



Towards a Culture of Best Practice Antibiotic Stewardship: Treatment of Acute Bronchitis

University Health Services, University of Oregon

Element 1: Purpose

The misuse and overuse of antibiotics is a public health concern that is complex, multi-faceted, and seemingly insurmountable.

Our first step was to start simply by addressing antibiotic (mis)use in the setting of uncomplicated Acute Bronchitis. We chose treatment of uncomplicated Acute Bronchitis as our first area of study for several reasons:

1. Acute Bronchitis is common.
2. Benchmarking data is available.
3. Acute Bronchitis has a distinct symptom/sign pattern, and evidence-based guidelines exist for appropriate treatment.
4. Current national guidelines, based on strong reproducible evidence, recommend against the use of antibiotics in the treatment of Acute Bronchitis.

Element 2: Performance Goal

Benchmarking:

- Acute Bronchitis is caused by a bacterial agent less than 6% of the time.
- Despite this evidence, Acute Bronchitis in young adults is treated appropriately (without the use of antibiotics) only 33% of the time.

We set a measurable goal that would require successive approximations to achieve. These ongoing corrective actions could help shift the culture in our practice to one of thoughtful antibiotic stewardship.

Performance Goal: 90% of charts reviewed would demonstrate treatment of uncomplicated Acute Bronchitis without the use of antibiotics.

Element 3: Data Collection Plan

The initial year of our study, 2017-2018, set out to establish a baseline for our practice: how often were we treating uncomplicated Acute Bronchitis without the use of antibiotics?

Type of study: retrospective encounter-based peer review

Patient encounters: University of Oregon undergraduate and graduate students

Measurement Period: Winter Term (Jan-Mar 2017) and Fall Term (Sept-Dec 2017)

Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none"> • All charts with primary codes • J02.9 Acute Bronchitis • J20.2 Acute Bronchitis due to mycoplasma (note, at the time of this study, we had no way test for mycoplasma, so this was a clinical diagnosis) • R05 (cough) • J40 (acute bronchitis, unspecified) • J22 (LRTI) 	<ul style="list-style-type: none"> • Charts with objective findings to suggest CAP • P>100 • R>24 • T>38 • SaO2 <95% • rales or egophany on pulmonary exam • Charts with additional secondary diagnoses (sinusitis, AOM, pneumonia, chronic bronchitis, influenza)

Of the remaining charts, we then examined whether antibiotics were prescribed or not, and whether follow up visits occurred within two weeks. If there was a follow up visit within two weeks, we reviewed whether the visit continued to meet inclusion criteria, and if so whether antibiotics were then prescribed.

Element 4: Data Collection

115 unique encounters

60 prescribed antibiotics
55 given alternative treatment

18 had follow-up: and 12 prescribed antibiotics

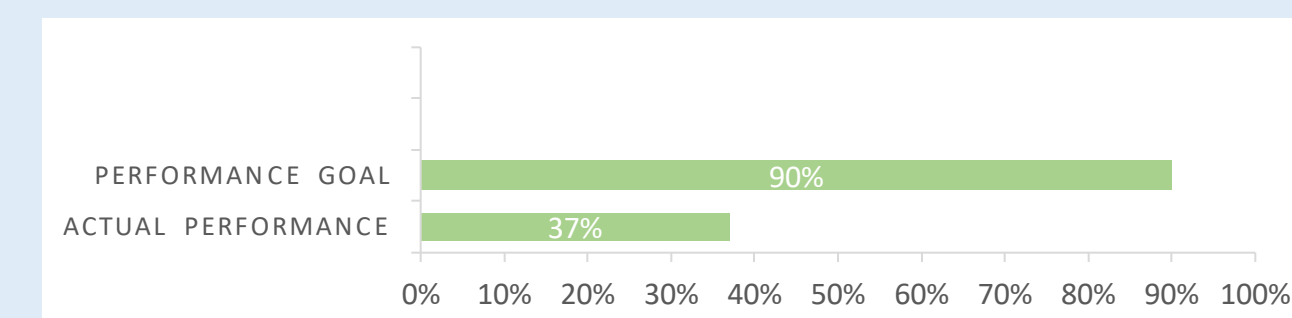
72/115 prescribed antibiotics
43/115 given alternative treatment

Element 5: Data Analysis

Initial Visit: 48% (55 out of 115) treated appropriately without the use of an antibiotic.

