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Optimizing Asthma Treatment in the Practice Setting: A Quality Improvement Project

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A Quality Improvement Project

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Abstract

Technology is rapidly changing the way that clinicians provide care to patients. The use of smart phrases in electronic health records (EHRs) has been shown to improve efficiency amongst clinicians and provide easy access to large amounts of information for clinical decision-making. One area of medicine where treatment algorithms are particularly complex and there has been recent landmark changes to treatment algorithms, is asthma. The 2019 Global Institute for Asthma (GINA) guidelines changed the standard of care for asthma, and the principal investigator (PI) sustained a strong interest in whether the guidelines had been implemented into clinical EHRs effectively. A needs assessment was conducted with clinicians at the clinical site which revealed that there were few useful and current asthma smart phrases existing in the EHR. This technological quality improvement project was created to bridge the gap from science to practice. Based on direct stakeholder feedback, three smart phrases were created, and one existing smart phrase edited, using the Global Institute for Asthma 2022 guidelines. The smart phrases were distributed for review by all clinicians at at the clinical site. After several revisions, the final suite of smart phrases was presented to all stakeholders in a staff meeting. An anonymous survey was employed to measure the efficacy of the intervention, with 100% of participants expressing increased satisfaction with the new asthma smart phrases than with the existing asthma smart phrases.

Keywords: smart phrases, electronic health records, quality improvement, treatment algorithms, student health center

Optimizing Asthma Treatment in the Practice Setting:

A Quality Improvement Project

Asthma treatment in adult patients is an area of clinical practice that has seen significant change in recent years. In 2019, the Global Institute for Asthma (GINA), released a strategy report, stemming from over a decade of research, recommending a new standard of care—that all adults and adolescents with asthma should receive an inhaler treatment containing inhaled corticosteroid (ICS) (Global Institute for Asthma [GINA], 2019) and not just a short-acting β_2-agonist (SABA) inhaler. Use of SABA had been the standard of care globally for over thirty years, but the new research proved that it did not treat the airway inflammation that accompanies mild asthma (Fitzgerald et al., 2021). With the knowledge of this recent standard of care change, the PI for this quality improvement project wondered whether the electronic health records (EHR) used daily by clinicians adequately reflected the change and whether clinicians found the information needed for asthma diagnosis and treatment readily available.

This electronic health record-based quality improvement project sought to optimize asthma treatment algorithms for clinicians at the clinical site by creating asthma smart phrases in the EHR that were both up-to-date and user-friendly. Asthma is a common condition worldwide (World Health Organization [WHO], 2023) and it is on the rise globally. From 2010 to 2019, asthma cases increased by 13% globally and in 2019, asthma was responsible for 461,000 deaths (Institute of Health Metrics and Evaluation [IHME], 2020). As a disease process, it is multi-factorial and complex. Because of its complex nature, clinicians treating asthma patients need dependable asthma smart phrases to reference when prescribing inhalers. The goal of the

project is two-fold—to improve the satisfaction of clinicians with their asthma smart phrases and to improve asthma patient outcomes. The priority population, those for whom the program is intended to serve (McKenzie, Neiger & Thackeray, 2017) were the nurse practitioners treating patients at the clinical site.

This problem is important to healthcare because the correct diagnosis and treatment plan for asthmatic patients directly affects their quality of life. Asthma is prevalent in King County and the number of cases of asthma are increasing each year. Recent King County health data shows that 9% or about 142,700 King County adults age 18+ have been diagnosed with asthma (Public Health- Seattle & King County [PHSKC], 2021). Clinicians treating asthma are faced with an overwhelming number of algorithms, and the GINA guidelines are over 200 pages long. Concise, accurate asthma smart phrases within the EHR will assist clinicians at the clinical site in navigating treatment options easily and help patients reach asthma goals including fewer symptoms, no limits on activity, rare exacerbations, and normal lung function (Kelso, 2016). By filling a gap in prescriptive efficiency in the clinic, this project seeks to improve clinicians' satisfaction with their asthma treatment plans when using the updated asthma smart phrases versus the previous asthma smart phrases.

Problem Statement

Stakeholder interviews with clinicians at the clinical site began in July 2022. The interviews revealed that the current clinical EHR, Medicat, included only skeleton templates for asthma and was not up to date with the most current GINA guidelines. The clinicians, who are short on both staffing and time, as is common in the profession globally, do the work of building up smart phrases for various conditions. The inefficient EHR reflects a gap in the

translation of science to practice. It is not user-friendly yet is utilized in every patient encounter

by all clinicians. This quality improvement project will optimize asthma treatment options for

clinicians by creating asthma smart phrases that are easy-to-follow, current, and malleable

enough to change as guidelines change.

Background and Significance

Literature Review

The literature review focused on the new standard of asthma care, clinician comfort

level with the asthma algorithms, the danger of undertreated asthma and ease of access to the

algorithms in the clinical settings. The Global Institute for Asthma's 2019 practice change

recommendation for mild asthma treatment was based on the review of 616 clinical trials and

151 meta-analyses (GINA, 2019). This research led to the Institute ceasing its recommendation

of treatment with short-acting β_2- agonists (SABA) alone (GINA, 2019) for asthma. The main

strength of this strategy paper is that it was written by an international group of clinical experts

who had buy-in to solve a clinical problem. Further, GINA is "outside of industry" (GINA, 2019)

and is funded only by distribution of its findings and not from drug companies, insurance

companies or any other stakeholders. The weakness of the GINA report is that it is extremely

long; it is 211 pages. This project will help to distill the recommendations down for ease of use

in the clinical point-of-care setting.

