisms in a voided urine sample ➤ ≥10² cfu/mL of any organism(s) in a specimen collected by an in-and-out catheter

AN ABUNDANCE OF FREE HELP!

- ▶ <http://www.rochesterpatientsafety.com/index.cfm?Page=For%20Nursing%20Homes>
- ▶ <https://www.health.state.mn.us/diseases/antibioticresistance/hcp/asp/ltc/index.html>
- ▶ <https://www.cdph.ca.gov/Programs/CHCQ/HAI/Pages/SNF ASP Toolkit.aspx>
- ▶ <https://asap.nebraskamed.com/long-term-care/tools-templates-long-term-care/>
- ▶ <https://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html>
- ▶ <https://www.ahrq.gov/nhguide/index.html>

Many tools (156!) available for free on the internet, mostly about education, patient assessment and outcome measurement.

Belan M. J Antimicrob Chemother. 2020 Jun



ROCHESTER Nursing Home Collaborative



<http://www.rochesterpatientsafety.com/index.cfm?Page=For%20Nursing%20Homes>

GOAL

Through antimicrobial stewardship interventions targeting common infectious syndromes.

ROCHESTER
Nursing Home
Collaborative

GENERAL ANTIBIOTIC STEWARDSHIP PRINCIPLES

- HANYS Podcast: Antibiotic Stewardship in Nursing Homes
- AHRQ - Antimicrobial Stewardship Educational Modules
- National Perspective on Antibiotic use in Nursing Homes
- Antibiotic Use and Resistance in LTC

POLICY & IMPLEMENTATION

- Antibiotic Stewardship Policy Template
- Tools for Advancing Antimicrobial Stewardship in Nursing Homes
- Adoption of ASP in Long Term Care
- The Core Elements of ASP with CMS and OAPI Updates
- Workshop 2.28.18 - CMS ASP Regulations
- Workshop 2.28.18 - Implementation Stewardship in Rochester, NH

IMPROVING ANTIBIOTIC USE

EDUCATION:

- Treatment of Urinary Tract Infections in Older Adults
- Antibiotic Review: Focus on Older Adults
- UTI An Opportunity for Antimicrobial Stewardship
- Stewardship for SSTI and PNA

GUIDELINES:

- Guidelines for Treatment of Urinary Tract Infections



IMPROVING ANTIBIOTIC USE

EDUCATION:

- Strategies to Promote Appropriate Treatment of Urinary Tract Infections in Older Adults
- Antibiotic Review: Focus on Older Adults
- Managing Common Infections in the Elderly
- UTI An Opportunity for Antimicrobial Stewardship
- Workshop 2.28.18 - Stewardship for SSTI and PNA

GUIDELINES:

- Guidelines for Treatment of Urinary Tract Infections
- Guidelines for Treatment of Pneumonia
- Active Monitoring Pocket Card
- Renal Dosing Guidelines for Common Antibiotics
- Guidelines for the Diagnosis and Treatment of SSTI



TRACKING ANTIBIOTIC USE

EXCEL TRACKING WORKSHEETS AND INSTRUCTIONS:

- Monthly Antibiotic Tracking Worksheet (NEW)
- Summary Antibiotic Tracking Worksheet (NEW - Use with monthly tracking sheet)
- Antibiotic Tracking Sheets Instructions (NEW)

NYSDOH UTI Tracking Worksheet

NYSDOH UTI Tracking Worksheet Instructions for Use

OTHER TOOLS:

- Antibiotic Order Sheet Template
- Antibiotic Data Cleaning and Summation Guidance
- ANTIBIOTIC TRACKING EDUCATION:
- Measuring Antibiotic Use in Long Term Care
- Antibiotic Tracking and QAPI Presentation
- Gathering and Using Nursing Home Antibiotic Data
- Practical Approaches to Measuring & Reporting Antibiotic Use



EDUCATION

RESIDENTS AND FAMILIES:

- Resident Family UTI Letter Template
- Residents and Families UTI Pamphlet (English)
- Residents and Families UTI Pamphlet (Spanish)

NURSING:

- Assessment of Urinary Tract Infections in LTCF Residents
- Dr. Robin Jump's Improving the Care of LTCF Residents with Infections
- Workshop 2.28.18 - Establishing Infection Control Programs
- Workshop 2.28.18 - Managing MDROs and C. difficile Infections

INFECTION TRACKING EXCEL SPREADSHEETS



ANTIBIOTIC TRACKING TOOL

Location/Unit:
 Resident Name:
 ST/LT: Room/Bed:
 Date of Admission: Discharged:
 ABX Name:

TOTALS -->
 As of: Period Reported From: 04/01/18
 04/30/18 Period Reported Through: 04/30/18

This material was prepared by the Atlantic Quality Innovation Network (AQIN), the New York State, South Carolina, and the District of Columbia, under contract with the U.S. Department of Health and Human Services. The contents do not necessarily reflect the views of the U.S. Department of Health and Human Services.

MONTHLY STATISTICS							
New ABX Starts for Month	0						
New ABX Start Rate (New ABX Starts for Month/1000 Resident Days)	0.00						
Days of Therapy Rate (Monthly Days of Therapy/1000 Resident Days)	0.00						
Did NOT Meet Facility Criteria	0						
NOT Re-Assessed within 48-72 hours of antibiotic start	0						

Resident Days Reported for Month (Facility-wide) **none**



<http://www.rochesterpatientsafety.com/index.cfm?Page=3>
 For%20Nursing%20Homes

ANTIBIOTICS	TOTAL TRACKED	NEW FOR MONTH				DAYS OF THERAPY FOR MONTH			DOT RATE	NEW ABX Start	
	#	#	Short Stay	Long Stay	Hospital Start	Tx	Prophylaxis	GRAND TOTAL	per 1000	per 1000	
AMIKACIN - INHALED	0	0	0	0	0	0	0	0.00%	0	0.00	0.00
AMOXICILLIN	0	0	0	0	0	0	0	0.00%	0	0.00	0.00
AMOXICILLIN/CLAVULANATE	0	0	0	0	0	0	0	0.00%	0	0.00	0.00
AMPICILLIN	0	0	0	0	0	0	0	0.00%	0	0.00	0.00
AMPICILLIN/SUBLACTAM	0	0	0	0	0	0	0	0.00%	0	0.00	0.00
AZITHROMYCIN	0	0	0	0	0	0	0	0.00%	0	0.00	0.00
CEFACLOR	0	0	0	0	0	0	0	0.00%	0	0.00	0.00
CEFAZOLIN	0	0	0	0	0	0	0	0.00%	0	0.00	0.00
CEFDINIR	0	0	0	0	0	0	0	0.00%	0	0.00	0.00
CEFEPIME	0	0	0	0	0	0	0	0.00%	0	0.00	0.00
CEFPODOXIME	0	0	0	0	0	0	0	0.00%	0	0.00	0.00
CEFTAZIDIME	0	0	0	0	0	0	0	0.00%	0	0.00	0.00
CEFTRIAZONE	0	0	0	0	0	0	0	0.00%	0	0.00	0.00
CEFTUROXIME	0	0	0	0	0	0	0	0.00%	0	0.00	0.00



Antibiotic Statistical Trending Report		Facility Name-												Unit/Floor-										
Month/Year-->	Jan-00	Mar-00	Apr-00	May-00	Jun-00	Jul-00	Aug-00	Sep-00	Oct-00	Nov-00	Dec-00	Jan-01	Feb-01	Mar-01	Apr-01	May-01	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01	
New ABX Starts for Month																								
New ABX Start Rate (New ABX Starts for Month/1000 Resident Days)																								
Days of Therapy Rate (Monthly Days of Therapy/1000 Resident Days)																								
Did NOT Meet Facility-Adopted Criteria																								
Not Re-Assessed within 48-72 hours of Facility-Start																								
The 6 rows below are for the trending of "User-Defined" areas. You may choose any "topic" or statistic to trend up to 24 months from the Monthly Antibiotic Tracking Tool. Whatever "Topic" that is typed in column "A" (below) will automatically appear as a corresponding chart title below along with the trending data entered across in that same row. If the "topic" is left blank along with the 24 monthly trending cells across the sheet, the corresponding graph below will simply appear blank.																								