Initial plus Follow up Visits: 37% (43 out of 115) treated appropriately for Acute Bronchitis without the use of antibiotic.

Element 6: Comparison to Goal



Our performance goal was that 90% of charts reviewed would demonstrate treatment of Acute Bronchitis without the use of antibiotics.

Our baseline data demonstrated that our actual performance was at 37%.

While this is consistent with national averages, it was significantly below our performance goal and demonstrated a large quality gap needing correction.

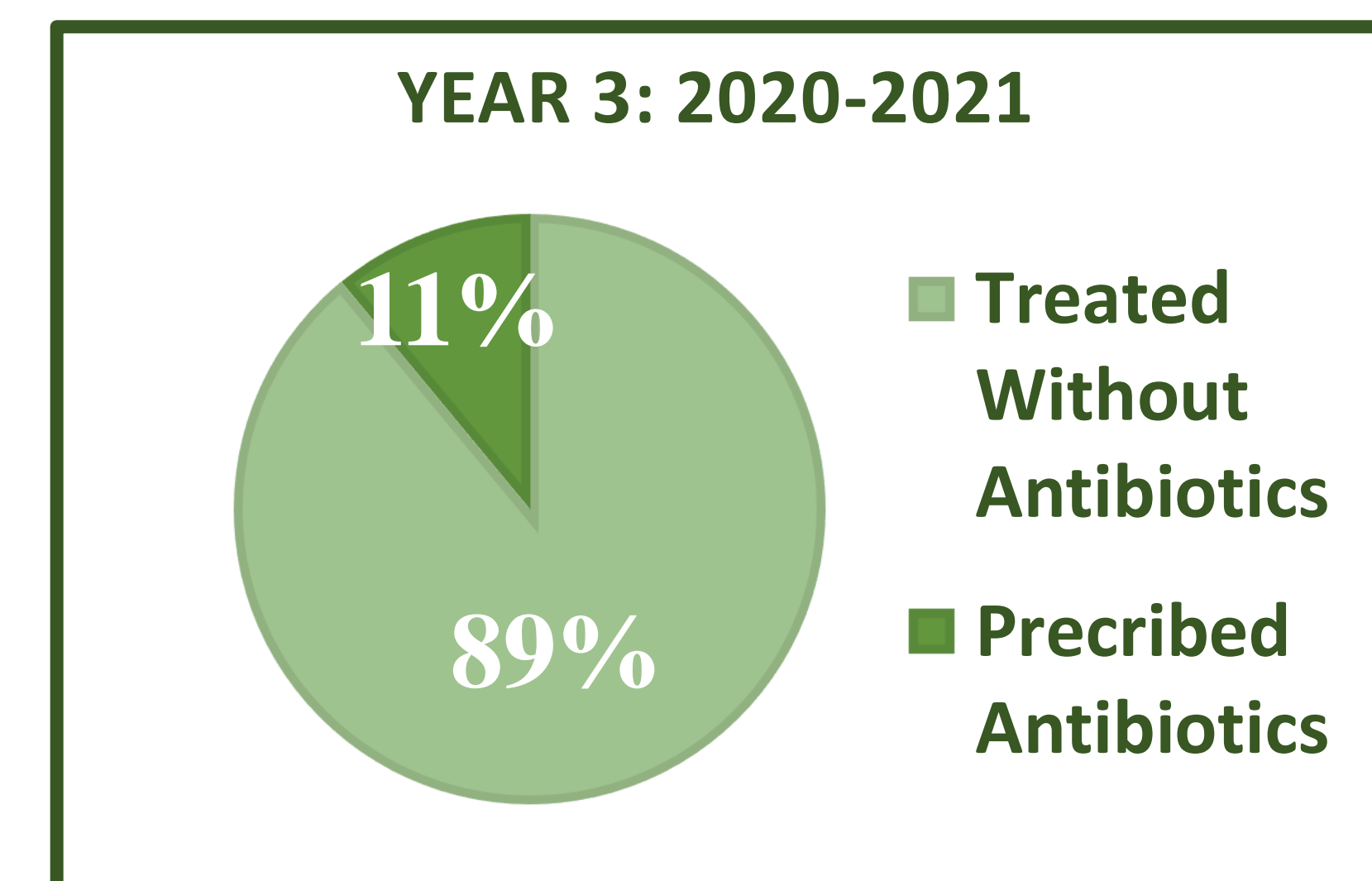
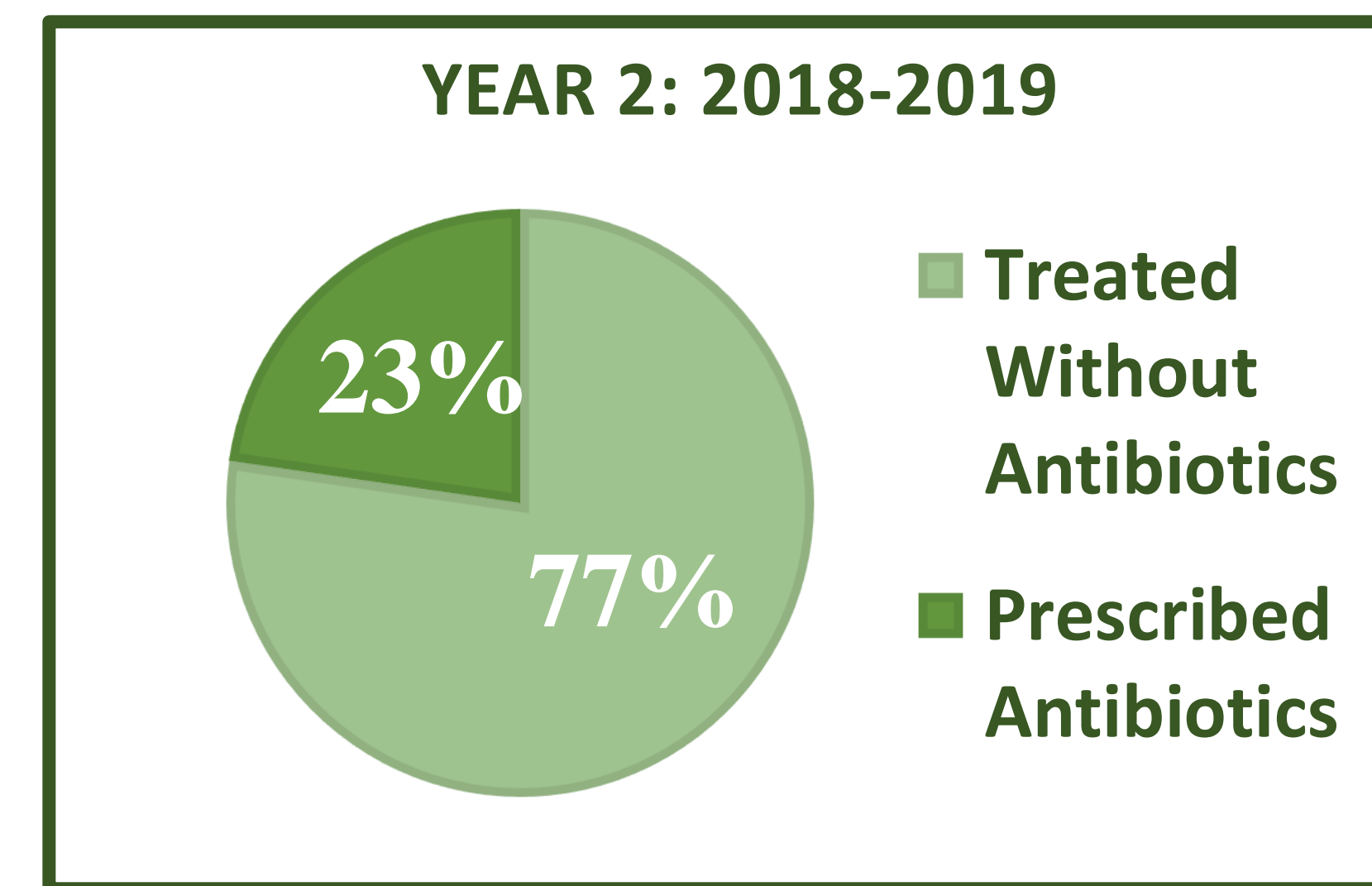
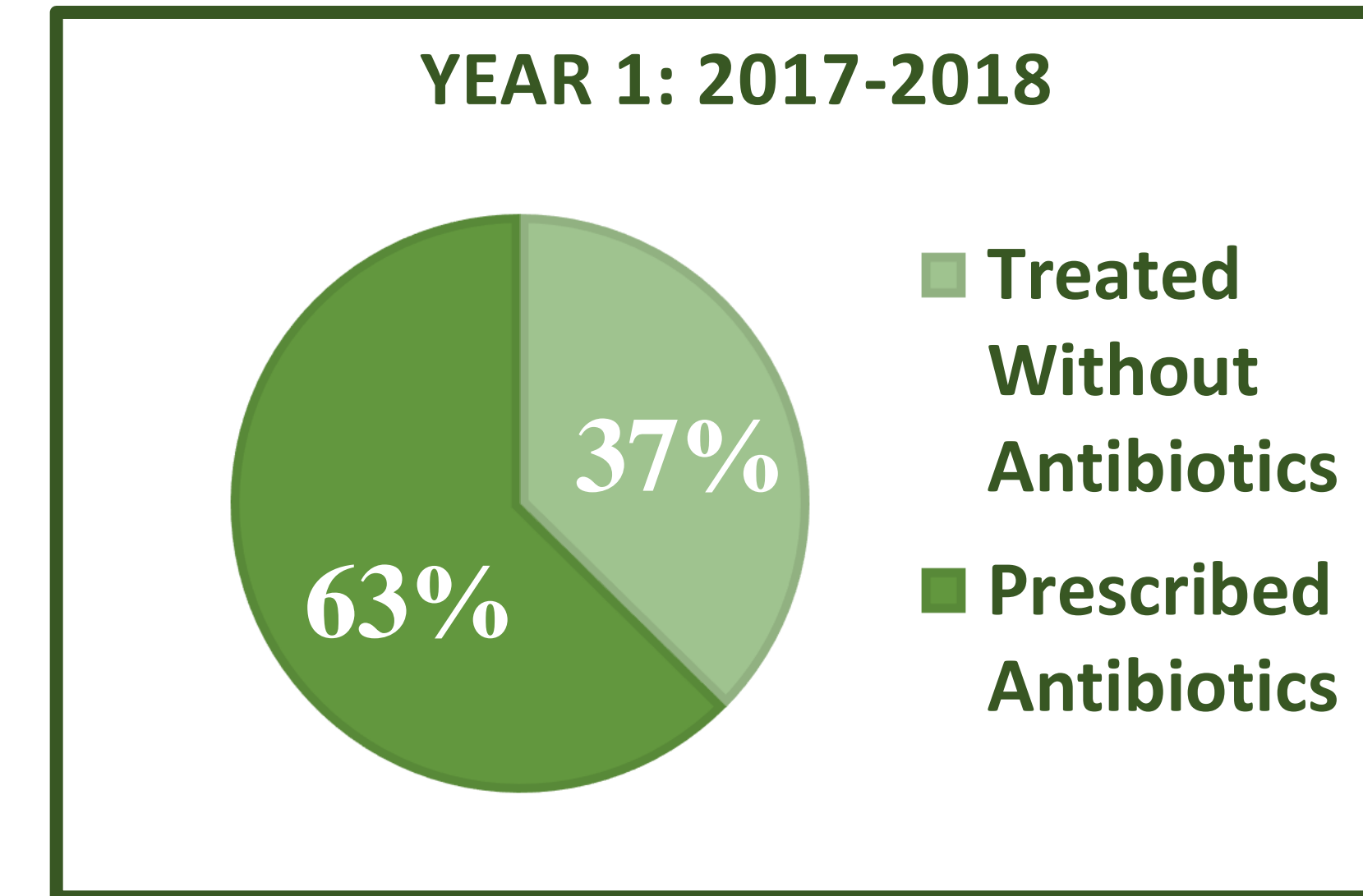