A 2018 article by O'Byrne and colleagues was written by the researchers of the hallmark

SYGMA 1 randomized controlled trial (RCT). The article shares the findings of the RCT. As-

needed use of an inhaled glucocorticoid plus a fast-acting β_2- agonist may be an alternative to

conventional treatment strategies (O'Byrne et al., 2018). It was important that this article be

reviewed in the literature search as it was highly influential in GINA's strategy

recommendations in 2019.

Fitzgerald et al. used data from the SYGMA 1 and SYGMA 2 studies to analyze how safe

ICS-formoterol was for patients (2021). The article's findings contributed new knowledge to

clinicians enacting the GINA practice change recommendation- that budesonide-formoterol

reliever therapy is generally well-tolerated and no new safety signals were identified.

Additionally, the data showed that there are no serious adverse effects with long-acting beta-

agonist (LABA) treatment when taken with an ICS from the same device (Fitzgerald et al., 2021).

Beasley et al. presented original research from the Novel START study in their 2019

article. The findings of the RCT showed that budesonide-formoterol used as needed was

superior to albuterol used as needed for the prevention of asthma exacerbations in adults. One

of the strengths of this study is the parameters they used to define worsening asthma, which

included prescription of systemic glucocorticoids and episodes of high β_2-agonist use, and not

just visits to the emergency room (Beasley et al., 2019). This allowed for the primary outcome

of asthma exacerbations to be understood in a broader context than many other studies which

were reviewed.

Treatment Changes and How Patients Respond to the Change

Foster and colleagues, explored qualitative data in the NovelQ study, analyzing patients'

attitudes toward using only as-needed budesonide-formoterol (2020). The investigators sought

to fill a gap in research after noting that recent studies on as-needed budesonide-formoterol in

mild asthma largely focused on clinical efficacy. The findings were mixed. Some patients found

ICS-formoterol an acceptable reliever therapy, but some patients still preferred their usual

SABA reliever. This article clarified how patients view the protocol shift (Foster et al., 2020).

An article by Baggott et al. analyzed the PRACTICAL study, a randomized clinical trial

comparing symptom-driven budesonide-formoterol with maintenance budesonide plus as-

needed SABA (2020). The study showed that most participants stated a preference for the

treatment regimen to which they had been randomized. This brings up elements not yet

discussed in this review- patient feelings of trust in clinicians' prescriptive choices and patients'

desires for habit and routine. Additionally, patients in the study who had historically used a

SABA for relief reported "(being) apprehensive about switching reliever." By the end of the

study, however, 92% said that they were confident in using budesonide-formoterol as a reliever

(Baggott et al., 2020). This finding shows patients' adaptability to changing medication

regimens. A particular helping factor for patient adaptability in the patient population of the

clinical site (university students) is that most patients are ready and willing to incorporate new

information and change strategies as needed (clinical site mentor, personal communication,

July 14, 2022).

Social Determinants of Health and Asthma

The 2022 Washington State report on asthma discussed asthma inequities in detail. This

article outlined eight exacerbating factors for asthma that are related to social determinants of

health (SDH)- "exposure to indoor and outdoor air pollutants due to deteriorated housing,

location of housing near traffic and/or industrial pollutants, exposure to tobacco smoke,

genetics, unequal access to care and quality of care, under- or incorrect use of asthma

preventive medicines, variations in provider cultural competency and communication styles,

and psychosocial factors such as symptom perception, stress, and social support" (Washington

State Department of Health, 2013). These exacerbating factors helped in the PI's broader

understanding of asthma as a disease process and how best to factor in the multi-factorial

nature of the disease in smart phrase creation.

Clinician Perceptions of the Practice Change

A 2018 article by Cloutier et al. reviewed how clinicians were putting current asthma

treatment guidelines into practice in the clinic. The article summarized that "previous reports

on primary care clinicians and specialists demonstrate that adherence to guidelines in general is

low" (Cloutier et al., 2018). A more recent 2021 article found that asthma was challenging for

family doctors to manage because of its variety of shapes, different levels of severity, and wide

age range (Correia de Souza et al., 2021). Together, these articles reinforce the need for clear

and easy-to-follow smart phrases to aid providers in the clinical setting.

Smart Phrases & How They Help or Hinder Clinical Workflow

While it is clear that "the burden to create high quality clinical documentation is

sizeable" (Perotte et al., 2022), the authors of this article found that smart phrase use did not

necessarily decrease time clinicians spent in charting. They did find that smart phrase use

equated with a higher level of billing for visits. The article was based on a study conducted in an

emergency department (ED), however, which differs greatly from a student health center in

both visit times and scope of care provided. Still, the research was relevant to this QI project

because the authors provided an opposing view on smart phrases capacity for reducing charting

burden.