<http://www.rochesterpatientsafety.com/index.cfm?Page=For%20Nursing%20Homes>

SMALL GROUP DISCUSSION

Tracking and Reporting for UTIs

1. How do you track a patient with a UTI? What's something helpful that you do? What's a barrier?
2. What goes in your report of your data? WHAT do you do with it?

Ask for volunteer to debrief the larger group on how you report the data!

Tracking and Reporting for UTIs
How do you report the data?

SMALL GROUP DEBRIEF

Understanding Variation through Tracking and Reporting

Looking at Data Over time

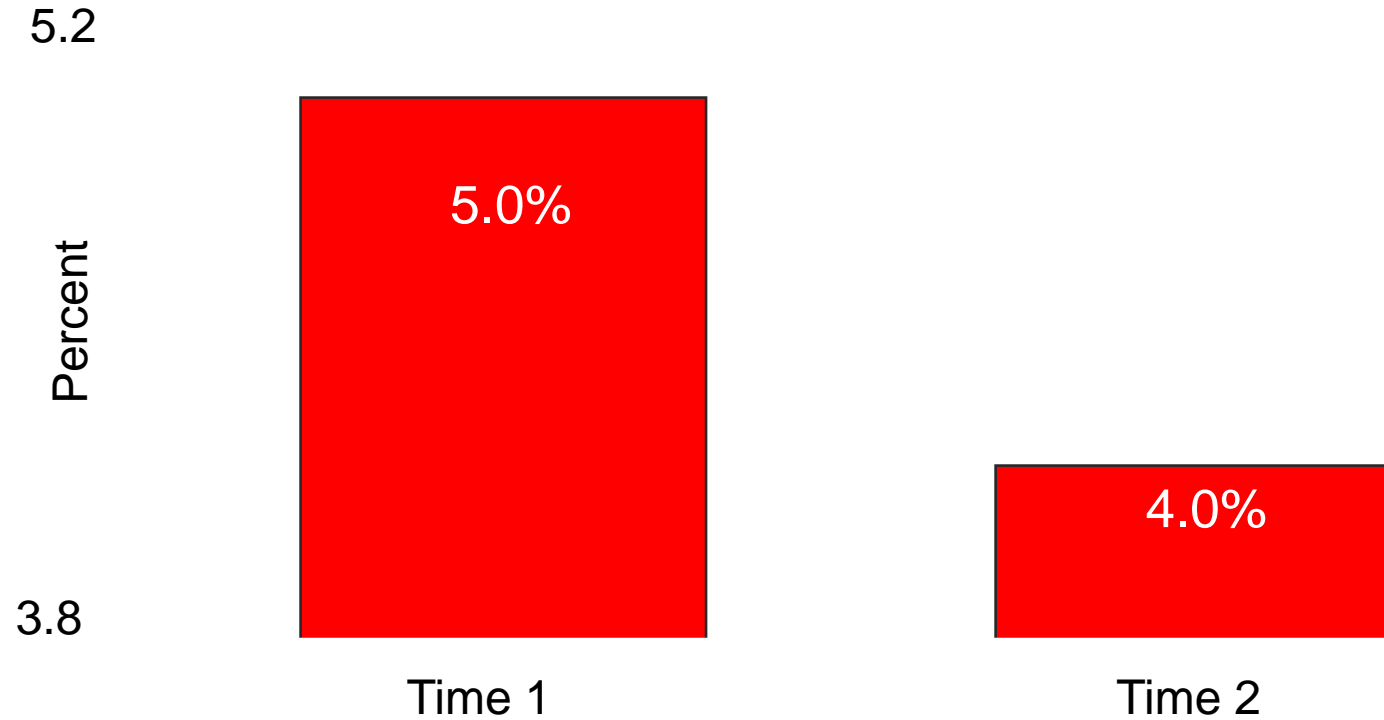
Marian Johnson

TRACKING DATA FOR IMPROVEMENT

Tracking a measure over time allows us to answer questions about a key process, such as:

- ▶ What is the current state (baseline) of our process?
- ▶ Is it stable (or reliable)?
- ▶ How will we know if a change is an improvement?
- ▶ Which actions have an impact on our process?