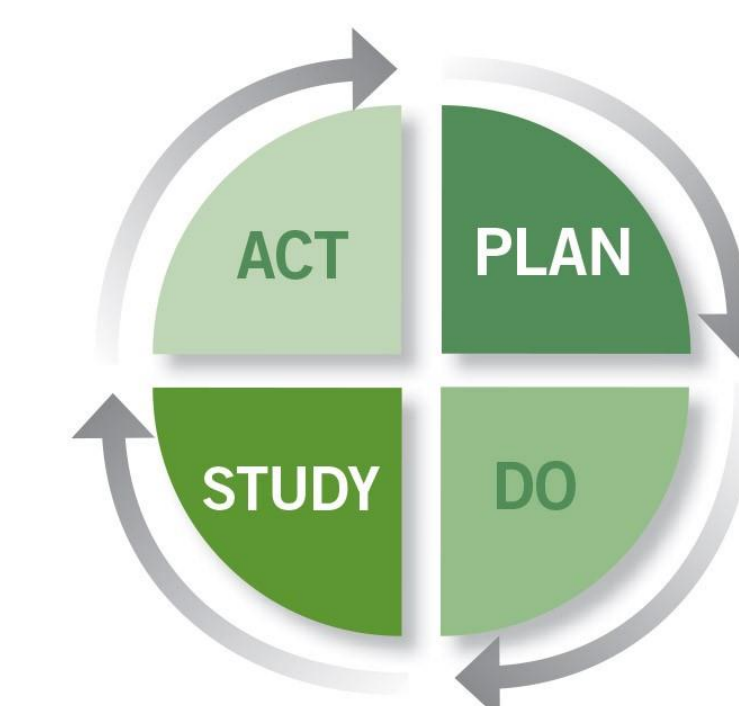
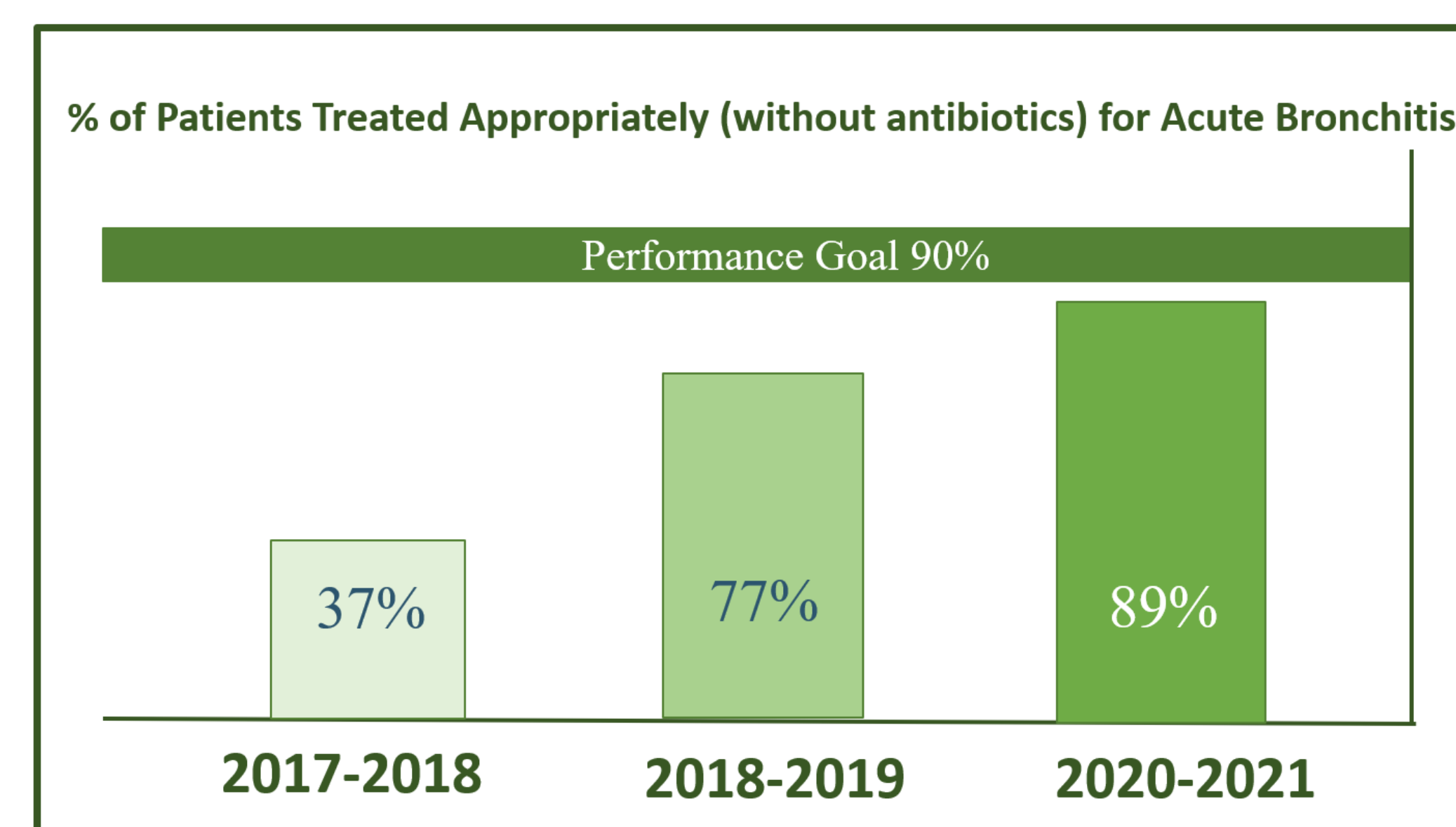
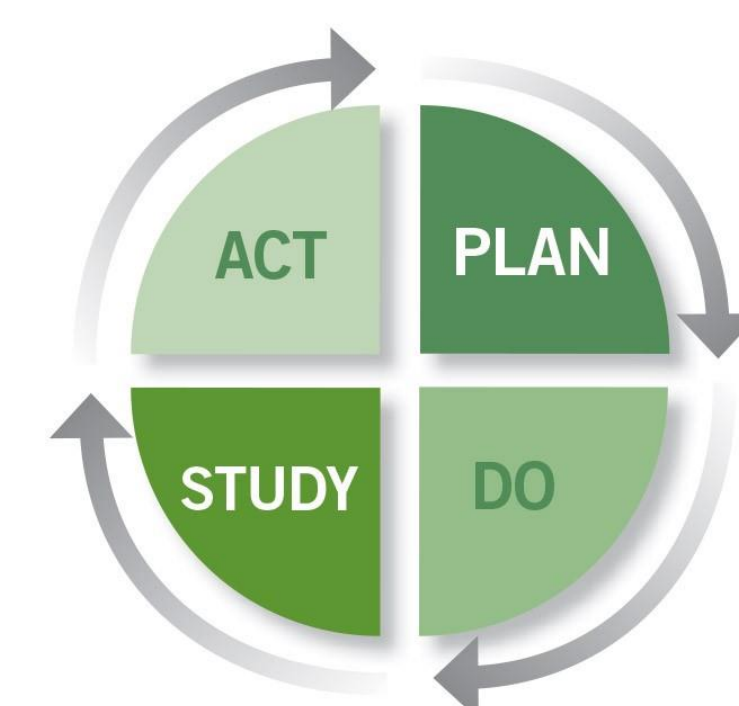
Element 7: Corrective Actions