An article by Dufault et al. (2021) found the opposite of Perotte. The article outlined the results of a case study that implemented smart phrases for tele-triage oncology nurses and studied both patient and nurse outcomes. The results of the study showed that participants felt that the use of the smart phrases "significantly streamlined documentation time, enabling them to complete documentation accurately within the shortest time possible" (Dufault et al., 2021). When analyzing the demographics of participants, the authors of the study did note that newer nurses found the smart phrases to be more usable and that they improved their job performance, while the more experienced nurses found them both less useful and having less effect on their job performance. Essentially, the newer nurses appreciated the additional, organized information, whereas the more seasoned nurses had less need for the tools to still achieve similar outcomes.

The Need for Management of "Only" Mild Asthma

An interesting article by Caminati et al. (2021), based in Italy, investigated the reasons that most asthma patients ended up in the emergency department. They found that adequate control was the main factor, independent entirely of disease severity. The article influenced the PI in understanding the goals of asthma management from a clinician standpoint. The categorization of asthma is important for charting, coding, and general understanding, but the control of asthma is the linchpin and the biggest determining factor for exacerbations or ED visits. The article found that "despite the availability of different treatments that have been proven to be effective in most patients, if regularly taken, satisfactory asthma control still remains an unmet need worldwide" (Caminati et al., 2021). The article emphasized that clinicians need to be able to easily and effectively assess control to improve patient outcomes.

The decision of the PI to create a distinct asthma control smart phrase for quick and effective

assessment by clinicians was influenced by this article.

Theoretical Framework

The theoretical framework guiding this project is the Theory of Reasoned Action (TRA),

developed by Martin Fishbein and Icek Ajzen in 1967. TRA postulates that a person's intention

to perform (or not perform) a behavior is the immediate determinant of that action. Barring

unforeseen events, people are expected to act in accordance with their intentions (Kuhl &

Beckmann, 1985). This theory is almost forty years old, but it remains relevant, especially in the

healthcare field, where patient motivations and intentions can influence health outcomes.

The Theory of Reasoned Action provides an appropriate lens for this practice scholarship

project because the project seeks to influence patients' intentions regarding inhaler use as well

as patients' behaviors around modifiable risk factors, such as use of environmental controls for

allergens or avoidance of tobacco smoke. In the literature review, results from the PRACTICAL

study were highlighted. They showed that participants in a large RCT stated a preference for

whichever treatment regimen to which they had been randomized (Baggott et al., 2020). They

leaned towards liking where they were placed and adapting to a new regimen. This finding

seems to be in alignment with Ajzen's theory that most human behavior is goal-directed (Kuhl

& Beckmann, 1985). If this is true, it is a hopeful finding for clinicians; once the goal of

treatment is outlined (well-controlled asthma symptoms), patients can adjust their behavior

and adapt accordingly.

Methods

Setting

The project was implemented at a medical clinic located on the campus of a university in a large urban metropolis. The clinic serves both domestic and international students attending the university and the visits are very low cost, regardless of whether the student has insurance or not. They are open during the business week while school is in session but do close during school breaks. They remain open over the summer as some students still live on campus and attend classes during this time.

Participants

The participants for the project were the four nurse practitioners (NPs) practicing at the clinical site. The project utilized feedback from all clinicians in the creation of the smart phrases. The feedback was provided in the form of stakeholder interviews, response to a PowerPoint presentation of proposed smart phrases, and a post-intervention survey. The specific inclusion criteria for participants were that they were NPs diagnosing and treating patients at the clinic, that they used Medicat in the clinic for charting, and that they were willing to provide feedback on the smart phrases. The exclusion criteria for participants included not actively working at the clinic, not using Medicat, or planning to leave the clinic before the end of the project.

The participants were recruited through the help of the clinical site mentor. Because of her good rapport with the other NPs, she was able to help the PI achieve buy-in with the other NPs on staff. The clinical site director and site mentor were initially contacted by a College of Nursing professor, on behalf of the PI. The clinical site has worked with students in the past. The proposed project was submitted to the Seattle University Institutional Review Board (IRB) in November for approval and because it was not categorized as human participant research,

was not subject to further IRB review. Consent for participation in the project was obtained

verbally by all participants and electronically, in the beginning of the Qualtrics survey.

Intervention

The intervention for this technological improvement project was a suite of asthma

smart phrases, built by the PI. The smart phrase design, formatting and layout was based off

end-user (clinician) feedback, and tailored to the specific EHR, Medicat, used at the clinic.

Clinician feedback was gathered in two phases.

Phase one qualitative data was gathered through interviews with the clinical site mentor

and clinical director, who also sees patients. These initial meetings (five in total) helped home in

the general focus of the project and understand the layout of the EHR. The meetings took place

between July and December 2022 and consisted of open-ended interviews about the perceived

efficacy of the current asthma smart phrases and discussion of what would be helpful for new

smart phrases. Research from the literature review was shared by the PI, to provide deeper

context on past and current smart phrase usability studies. A total of four rough drafts were

proposed, edited, and re-submitted for review by the clinical site mentor and site director

before a final suite was agreed upon for presentation to all stakeholders during phase two.

Phase two of the project gathered qualitative data from the other two NPs in the clinic.