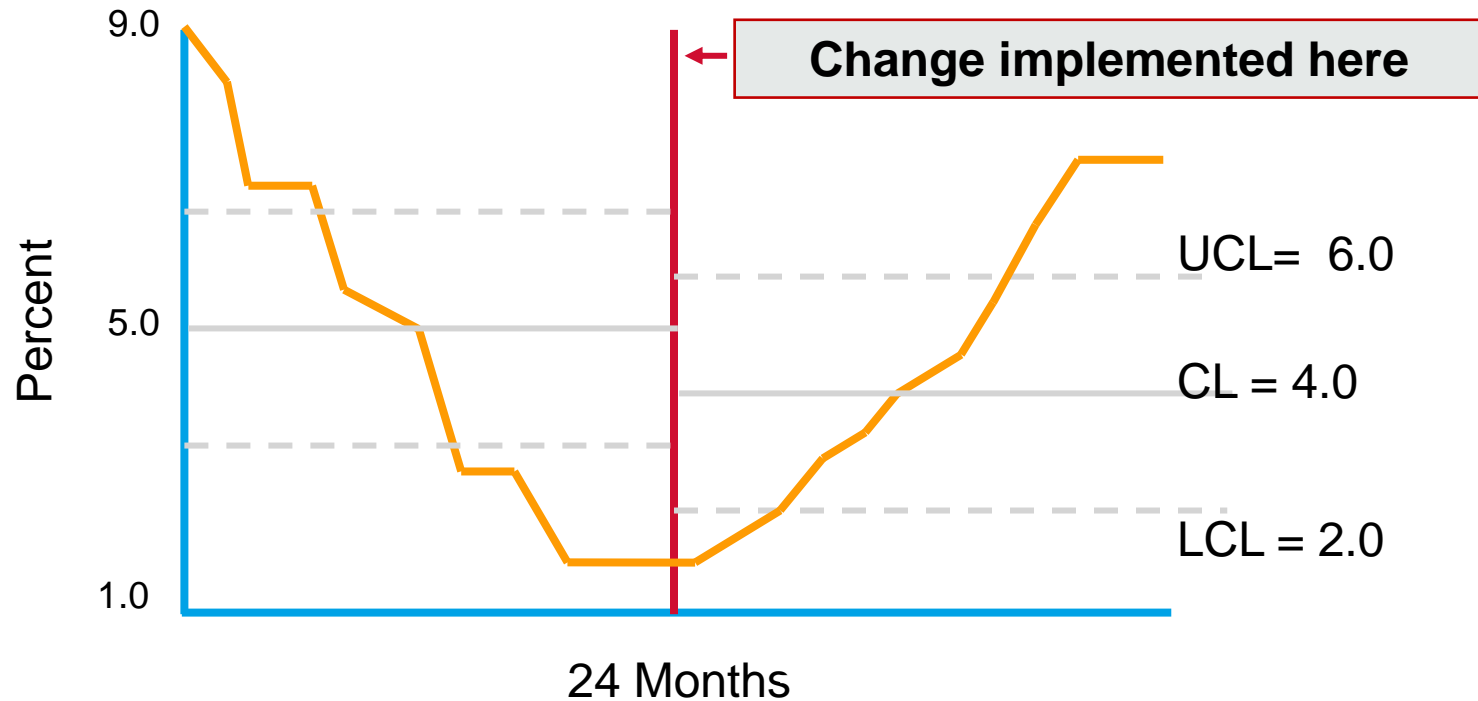
PERCENT OF RESIDENTS ON ANTIBIOTICS BEFORE AND AFTER THE IMPLEMENTATION OF A CHANGE



