# Antimicrobial Stewardship & Quality

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## Objectives

- 1. Revisit current guidance and protocols for Antimicrobial Stewardship in our PALTC facilities
- 2. Discuss how we are tackling vaccinations as it relates to COVID, Flu and RSV in our PALTC facilities for both residents and staff.
- 3. Provide examples of interdisciplinary approaches to combatting the over prescribing of antibiotics and share how this impacts the quality of care for PALTC residents.
- 4. Review how our PALTC Facilities can work with their QIO to educate and implement policies on Antimicrobial Stewardship

## Antimicrobial Stewardship Program



https://www.cdc.gov/antibiotic-use/core-elements/nursing-homes.html

## QSO-20-03-NH

 https://www.cms.gov/files/doc ument/qso-20-03-nh.pdf

			-
Section E	Antibiotic Stewardship Programs <a href="http://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html">http://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html</a>	Assessments	Comments
E.1.	The facility has an antibiotic stewardship program that has been approved by the coverningbody (e.g., facility administrator and facility leadership) to improve antibioticuse.	□ Yes □ No	
E.2.	The facility IP is responsible for ensuring theantibiotic stewardshipprogram is mplemented, and the facility has identified oneor more clinical leaders accountable for antibiotic stewardship-related duties as per their position description (e.g., nursing director, medical director, or consultant pharmacist).	□ Yes □ No	
E.3.	The facility has written protocols on antibiotic prescribing.	□ Yes □ No	
	Note: Theintent is to verify appropriateness based on clinical indications and laboratory findings, duration of use, and national standards.		
E.4.	The facility uses infection assessment tools or management algorithms for antibioticuse for oneor moreinfections.  Examples: Useof an SBAR tool for UTlassessment, application of the Loeb minimum criteria for initiation of antibiotics.	□ Yes □ No	
E.5.	The facility has a report summarizing antibioticuse from pharmacydata created within last 3 months.  Note: Reportcould include number of newstarts, types of drugs prescribed, or number of days of antibiotic treatmentper 1,000 resident days.	□ Yes □ No	
E.6.	The facility has a report summarizing antibioticresistance(i.e antibiogram) based on laboratorydata created withinthepast 18 months.	□ Yes □ No	
E.7.	The facility clinical leadership (e.g., medical director, directorof nursing, infection preventionist, or consulting pharmacist) provides clinical prescribers with feedback about theirantibiotic prescribing practices.	□ Yes □ No	
E.8.	The facility clinical leadership (e.g., medical director, directorof nursing, infection preventionist, or consulting pharmacist) has provided training or antibioticuse (stewardship) to all nursing staff and clinical providers with prescribing privileges within the last 12 months.	□ Yes □ No	
E.9.	The facility has educational materials on antibioticstewardship for residents and families.	□ Yes □ No	



#### Leadership Matters!

- Who
- Where
- How
  - Accountability for data collection and presentation
  - What gets discussed
  - What are deliverables

## Case

- Mrs A is a 80 year old woman with frailty and dementia, Adult failure to thrive, diabetes with uncontrolled sugars with nephropathy, hypertension. She is a longterm care resident.
- Nurse reports resident is constantly pushing the call light for going to the bathroom- new for last 3 days. On further questioning, she does not report burning and discomfort when urinating. Vitals are WNL, No suprapubic, CVA tenderness.

## Case – ARS

- What would you do?
  - 1. Start nitrofurantoin 100 mg BID
  - 2. Start ciprofloxacin 250 mg BID
  - 3. Request a UA and reflex culture
  - 4. Start resident on active surveillance protocol

## Make a tool box:

- Loeb minimum criteria
- Create a SBAR
- Active monitoring protocol
- LTC antibiotic protocol
- Feedback form

#### Minimum Criteria for Initiation of Antibiotics in Long-Term Care Residents

#### **Suspected Urinary Tract Infection**

#### NO indwelling catheter:

Acute dysuria

or

 Fever (>37.9°C [100°F] or a 1.5°C [2.4°F] increase above baseline temperature)

and at least one of the following:

New or worsening:

- Urgency
- Frequency
- · Suprapubic pain
- · Gross hematuria
- Costovertebral angle tenderness
- Urinary incontinence

#### WITH indwelling catheter (Foley or suprapubic):

- · At least one of the following:
- Fever (>37.9°C [100°F] or a 1.5°C [2.4°F] increase above baseline temperature)
- New costovertebral tenderness
- Rigors
- New onset of delirium

Note: Foul smelling or cloudy urine is not a valid indication for initiating antibiotics. Asymptomatic bacteriuria should not be treated with antibiotics.