During a presentation of the proposed smart phrases, all stakeholders provided feedback in

real-time, and changes were able to be made quickly and efficiently. One unanimous piece of

feedback was that the smart phrases were too long. Ways to shorten them were discussed

during the meeting, with some disagreement amongst the clinicians themselves. In the end,

two entire smart phrases were morphed into one for ease of use. A smart phrase that was just

consisting of ICD-10 codes for different asthma severities was combined with an asthma

severity smart phrase. The final smart phrase count ended up being four. At the beginning of

the project, there were as many as eight proposed by the PI, so this was a significant

improvement. The goals of the intervention were to reduce charting burden, improve clinician

satisfaction, and optimize asthma therapy within the practice setting. A survey was employed

to gather quantitative data on perceived effectiveness of the intervention.

Measures

Final outcomes for the project were measured using a post-intervention 5-point Likert

scale survey. The Likert scale can be between a 5- or 7-point ordinal scale used to rate the

degree to which respondents agree or disagree with a statement (Sullivan & Artino, 2013). The

survey was anonymous, electronic, and created using Qualtrics. It consisted of five questions,

written as statements, and participants were asked to rate their level of agreement using a

scale from strongly agree, somewhat agree, neither agree or disagree, somewhat disagree, and

strongly disagree. Because one of the over-arching goals of the project was to create a

technological intervention that was specifically tailored for the priority population, it was

important to understand whether clinicians felt their feedback was adequately considered in

the intervention. One question addressed this outcome. Another important outcome measure

was whether clinicians felt the smart phrases were malleable enough to change as they saw fit

in the future, so one question addressed this outcome. The other three questions solicited

information on general satisfaction and perceived useability of the new smart phrases. The

survey was sent to all participants after the intervention was presented during the staff

meeting in March 2023. Anonymity was used to increase validity of the survey responses.

Because the sample size for the project was four, a relatively small number, the PI suggested

that all participants take the survey on the same day, to ensure the greatest anonymity

possible. The survey was sent on a day that all clinicians confirmed they would be working.

Results

Data Analysis

Data from the post-intervention Qualtrics survey was analyzed using Microsoft Excel.

The predicted survey response rate was 100%; the actual survey response rate was 75%. This is

likely due to the multiple demands on the project stakeholders' time. It is, however,

encouraging that 100% of stakeholders attended the meeting where the smart phrases were

presented in March. Data from the survey was imported into MS Excel and each of the Likert-

scale questions was analyzed separately because each question was soliciting feedback on

separate aspects of the intervention. Because the Likert scale was designed to measure

attitudes, versus interval (objective) data, the difference between responses cannot be

assumed to be equidistant (Sullivan & Artino, 2013). The received data, once imported to MS

Excel, was graphed to deduce trends and visually analyze the results of each of the survey

questions.

Project Results

The participant survey had a 75% response rate (n=3). The overall responses to the

asthma smart phrases were positive. Three of the survey questions received a "strongly agree"

response from 100% of participants, the highest possible rating. Two-thirds of participants said

they strongly agreed that the updated asthma smart phrases would improve their workflow

efficiency, with one participant somewhat agreeing. Lastly, the question, "I anticipate that the

updated smart phrases will improve my care of asthma patients" got a strongly agree response rate of 33% and a somewhat agree response rate of 67%. It is reassuring when looking at the results of the survey to see that all five questions were not blanket answers of 100% "strongly agree" from all participants. This finding could be interpreted to show authenticity, rather than a social desirability bias, in the participant answers. The breakdown of Likert-scale responses for each of the five survey questions are provided in Appendix A for review.

Discussion

The purpose of this population-level quality improvement project was to improve clinicians' satisfaction with their asthma treatment plans when using the updated asthma smart phrases versus the previous asthma smart phrases. The post-intervention survey results would seem to signify that the purpose was generally achieved. Looking deeper at the many iterations of the intervention also lends perspective to understanding the development of the intervention. With a total of four rough drafts of proposed smart phrases presented to the clinical site mentor over the project implementation period, it should be no surprise that the final project received excellent feedback. Buy-in from stakeholders was a prime directive of the project for its duration. The EHR used at the clinic is unique and requires specific formatting concerns to be addressed when populating smart phrases. Thus, for future students interested in the work, close contact with stakeholders using the software is essential throughout the development of proposed interventions. The response to the final suite of smart phrases speaks to the importance of this ongoing relationship of feedback, edits and re-submissions that led to the final intervention.

Limitations of the project are two-fold- time and the functionality of Medicat. More smart phrases could have been developed and deployed if the PI had more time to work on the project and if the clinicians had more time to discuss ideas on reducing charting burden. Medicat is a pared-down EHR, compared to the more well-known EHRs such as EPIC. Free text is used for all smart phrases and applications, and no symbols can be used. This was a limitation conveyed to the PI by the clinical site mentor in early meetings, when ideas for drop-down click options, graphics or tables were discussed. Overcoming the limitations of the EHR was possible through review of the formatting of currently existing smart phrases and mirroring it in the creation of the suite of new smart phrases.

Sustainability Plan

The sustainability goal of this project is to share the knowledge gained in building smart phrases in the Medicat EHR with future SU DNP students so they may continue the work for the clinic downstream, if desired. To that end, this paper has been written to provide as much detail as possible, with the actual smart phrases attached in the Appendix. The findings of this quality improvement project will be shared with the College of Nursing and stakeholders on June 9, 2023, on Scholarship Day. The paper will also be housed in the Seattle University institutional repository, ScholarWorks, for future reference by faculty, staff, and students.