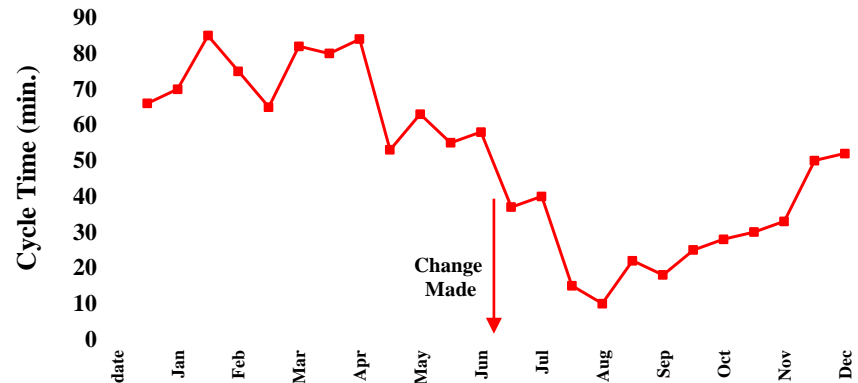
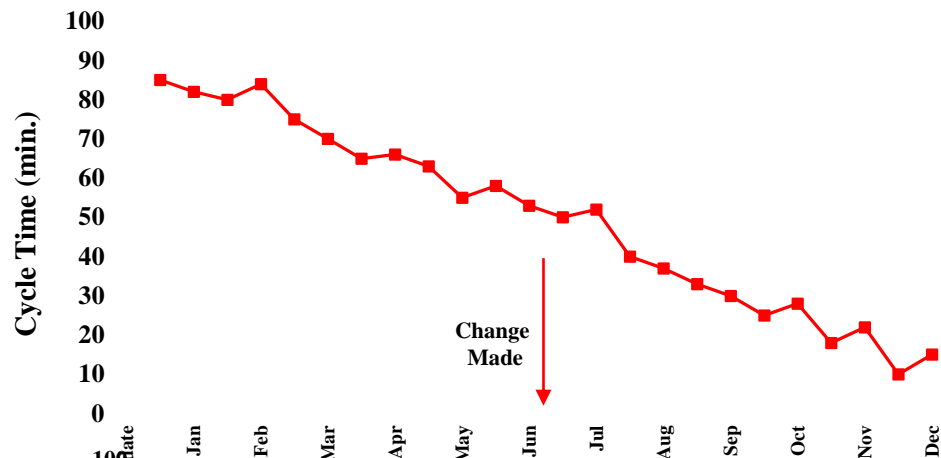
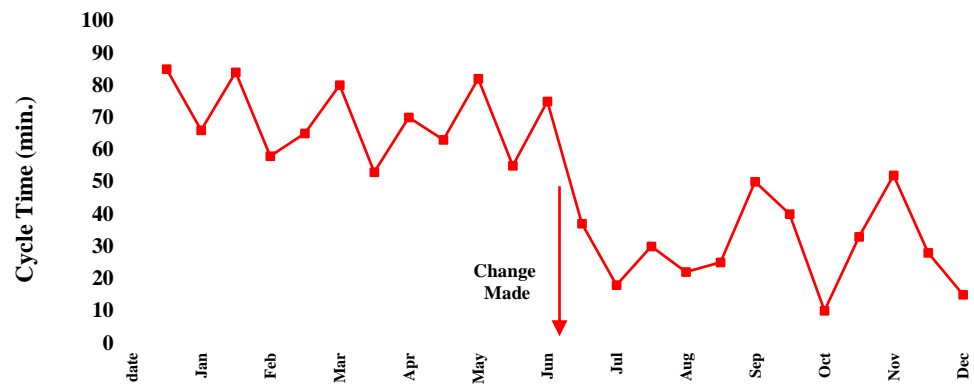
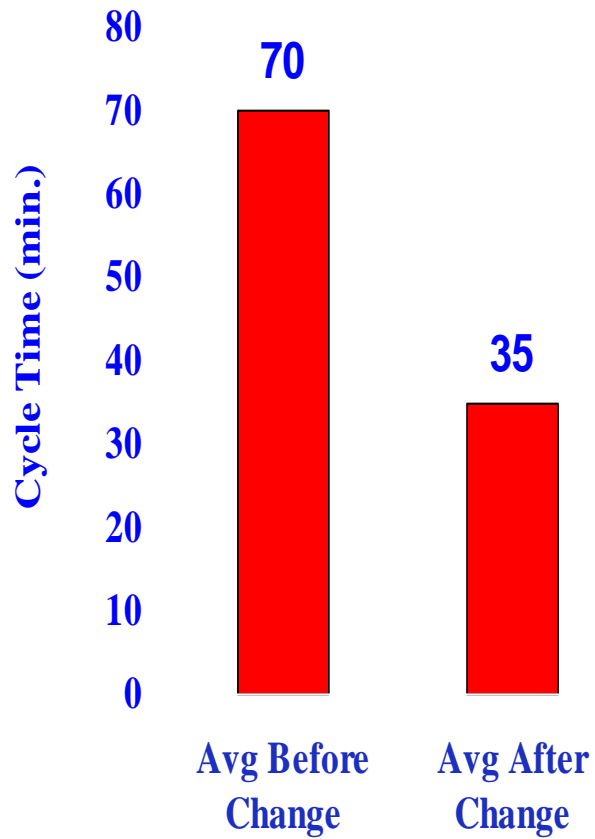
Conclusion -The change was a success!
A 20% drop in antibiotic use!