#### **TREATMENT**

#### **Begin Active Surveillance:**

Obtain vital signs Q6H for 72 hours and inform MD if abnormal.

Unless contraindicated, increase fluids by 200cc 4 times daily as tolerated.

Watch for sepsis: Rule of 100s – Temp >100, heart rate >100, systolic BP <100.

If fever and 1 of the symptoms or no fever and 2 of the symptoms:

Residents WITH Indwelling Catheters:

Notify Physician and obtain orders to:

☐ Check for constipation.
☐ Obtain Vital Signs every four hours.
☐ If not on fluid restrictions and there are no
contraindications, increase fluid by 200 cc's four times

☐ Change the catheter (if in place for more than five days).

☐ Order UA with reflex to culture from **NEW** catheter.

Residents **WITHOUT** Indwelling Catheters and any boxes checked:

Notify Physician and obtain orders to:

Check	for	constipation.

daily.

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Obtain	vnai	Signs	everv	IOHT	nours.
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- ☐ If not on fluid restrictions and there are no contraindications, increase fluid by 200 cc's four times daily.
- ☐ Order UA with reflex to culture.

Residents that do not meet criteria but have symptoms:

Notify Physician and obtain orders for <u>active monitoring</u> protocol for UTI:

#### **Active Monitoring Protocol for suspected UTI:**

	Check	for	constipation	
--	-------	-----	--------------	--

- ☐ Obtain Vital Signs every four hours x 72 hours. Notify MD if abnormal
- ☐ If not on fluid restrictions and there are no contraindications, increase fluid by 200 cc's four times daily x 72 hours.
- $\square$  Monitor for other infections and worsening of symptoms.
- □ **DO NOT ORDER UA or UA with reflex to culture.**

## Active monitoring/Surveillance



	\$r /3		Beta lactams								A main	alv	idos	Fluoroquinolones /							
		4.5 4.4	Per	nicillins	77	Cephalosporins Carbapenems				Aminoglycosides		sides	Miscellaneous								
2021 VAPAHCS GRAM-NEGATIVE ORGANISM (% Susceptibility)	# isolates tested	Ampicillin	Amoxicillin/ clavulanate	Ampicillin/ sulbactam (CR)	Piperacillin/ tazobactam	Cefazolin^ applies to urine only	Cefoxitin	Cefpodoxime	Ceftriaxone	Ceftazidime (R)	Cefepime (CR)	Ertapenem	Meropenem (R)	Gentamicin	Tobramycin	Amikacin (CR)	Ciprofloxacin (CR)	Levofloxacin (CR)	Aztreonam (R)	Nitrofurantoin applies to urine only	Trimethoprim/ sulfamethoxazole
Acinetobacter baumaunii	11*	-	-	100*	82*	-	-:	-	2.7	91*	100*	-	100*	100*	100*	-	91*	91*	-	(T)	100*
Citrobacter freundii#	32		- 1	-	72		2-4	63#	63#	69#	100	96*	97	97	91	100	84	78	63	85*	81
Citrobacter koseri	50	-	100*	100	100	95^	96	98	98	98	100	100	100	96	98	100	100	100	100	92	98
Enterobacter cloacae#	89	-	-	-	90	-	1-6	78#	85#	90#	99	96	99	100	99	100	99	97	93	40	92
Escherichia coli~	636	56	87	64	96	81^	92	86	90	90	93	100	100	91	91	100	75	74	90	98	77
Klebsiella aerogenes#	44	-	-	-	89	-	1.00	82#	89#	89#	100	100	100	100	100	100	95	95	89	19	100
Klebsiella oxytoca~	80	5	67*	62	91	52^	99	96	91	98	97	100	100	99	97	100	97	99	94	82	94
Klebsiella pneumoniae~	252	-	100*	83	94	88^	95	90	90	90	94	99	99	94	93	100	89	90	91	26	88
Morganella morganii	48	5	-:	17	100	-	67	*	93	92	100	100	100	91	98	100	81	83	98	(C=)	83
Proteus mirabilis	183	85	96*	91	100	75^	95	96	97	97	97	100	100	91	93	100	77	77	96	:0 <del>=</del> 0	77
Providencia rettgeri	24*	-	-	58*	100*	-	100*	96*	96*	92*	100*	100*	100*	96*	96*	100*	92*	83*	96*	( T	92*
Providencia stuartii	6*	-	-	-	100*	-	100*	100*	100*	100*	100*	100*	100*	270	, p <del>.</del> 11	100*	17*	17*	100*	29 <del>-</del> 9	50
Pseudomonas aeruginosa	208		-		94	-	1.52	-	11 <del>-</del>	93	95	•	95	95	99	99	87	85	62	::3	-
Serratia marcescens#	36	300	×	3	97		- 10	-	92#	97#	100	97	97	100	89	100	89	89	97	\$ <del>\</del>	100
Stenotrophomonas maltophilia	22*	2	-	-	*	8	*	-	÷	*	<b>B</b> .	-		÷	-	8	+	82*	*	(#	95*
Cost per day (\$)		\$	\$	\$	\$	\$	\$	\$	\$	\$\$	\$\$	\$\$	\$	\$	\$	\$	\$	\$	\$\$\$	\$	\$