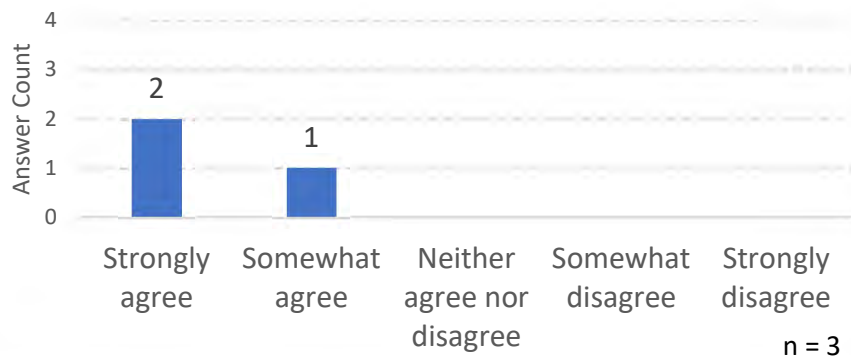## Implications for Advanced Practice Nursing

This technological quality improvement project focused on assisting clinicians to optimize asthma therapy within the practice setting. The clinicians, in turn, will be contributing to social justice by improving clinical outcomes for asthma patients, using both pharmacologic and nonpharmacologic treatment strategies. Race, ethnicity, and income are all factors

influencing asthma prevalence and severity globally. Asthma is predominately higher in non-white populations and poorer populations. The connection between social determinants of health and asthma disease prevalence is clear. In creating a population-level intervention to assist clinicians, this project will contribute also to creating a more just world.

Appendix A

Likert Scale Survey Questions
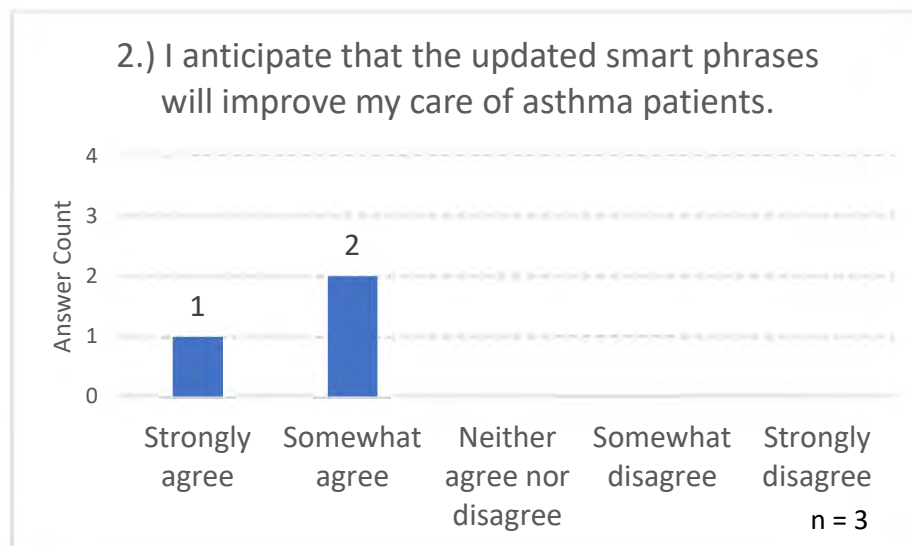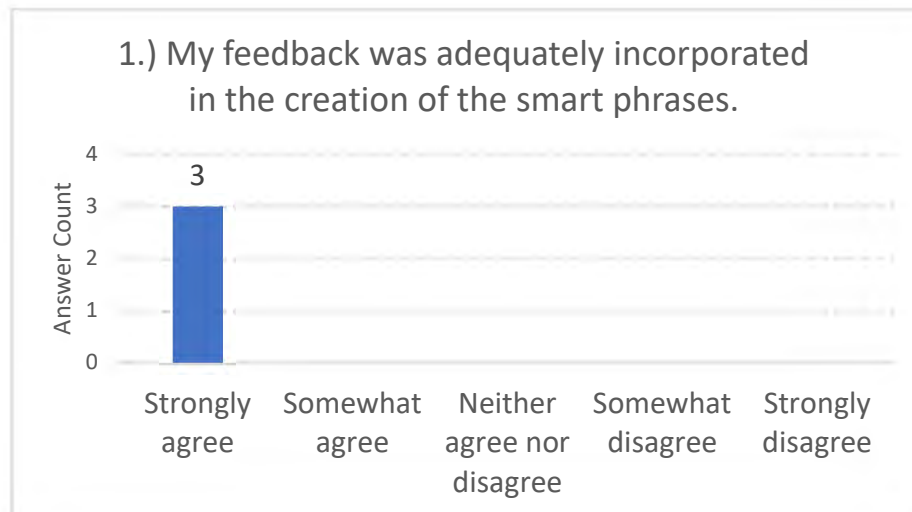
1.) My feedback was adequately incorporated in the creation of the smart phrases.

2.) I anticipate that the updated smart phrases will improve my care of asthma patients.

n = 3

3.) I anticipate the updated asthma smart phrases will improve my workflow efficiency.