PERCENT OF RESIDENTS ON ANTIBIOTICS

BEFORE AND AFTER THE IMPLEMENTATION OF A CHANGE
A SECOND LOOK AT THE DATA



Now what do you conclude about the impact of the change?



SIX SETS OF NUMBERS, SAME STATISTICS...

WHAT DO YOU SEE?

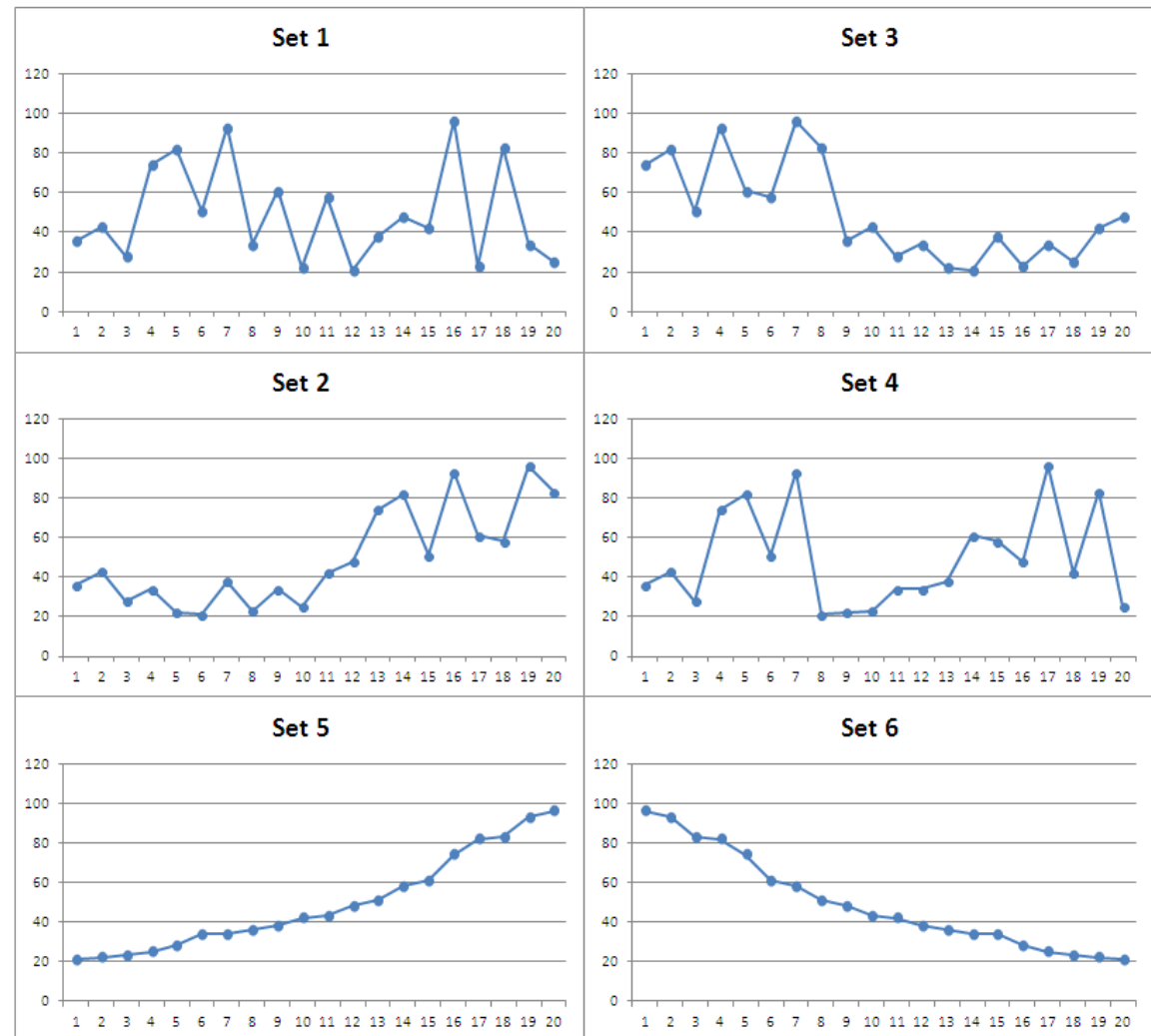
A	B	C	D	E	F	G
	Set 1	Set 2	Set 3	Set 4	Set 5	Set 6
	36	36	74	36	21	96
	43	43	82	43	22	93
	28	28	51	28	23	83
	74	34	93	74	25	82
	82	22	61	82	28	74
	51	21	58	51	34	61
	93	38	96	93	34	58
	34	23	83	21	36	51
	61	34	36	22	38	48
	22	25	43	23	42	43
	58	42	28	34	43	42
	21	48	34	34	48	38
	38	74	22	38	51	36
	48	82	21	61	58	34
	42	51	38	58	61	34
	96	93	23	48	74	28
	23	61	34	96	82	25
	83	58	25	42	83	23
	34	96	42	83	93	22
	25	83	48	25	96	21
Avg	49.6	49.6	49.6	49.6	49.6	49.6
Mode	34.0	34.0	34.0	34.0	34.0	34.0
Median	42.5	42.5	42.5	42.5	42.5	42.5
St Dev	24.4	24.4	24.4	24.4	24.4	24.4
Range	75.0	75.0	75.0	75.0	75.0	75.0