https://med.stanford.edu/bugsanddrugs/clinical-microbiology.html; VA Palo Alto Antibiogram

## Drug expertise

ANTIBIOGRAM

# **GU Tract**

#### Acute Uncomplicated Cystitis in Women (with presence of symptoms)

Cephalexin 500 mg PO BID x 7 days

OR

Nitrofurantoin ER (Macrobid) 100 mg PO BID x 5 days

OF

Sulfamethoxazole/Trimethoprim DS (800/160 mg) 1 tab PO BID x 7 days

Acute Complicated UTI/Pyelonephritis/Catheter-associated UTI/Prostatitis

(Prostatitis-Consider longer duration of therapy)

Ceftriaxone 1 gm IV every 24 hours x 10 days

OR

IF life-threatening penicillin allergy
Ciprofloxacin 500 mg PO q 12h x 10 days

OR

IF life-threatening penicillin allergy

Sulfamethoxazole/Trimethoprim DS (800/160 mg) 1 tab PO BID x 10 days

OR

IF history of resistant organisms in past 6 months Ertapenem 1 gm IM every 24 hours x 10 days

## Education

#### Residents and families

Resident counsel- administrator

#### Clinician

- Orientation
- Annual with data
- PRN

#### Nursing- rationale and messaging to residents

- Orientation
- Annual
- PRN
- Ongoing (mentored by consultant pharmacist)

#### Example of Individualized Feedback

#### Metric

Antibiotic prescription with dose, duration & indication

Urine culture ordered for residents indication of UTI

#### Reviewed and discussed:

- Antibiotic Use Protocols
- Antibiotic Stewardship Policy
- Antibiotic Use

Dr. A,
Sign and Date:
Medical Director,
Sign and Date:

## Facility Dr. A

27 of 42 (64%) 8 of 8 (100%)

16 of 20 (80%) 2 of 4 (50%)

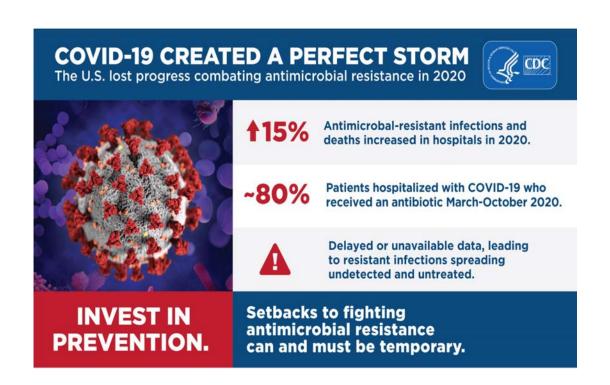
#### Length of Therapy



#### Track and Report

- Antimicrobial stewardship meeting
- QAPI
- IP
  - Number of infections reported
  - Type of infections
- Clinical pharmacist
  - Number of ABX starts
  - Number started inhouse
  - Average days of ABX
  - Number that met criteria

## Emerging issues



#### Cases of Deadly Fungus Tripled in Past Few Years, CDC Says

— The agency has rated Candida auris as an urgent antimicrobial-resistant threat

by Ingrid Hein, Staff Writer, MedPage Today March 20, 2023



Cases of *Candida auris* have tripled from 2019 to 2021, according to national surveillance data.