Answer Count

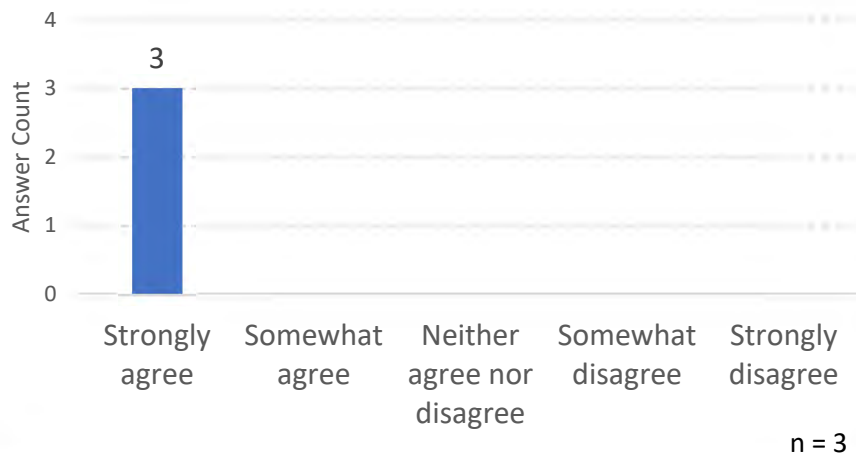|	
Strongly agree	2
Somewhat agree	1

Strongly agree — Somewhat agree — Neither agree nor disagree — Somewhat disagree — Strongly disagree

n = 3

4.) I feel more satisfied with the new asthma smart phrases than with the existing asthma smart phrases.

Answer Count

Strongly agree — 3

Strongly agree — Somewhat agree — Neither agree nor disagree — Somewhat disagree — Strongly disagree

n = 3

5.) The smart phrases are adjustable enough that I can make future changes as needed.

Answer Count

Strongly agree — 3

Strongly agree — Somewhat agree — Neither agree nor disagree — Somewhat disagree — Strongly disagree

n = 3
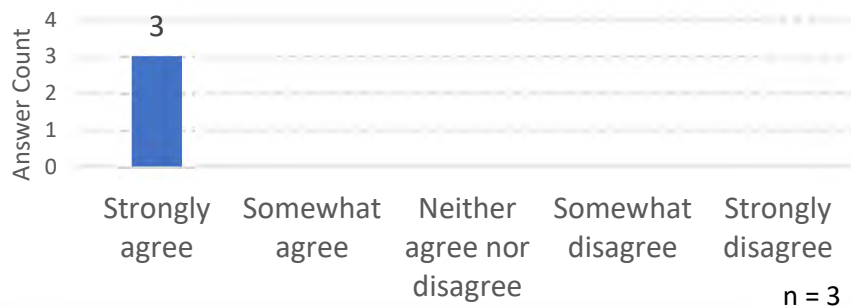
Table 1 *Median and Mode of Likert-Type Item Responses*

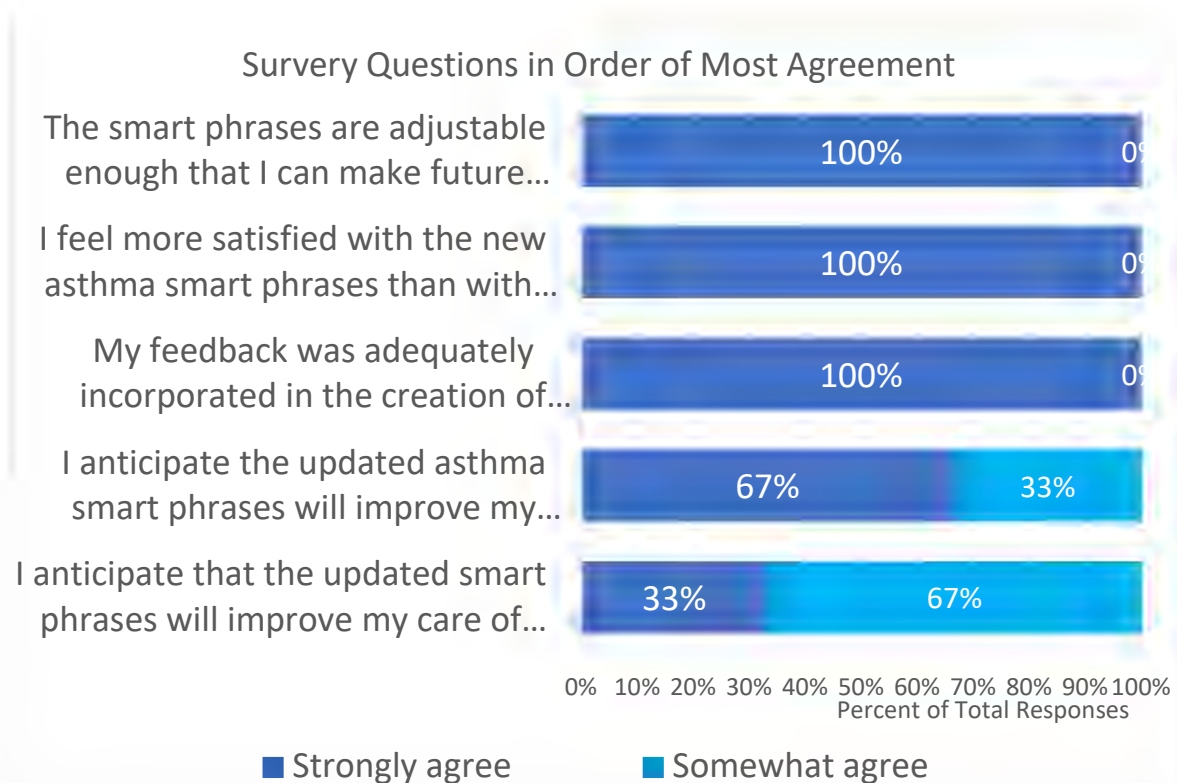| Survey Questions	Median	Mode
1.) My feedback was adequately incorporated in the creation of the smart phrases.	5.0	5.0
2.) I anticipate that the updated smart phrases will improve my care of asthma patients.	4.3	4.0
3.) I anticipate the updated asthma smart phrases will improve my workflow efficiency.	4.7	5.0
4.) I feel more satisfied with the new asthma smart phrases than with the existing asthma smart phrases.	5.0	5.0
5.) The smart phrases are adjustable enough that I can make future changes as needed.	5.0	5.0