Same descriptive statistics for
6 sets of numbers

SAME NUMBERS – DIFFERENT CONCLUSIONS

A	B	C	D	E	F	G
	Set 1	Set 2	Set 3	Set 4	Set 5	Set 6
	36	36	74	36	21	96
	43	43	82	43	22	93
	28	28	51	28	23	83
	74	34	93	74	25	82
	82	22	61	82	28	74
	51	21	58	51	34	61
	93	38	96	93	34	58
	34	23	83	21	36	51
	61	34	36	22	38	48
	22	25	43	23	42	43
	58	42	28	34	43	42
	21	48	34	34	48	38
	38	74	22	38	51	36
	48	82	21	61	58	34
	42	51	38	58	61	34
	96	93	23	48	74	28
	23	61	34	96	82	25
	83	58	25	42	83	23
	34	96	42	83	93	22
	25	83	48	25	96	21
Avg	49.6	49.6	49.6	49.6	49.6	49.6
Mode	34.0	34.0	34.0	34.0	34.0	34.0
Median	42.5	42.5	42.5	42.5	42.5	42.5
St Dev	24.4	24.4	24.4	24.4	24.4	24.4
Range	75.0	75.0	75.0	75.0	75.0	75.0

Yet ... 6 different stories when plotted over time!



USING DATA FOR JUDGMENT VS. IMPROVEMENT

Characteristic	Judgement	Research	Improvement
Aim	Achievement of target	New knowledge	Improvement of service
Testing strategy	No tests	One large, blind test	Sequential, observable tests
Sample size	Obtain 100% of available, relevant data	'Just in case' data	'Just enough' data small, sequential samples
Hypothesis	No hypothesis	Fixed hypothesis	Hypothesis flexible; changes as learning takes place
Variation	Adjust measures to reduce variation	Design to eliminate unwanted variation	Accept consistent variation
Determining if change is an improvement	No change focus	Statistical tests (t-test, F-test, chi-square, p-values)	Run chart or statistical process control (SPC) charts

Please type in the chat:

- one potential tracking and reporting intervention for antibiotic stewardship that you can try in your nursing home.