#### Medical News From Around the

#### ABC NEW

Powerful new obesity drug poised to upend weight loss care

#### BECKER'S HOSPITAL REVIEW

New York children's hospital starts liver disease, transplant program

#### CNN

A drug company abandoned a treatment for 'bubble boy disease.' After a 5-year fight, this little girl is about to get it | CNN

Table 3. Antimicrobials Used by Site of Infection for Treatment of Active Infection or Medical Prophylaxis<sup>a</sup>

	Antimicrobials, No. (%)					
Site of infection	Treatment of active infection (n = 1120) <sup>b</sup>	Medical prophylaxis (n = 262) <sup>b</sup>				
Urinary tract	315 (28.1)	107 (40.8)				
Skin or wound	264 (23.6)	36 (13.7)				
Respiratory tract	189 (16.9)	28 (10.7)				
Bone or joint	133 (10.1)	27 (10.3)				
Gastrointestinal tract	88 (7.9)	Not applicable				

<sup>&</sup>lt;sup>a</sup> More than 1 site of infection could be documented for an antimicrobial.

Antimicrobial Use in a Cohort of US Nursing Homes, 2017 Thompson et al

doi:10.1001/jama.2021.2900

<sup>&</sup>lt;sup>b</sup> For treatment of active infection, the value indicates 77.0% of the total, and for medical prophylaxis, 18.0%

Table 3. Changes in Antibiotic Use, Urine Cultures Collected, and Clostridioides difficile LabID Events

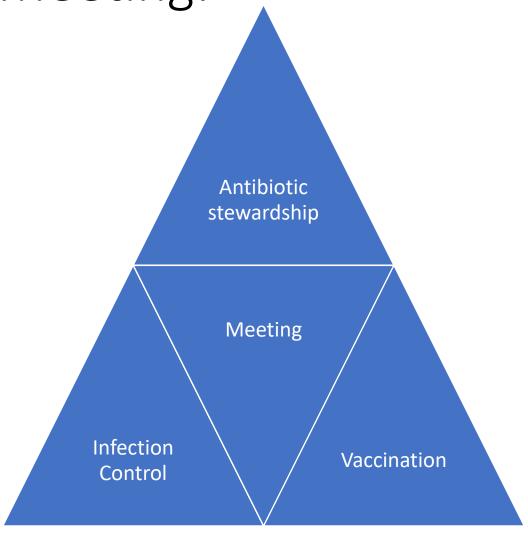
	Rate per 100	O resident-days			
Outcomes	Baseline (n = 410)	End of program (n = 410)	Difference (95% CI)  -0.41 (-0.76 to -0.07) -0.21 (-0.35 to -0.08)  0.02 (-0.01 to 0.04) -0.06 (-0.14 to 0.02)  0.04 (-0.004 to 0.08)  -3.05 (-6.34 to 0.23) -1.20 (-2.15 to -0.24)  0.83 (-0.17 to 1.84) -0.76 (-1.44 to -0.88)  0.78 (0.07 to 1.49) -0.38 (-0.61 to -0.15) -0.16 (-0.64 to 0.33)	P val	
Antibiotic starts					
All antibiotics	7.89	7.48	-0.41 (-0.76 to -0.07)	.02ª	
Fluoroquinolones	1.49	1.28	-0.21 (-0.35 to -0.08)	.002	
Piperacillin-tazobactam	0.09	0.11	0.02 (-0.01 to 0.04)	.13	
Third-generation cephalosporins	0.80	0.74	-0.06 (-0.14 to 0.02)	.15	
Ceftazidime/cefepime	0.09	0.13	0.04 (-0.004 to 0.08)	.08	
Antibiotic days of therapy					
All antibiotics	64.10	61.05	-3.05 (-6.34 to 0.23)	.07	
Fluoroquinolones	10.6	9.41	-1.20 (-2.15 to -0.24)	.01ª	
Piperacillin-tazobactam	2.18	3.01	0.83 (-0.17 to 1.84)	.10	
Third-generation cephalosporins	5.48	4.72	-0.76 (-1.44 to -0.88)	.03ª	
Ceftazidime/cefepime	1.41	2.19	0.78 (0.07 to 1.49)	.03ª	
Urine cultures collected	3.01	2.63	-0.38 (-0.61 to -0.15)	.001	
Clostridioides difficile LabID events/10 000 resident-days	1.66	1.50	-0.16 (-0.64 to 0.33)	.52	