Table 2 *Survey Questions in Order of Most Agreement*

Survery Questions in Order of Most Agreement

The smart phrases are adjustable enough that I can make future… — 100% | 0%

I feel more satisfied with the new asthma smart phrases than with… — 100% | 0%

My feedback was adequately incorporated in the creation of… — 100% | 0%

I anticipate the updated asthma smart phrases will improve my… — 67% | 33%

I anticipate that the updated smart phrases will improve my care of… — 33% | 67%

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Percent of Total Responses

■ Strongly agree   ■ Somewhat agree

Appendix B

Smart Phrases

qasthmaseverity

INTERMITTENT J45.20

Symptoms: 2 days per week or less, or with exercise

Nighttime awakenings: 2 times per month or less

SABA use for symptom control: 2 days per week or less

Can do usual activities

_____

MILD PERSISTENT J45.30

Symptoms: more than 2 days per week, not daily

Nighttime awakenings: 3-4 times per month

SABA use for symptom control: More than 2 days per week but not more than once daily

Minor limitation of usual activities

_____

MODERATE PERSISTENT J45.40

Symptoms: daily

Nighttime awakenings: greater than once per week but not nightly

SABA use for symptom control: daily

Some limitation of usual activities

_____

SEVERE PERSISTENT J45.5

Symptoms: throughout the day

Nighttime awakenings: nightly

SABA use for symptom control: several times per day

Extreme limitation of usual activities

qasthmacontrol

In the past 4 weeks, has the patient had:

Daytime asthma symptoms more than twice/week?

Any night waking due to asthma?

SABA reliever for symptoms more than twice/week?

Any activity limitation due to asthma?

If none of the above:

WELL CONTROLLED

_____

If 1-2 of the above:

PARTLY CONTROLLED

_____

IF 3-4 of the above:

UNCONTROLLED

_____

Qasthmaplan (existing, edited smart phrase)

Discussed how to use inhaler and spacer

Recommend spacer

Rinse mouth after use of the inhaled steroid

Discussed connection of allergic rhinitis and asthma

If new empiric treatment initiated, review patient's response in 2-3 months

Stepping up therapy

If asthma is uncontrolled on low-dose ICS-formoterol despite the following

1) good adherence

2) Correct technique AND

3) sxs are confirmed to be d/t asthma and

4) modifiable risk factors addressed, STEP UP in therapy recommended. Proceed to next step

In **qasthmainhalers**

Recheck asthma control in 2-3 months

Stepping down therapy

If good asthma control has been maintained for 2-3 months, can try reducing treatment.

Proceed to previous step on **qasthmainhalers.**

Education on asthma action plan.

Patient to report to clinic if control worsens.

qasthmainhalers

Step 1 Inhalers:

Frequency of symptoms:
Symptoms less than twice a month

LOW-DOSE ICS-FORMOTEROL (Track 1)

Symbicort MDI 160/4.5mcg (Budesonide formoterol)
Inhale 160/4.5 mcg with spacer, as needed, for symptom relief.

LOW-DOSE ICS with Albuterol (Track 2 Options)

Qvar RediHaler 40 mcg or 80 mcg (Beclomethasone dipropionate)
Inhale 80 mcg to 160 mcg as needed, when using albuterol.

Pulmicort Flexhaler 90 mcg/actuation or 180 mcg (Budesonide)
Inhale 180 mcg to 360 mcg daily as needed, when using albuterol.

Flovent HFA 44mcg, 110 mcg, 220 mcg (Fluticasone propionate)
Inhale 88 mcg–220 mcg daily, with spacer, as needed, when using albuterol.

Asmanex HFA 50 mcg, 100 mcg, 200mcg (Mometasone furoate)
Inhale 200 mcg to 400 mcg daily, with spacer, as needed, when using albuterol.