Thinking it through:

- We reviewed a study that looked at the impact of adding specific patient education brochures aimed at addressing common questions and myths regarding antibiotic use for acute bronchitis; this intervention reduced antibiotic fill rate by 46%.
- Another study suggested that providing a SNAP (safety net antibiotic prescription to be filled if symptoms worsen) led to a 90% patient satisfaction score and only a 50% antibiotic fill rate.
- We decided to experiment with creating a "Viral Prescription." This was an actual paper prescription on a tear-pad in the exam room that could be signed by the provider and handed to a patient.

Corrective Actions:

1. Medical Staff education sessions on Acute Bronchitis completed on 4/2018 and 9/2018.
2. Viral Prescription – Implemented 9/2018.
3. Acute Bronchitis FAQs handout – Implemented 9/2018.
4. Safety Net Antibiotic Prescription (SNAP) protocol – Implemented 9/2018.



Element 8: Re-Measurement

Year 2, 2018-2019:

Same study design, Winter Term and Fall Term 2018

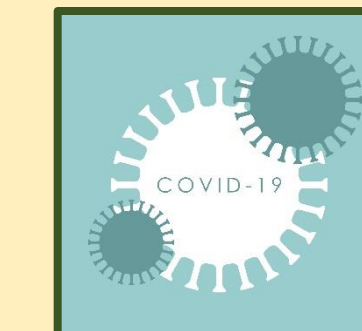
We repeated the same investigation, but this time also investigated how often our SNAP protocol was deployed and if it resulted in any additional antibiotic prescriptions.

Data: 126 out of 163 (77%) visits demonstrated appropriate treatment of acute bronchitis without antibiotics. While still below our performance goal of 90%, this was an impressive improvement, and now two to three times higher than the national average.

Our SNAP protocol was deployed in 8% of encounters (13 visits) and on investigation we found that 46% went on to fill and take the Rx (6 of the 13).

Element 9: Additional Corrective Actions

Our next corrective action was going to involve using peer-based influence via social media to provide education on antibiotics. We began work on this in early 2020, but then COVID-19 arrived, and our plans derailed.



However, as we grappled with the COVID-19 pandemic, we began to realize we had two very impactful corrective actions for our QI Study happening right before our eyes.

1. Our patients (and in fact the whole world) suddenly became incredibly well-educated on viral infections, the immune system, and inefficacy of antibiotics in treating non-bacterial infections. We suddenly had cadres of mini-virologists asking smart and informed questions in our exam rooms!
2. The COVID-19 pandemic accelerated advances in our in-house diagnostics. Our laboratory obtained several in-house PCR tests, and we could now rapidly test patients for SARS-CoV-2 as well as dozens of other viral respiratory pathogens.

We were curious, then: was there a silver lining to COVID-19 for our QI Study? Would we see further change in our performance given the improved "common knowledge" in our patient base and our ability to test for specific viruses?

Year 3, 2020-2021

Same study design. Fall Term and Winter Term.

Data: 89% of students were treated for uncomplicated Acute Bronchitis without the use of antibiotics. The SNAP protocol was not deployed at all.

We had essentially reached our goal of 90%.



Element 10: Communication of Findings

University Health Services has a tradition of celebrating all departmental QI studies every year at an All-Staff meeting.

- Our 2017-2018 QI study was presented in September 2018
- Our 2018-2019 QI Study was presented in June 2019
- Our 2020-2021 QI Study was presented in June 2021

Additionally, all QI Studies are available on Sharepoint, our inter-web system.

Acknowledgements: Big Thanks to our UO students – always good partners in our drive towards continuous quality improvement!