Implementation of an Antibiotic Stewardship Program in Long-term Care Facilities Across the US: Katz etal

doi:10.1001/jamanetworkopen.20 22.0181

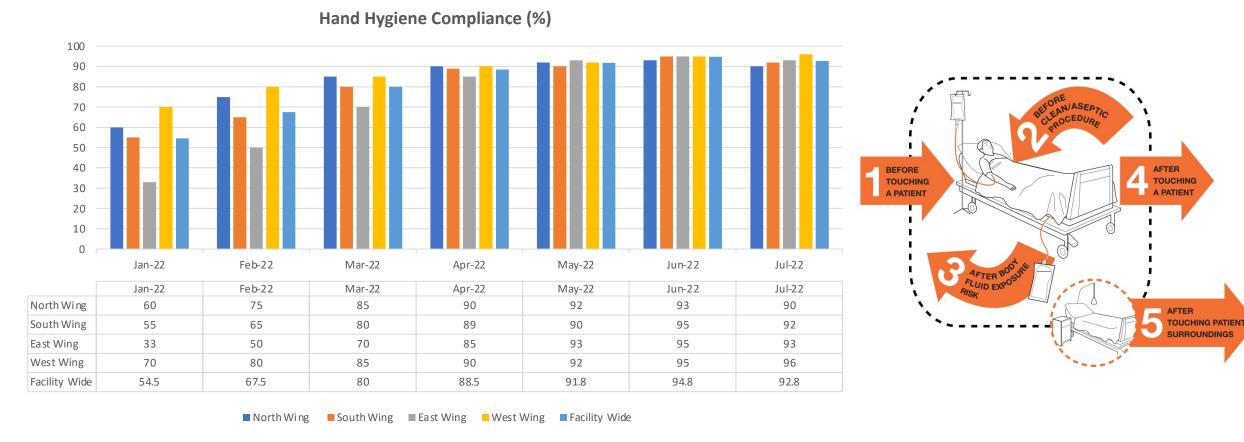
- Hospital antibiotic stewardship programs can increase infection cure rates while reducing:
- Treatment failures
- *C. difficile* infections
- Adverse effects
- Antibiotic resistance
- Hospital costs and lengths of stay

The Meeting:





## Hand Hygiene Data



## Data Table

Infection Type	Numerator	Denominator	Rate (YTD)	FY 2021 rate
Urinary Tract Infections				
Respiratory Infections				
SSTI				
Gastrointestinal Infections				
Multiple Drug Resistant Organisms (MDRO)				

## Antibiotic Stewardship Data

Antibiotic starts: 28

LTC starts: 17

ABT days/burden:154

LTC starts met McGeer Criteria: 8

## Review of quarterly antibiotic administration

Antibiotic DOT/1000	Q1	Q2	Q3	Q4
Ciprofloxacin	100	120	110	250
Azithromycin	100	110	300	500
Ceftriaxone	95	90	270	450
Nitrofurantoin	75	80	100	60

## Facility COVID vaccination rates

• Old definition: 92%

• New definition: 88%

Presenter: DPH

#### In the 2023-24 season, the overall rate of COVID-19-associated hospitalizations was 83.4 per 100,000 people Dashboard Age Group **Race and Ethnicity** Site Season Sex Characteristics Weekly Rates of COVID-19 Associated Hospitalizations by Age Group, All Seasons View Monthly Rates Weekly Rates **Cumulative Rates** All Seasons **Filters** per 100,000 Site COVID-NET Hospitalization rate Age Group Multiple selections 20 Jul 2020 Jan 2021 Jul 2021 Jan 2022 Jul 2022 Jan 2023 Jul 2023 Jan 2024 Reset Filters —**1** 0-4 years → 5-17 years → 18-49 years → 50-64 years → ≥65 years **Surveillance Month Download Data** Data last updated: 1/24/2024 | Accessibility: Select (Enter) the graph area and press Alt + Shift + F11 to view the data as a table. Press? to view more keyboard shortcuts.

## Impact of influenza and RSV on nursing home residents

In a retrospective cohort study of nursing home residents in 381 nursing homes across three seasons, estimated for the 63% of residents with comorbid conditions,

- Flu
- influenza contributed to approximately 28 hospitalizations, 147 courses of antibiotics and 15 deaths per 1000 person-years annually

- RSV
- RSV accounted for an annual average of 15 hospitalizations, 76 courses of antibiotics, and 17 deaths per 1,000 persons.