Alvesco HFA 80 mcg, 160 mcg (Ciclesonide)
Inhale 80 mcg – 160 mcg daily, with spacer, when using albuterol.
_____

Step 2 Inhalers:

Step 2 Frequency of symptoms:
Symptoms twice a month or more, need for reliever twice a month or more, no risk factors for
exacerbations, no exacerbations in the last 12 months

LOW-DOSE ICS-FORMOTEROL (Track 1)

Symbicort MDI 160/4.5mcg (Budesonide formoterol)

Inhale 160/4.5 mcg with spacer, as needed, for symptom relief.
LOW-DOSE ICS with Albuterol (Track 2 Options)- ICS is now used on maintenance schedule

Qvar RediHaler 40 mcg or 80 mcg (Beclomethasone dipropionate)

Inhale 40 mcg to 80 mcg twice daily.

Pulmicort Flexhaler 90 mcg/actuation or 180 mcg (Budesonide)
Inhale 90 mcg to 180 mcg twice daily.

Flovent HFA 44mcg, 110 mcg mcg (Fluticasone propionate)
Inhale 44 mcg to 110 mcg, with spacer, twice daily.

Asmanex HFA 50 mcg, 100 mcg, 200mcg (Mometasone furoate)
Inhale 100 mcg to 200 mcg daily, with spacer, twice daily.

Alvesco HFA 80 mcg (Ciclesonide)
Inhale 80 mcg twice daily, with spacer.

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Step 3 Inhalers:

Frequency of symptoms:
Symptoms most days of the week or waking due to asthma once a week or more.

LOW-DOSE ICS-FORMOTEROL (Track 1 Option)-ICS-Formoterol is now maintenance and reliever)

Symbicort MDI 160/4.5mcg (Budesonide formoterol)
Inhale one puff, with spacer, twice daily. Use for rescue inhaler as needed.

LOW-DOSE ICS-LABA with Albuterol (Track 2 Options)

Advair HFA 45 mcg, 115/21 mcg, 230/21 mcg (Fluticasone propionate-salmeterol)
Inhale two puffs twice daily, with spacer.

Breo Ellipta 100/25 mcg, 200/25 mcg (Fluticasone furoate-vilanterol)
Inhale one puff daily.

Dulera 100/5 mcg, 200/5mcg (Mometasone formoterol)
Inhale two puffs twice daily, with spacer.

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Step 4 Inhalers:

Frequency of symptoms:

Daily symptoms, or waking due to asthma once a week or more, and low lung function *Recommended

to refer to Pulmonologist

MEDIUM DOSE ICS-FORMOTEROL (Track 1 Option) ICS-Formoterol still maintenance and reliever)

Symbicort MDI 160/4.5 mcg (Beclomethasone-formoterol)

Inhale one-two puffs, with spacer, twice daily. Use for rescue inhaler as needed.

MEDIUM TO HIGH-DOSE ICS-LABA with Albuterol (Track 2 Options)

Advair HFA 45 mcg, 115/21 mcg, 230/21 mcg (Fluticasone propionate-salmeterol)
Inhale two puffs twice daily, with spacer.

Breo Ellipta 100/25 mcg, 200/25 mcg (Fluticasone furoate-vilanterol)
Inhale 200/25 mcg daily.

Dulera 100/5 mcg, 200/5mcg (Mometasone formoterol)
Inhale two puffs twice daily, with spacer.

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Step 5 Inhaler Options:

Frequency of symptoms:
Daily symptoms, waking due to asthma once a week or more, low lung function, severely uncontrolled
asthma. *Recommended to refer to Pulmonologist

MEDIUM DOSE ICS-FORMOTEROL+ ADD-ON LAMA/POSSIBLE OCS COURSE (Track 1 Option)

Symbicort MDI 160/4.5 mcg (Beclomethasone-formoterol)
Inhale two puffs, with spacer, twice daily.
+
Spiriva Respimat (2.5 mcg/actuation)
Inhale two puffs once daily.
+
Prednisone course (less than or = to 7.5MG/day)

For consideration in adults with poor symptom control and/or frequent exacerbations despite good

inhaler technique and adherence with Step 5 treatment, and after exclusion of other contributory

factors and other add-on treatments including biologics. Patients should be counseled about potential

side-effects.

MEDIUM TO HIGH-DOSE ICS-LABA + ADD-ON LAMA/POSSIBLE OCS COURSE with Albuterol (Track 2

Options)

Advair HFA 45 mcg, 115/21 mcg, 230/21 mcg (Fluticasone propionate-salmeterol)
Inhale two puffs of 230/21 mcg dose twice daily, with spacer.

Breo Ellipta 100/25 mcg, 200/25 mcg (Fluticasone furoate-vilanterol)
Inhale 200/25 mcg daily.

Dulera 100/5 mcg, 200/5mcg (Mometasone formoterol)
Inhale two puffs of 200/5mcg dose twice daily, with spacer.

+

Spiriva Respimat (2.5 mcg/actuation)

Inhale two puffs once daily.

+

Prednisone course (less than or = to 7.5MG/day)

For consideration in adults with poor symptom control and/or frequent exacerbations despite good inhaler technique and adherence with Step 5 treatment, and after exclusion of other contributory factors and other add-on treatments including biologics. Patients should be counseled about potential side-effects.

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Seasonal asthma:

Patients with purely seasonal allergic asthma, e.g. with birch pollen, with no interval asthma symptoms.

Symbicort MDI 160/4.5mcg (Budesonide formoterol)

Inhale one puff with spacer, as needed. Start immediately when symptoms begin.

Continue for four weeks after the relevant pollen season ends.

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