## Early COVID-19 vaccine effectiveness of XBB.1.5 vaccine against hospitalization and ICU admission, the Netherlands, 9 October - 5 December 2023

C. Henri van Werkhoven, Anne-Wil Valk, Bente Smagge, Hester E. de Melker, Mirjam J. Knol, Susan J.M. Hahné, Susan van den Hof, 

Brechje de Gier

doi: https://doi.org/10.1101/2023.12.12.23299855

#### **Abstract**

We present early vaccine effectiveness (VE) estimates of the 2023 seasonal COVID-19 vaccination campaign using XBB.1.5 vaccine against COVID-19 hospitalization and ICU admission in previously vaccinated adults ≥60 years old in the Netherlands. We compared vaccination status of 2050 hospitalizations including 92 ICU admissions with age group-, sex-, region- and date-specific population vaccination coverage between 9 October and 5 December 2023 VE against hospitalization was 70.7% (95% CI: 66.6; 74.3), VE against ICU admission was 73.3% (95% CI: 42.2; 87.6).

## Flu vaccine

Flu vaccine effective in decreasing risk of severe symptoms and hospitalization by ~50%

For admitted patients it decreased ICU admission and duration of hospitalization

## Vaccine Impact:

FLU vaccine will decrease flu by 1/3 Decrease antibiotics **Antibiotic** stewardship PNEUMONIA vaccine meeting effectiveness 76% Decrease against invasive hospitalization disease QAPI Decrease **COVID vaccine 5.3X** lower risk of dying death **Sustained protection** from ICU stay

https://www.acpjournals.org/doi/10.7326/M22-2042

https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2022-06-22-23/02-influenza-Chung-508.pdf

https://academic.oup.com/cid/article/40/9/1250/369981

## Flu Vaccine Requirements for Nursing Homes

Percentage of adults age 50-80 who reported flu vaccine should be "definitely required" for various groups





## CMS Quality reporting program

#### SNF QRP Measure #11: COVID-19 Vaccination Coverage among Healthcare Personnel (HCP) (CBE #3636)

This measure was finalized in the <u>FY 2022 SNF PPS Final Rule</u>, which was published in the Federal Register on August 4, 2021 (86 FR 42480 through 42489). Data submission for this measure began October 1, 2021.

#### SNF QRP Measure #12: Influenza Vaccination Coverage among Healthcare Personnel (HCP) (CBE #0431)

This measure was finalized in the <u>FY 2023 SNF PPS Final Rule</u>, which was published in the Federal Register on August 3, 2022 (87 FR 47537 through 47544). Data submission for this measure began October 1, 2022.

This final rule finalizes requirements for the SNF QRP, including the adoption of one new measure beginning with the FY 2024 SNF QRP: the Influenza Vaccination Coverage among Healthcare Personnel (HCP) (NQF #0431) measure.

### QRP measure

• In the <u>FY 2023 SNF PPS final rule</u> (pages 47564–47580), CMS adopted two additional measures for use beginning in the <u>FY 2026 SNF VBP Program year</u>: 1) Skilled Nursing Facility Healthcare-Associated Infections (SNF HAI) Requiring Hospitalization measure;

- SNF QRP Measure #15: Potentially Preventable 30-Day Post-Discharge Readmission Measure SNF QRP
- This measure was finalized in the <u>FY 2017 SNF PPS Final Rule</u> which was published in the Federal Register on August 5, 2016 (81 FR 52030 through 52034). Public reporting began 10/24/2019.
- SNF QRP Measure #16: SNF Healthcare-Associated Infections (HAI) Requiring Hospitalization
- This measure was finalized in the <u>FY2022 SNF PPS Final Rule</u>, which was published in the Federal Register on August 4, 2021 (86 FR.42473 through 42480). Public reporting began 4/29/2022.

## The SNF VBP Program Hospital Readmission Measure

Program Year	Baseline Period	Performance Period
FY 2019*	CY 2015 (1/1/2015-12/31/2015)	CY 2017 (1/1/2017-12/31/2017)
FY 2020	FY 2016 (10/1/2015-9/30/2016)	FY 2018 (10/1/2017-9/30/2018)
FY 2021	FY 2017 (10/1/2016-9/30/2017)	FY 2019 (10/1/2018-9/30/2019)
FY 2022	FY 2018 (10/1/2017-9/30/2018)	4/1/2019-12/1/2019**
FY 2023	FY 2019 (10/1/2018-9/30/2019)	FY 2021 (10/1/2020-9/30/2021)
FY 2024***	FY 2019 (10/1/2018-9/30/2019)	FY 2022 (10/1/2021-9/30/2022)
FY 2025***	FY 2019 (10/1/2018-9/30/2019)	FY 2023 (10/1/2022-9/30/2023)
FY 2026	FY 2022 (10/1/2021-9/30/2022)	FY 2024 (10/1/2023-9/30/2024)
FY 2027	FY 2023 (10/1/2022-9/30/2023)	FY 2025 (10/1/2024-9/30/2025)

SNF VBP Program Hospital Readmission

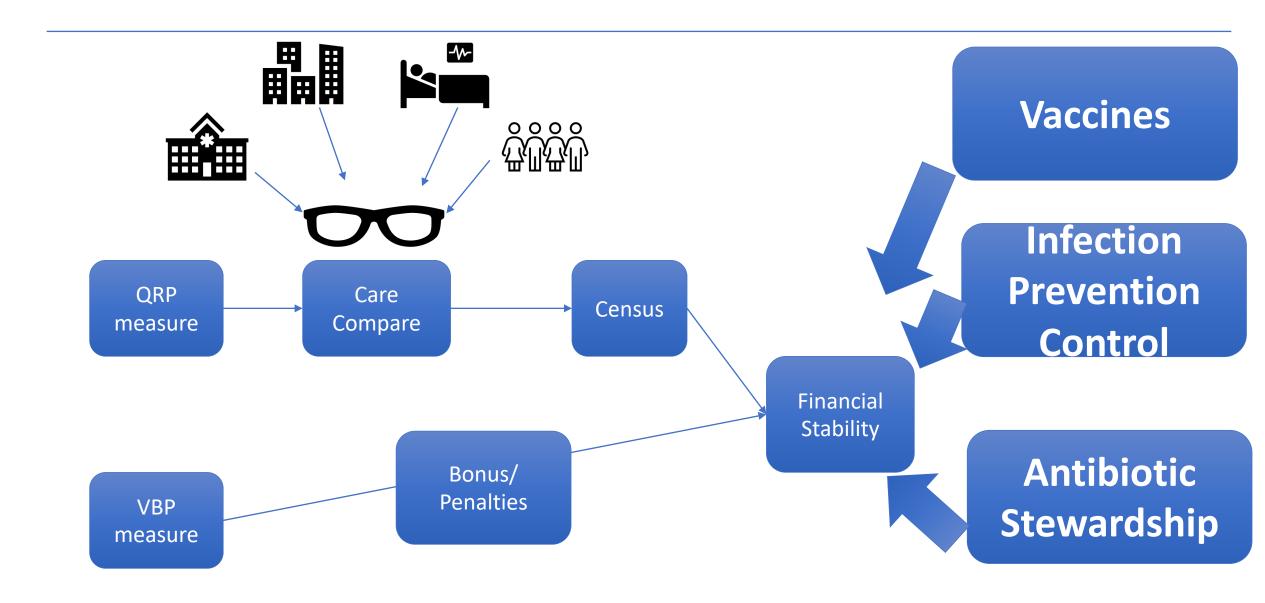
Measure and Link to Technical Report	FY 2024 Program Year	FY 2025 Program Year	FY 2026 Program Year	FY 2027 Program Year	FY 2028 Program Year
SNFRM	Yes	Yes	Yes	Yes	-
Skilled Nursing Facility Healthcare-Associated Infections (SNF HAI) Requiring Hospitalization	-	-	Yes	Yes	Yes
Total Nurse Staffing Hours per Resident Day (including Registered Nurse [RN], Licensed Practical Nurse	-	-	Yes	Yes	Yes
[LPN], and Nurse Aide hours)					
Discharge to Community — Post- Acute Care (DTC-PAC) Measure for SNFs	-	-	<b>2</b> 7	Yes	Yes
Percent of Residents Experiencing One or More Falls with Major Injury (Long-Stay)	-	-		Yes	Yes
Discharge Function Score for SNFs	_	-	<b>-</b> V	Yes	Yes
Number of Hospitalizations per 1,000 Long Stay Resident Days	-	-	-	Yes	Yes
Skilled Nursing Facility Within- Stay Potentially Preventable Readmission (SNF WS PPR) Measure	-	-	<b>-</b> <		Yes



## Future Expansion of the SNF VBP Program

SNF VBP Program

## When a good thing is more than a good thing:





• Question?