AAFP

American Academy of Family Physicians
Innovation Labs Report

AI Assistant for Clinical Review To Reduce Burden and Improve Quality and Value-Based Care Outcomes

Evaluating the Navina Assistant

navina

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AI ASSISTANT FOR CLINICAL REVIEW TO REDUCE BURDEN AND IMPROVE QUALITY AND VALUE-BASED CARE OUTCOMES

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Executive Summary

Objective:

The American Academy of Family Physicians has launched a series of Innovation Labs to identify and demonstrate technologies essential to optimizing the family medicine experience. The clinical review of the electronic health record has become a burden contributing to physician burnout. Physicians squeeze visit preparation into their day, but it is often inadequate to completely prepare for complex patients. This lab studied the use of an AI Assistant to greatly reduce chart review and visit preparation burden and family physician burnout.

Participants and Methods:

The lab studied the impact of the Navina AI Digital Assistant used for chart review and visit preparation over a minimum 30-day trial by 10 physicians. While the 30-day trial was free of charge, if they wanted to continue to use the AI Assistant, the physician or their organization must sign-up for a subscription. The study was based on pre and post adoption time and motion benchmarks, a physician survey for qualitative assessments, and a physician interview and KPIs (e.g. found diagnoses and RAF scores) were collected from the practice organization.

Results:

The lab was conducted with 10 physicians in 3 practices. The clinicians trialed the AI Assistant for over a minimum of 30 days. Participants reported a 61% decrease in their time to prepare for their visits. An analysis of the chart summaries of 991 encounters from two of the participating practice organizations showed a 25% increase in diagnoses found and a 37% increase in their RAF scores. When asked if they would recommend the AI Assistant to a colleague, the result was a Net Promoter Score of 100.

Conclusion:

The AI Assistant had three major positive impacts on physician clinical review: it saved time, provided thorough clinical review, and supported improved value-based care. The Assistant helped physicians be more prepared for their patient visits; saving them preparation time while thoroughly reviewing all the available records and summarizing it in a problem-oriented summary. The physicians had better information at the point of care. The dramatic impact on these family physicians suggests that an AI Assistant for Clinical Review may be an essential technology to optimize the family medicine experience. These results demand further study in a Phase 2 Innovation Lab where we will study the adoption of an AI Assistant for Clinical Review by 100 family physicians.

Overview: the AAFP Innovation Labs

The American Academy of Family Physicians (AAFP) is dedicated to optimizing the family medicine experience for patients and their families, and family physicians and their care teams. Toward this goal, the Academy supports family physicians in achieving the Quadruple AIM; enhancing their care for individuals, improving the health of their patient population, reducing the per capita cost of their care while also finding joy in their work. The family medicine experience is based on a deep physician-patient interaction and trust that requires support from technology. Traditional EHRs have greatly eroded the experience rather than enhancing it. The vision for the family medicine experience is that family physicians must primarily care for their patients and that IT must work for clinicians not against them. The AAFP sees the innovative use of health information technology (IT) as essential to optimizing the family medicine experience. Toward this end, our Innovation Laboratory is partnering with industry to drive innovation with the latest proven advanced technologies: cloud, AI/ML, voice, and mobile technologies, to optimize the family medicine experience.

Family physicians are facing existential threats. Physician burnout based on clerical burden is at epidemic levels for family physicians[1,2,3,4]. Clerical burden requires greater than 50% of the physician's time. At the same time, they are having to transform their practices to population-based care and alternative payment models. The associated financial risk threatens to burn down their margins and thus their practices. On top of that, artificial intelligence applied without optimizing the family medicine experience as a design requirement threatens to increase physician burden and sub-optimally impact patients and the specialty. While $6.6 billion dollars was invested into the AI health sector in 2020 with over 350,000 health apps available, these apps often increase the burden and burnout for physicians rather than improve the experience of care. The AAFP believes that family medicine must help drive the development and adoption of essential innovations and change how medicine is best practiced in the future. Luckily, applications exist today that are making a positive impact. There is an opportunity for the AAFP to curate these applications to drive adoption and influence their future roadmap.

The AAFP's role is to prove and promote innovations as essential innovations and best practices to membership. EHR's have clearly taught us all that technology can greatly affect best practices. Going forward the family medicine specialty should consider technology essential to the optimal practice of medicine and the delivery of care. Over the past 2 decades, the clerical burden on family physicians has grown with the increase of documentation, reimbursement, and reporting requirements. Family physicians, as with all primary care, make the vast majority of their practice revenues from patient visits and population health. The EHRs that have been built to address these many requirements were designed with many, actually too many stakeholders in mind. For example, the visit documentation has been bloated by the requirements for E&M coding as a proxy for the level of complexity of a visit and therefore the value of the visit. Meaningful Use certification bloated the requirements for EHRs increasing clerical burden and time required of physicians.

The AAFP Innovation Lab's goal is to study solutions that offer not merely incremental improvement, but that truly alleviate the underlying problems in family medicine. We define innovations as products that are adoptable and whose business models are sustainable. Innovations are essential when they are deemed just that, "essential," by physicians and actively promoted by physicians to their colleagues. Their value propositions must promise and then deliver such that the solution is effective and adoptable.

Problem- Clinical Review and Visit Preparation Burden

Family physicians spend over an 1.5 hours per clinic day (13% of the time) conducting chart reviews in support of their care. The time is often thoroughly inadequate, particularly for the patients that need it most and are most at risk. Physicians are squeezing chart review into their day, between visits, before clinics, and even the night or weekend before. Physicians' care teams can help "prep the chart", but the physician still needs to read all new information themselves. Their EHRs and document management systems require time and many clicks to search, navigate, open, and read documents. They are asking; What is new in this patient's history? What is pertinent to today's visit? Am I missing a diagnosis or other clinical elements? Am I identifying all care gaps, quality metrics, and RAF gaps? They feel rushed and have the feeling of potentially missing something. Clinical review burden is negatively affecting the quality of their care and eroding their professional satisfaction.

Innovation - AI Assistant for Clinical Review

AI Assistants are a new category of innovative products that use Artificial Intelligence to greatly reduce burden. The AI performs tasks that require clinicians to spend significant time and effort while allowing them to better care for their patients. In this case, the AI Assistant is helping the clinician to review all disparate records and summarize the patient's history and care to support their current visit. The AI Assistant reviews the entire chart and accessible records including; labs, diagnostics, referrals, consult notes, discharge summaries, scanned documents and provides them a problem-oriented summary of the chart. The AI Assistant eliminates the need for the clinician to search and click through the records and manually collect and summarize new information and pertinent changes. The AI Assistant does it for them in seconds and creates a problem-oriented summary identifying missing diagnoses and gaps in care.

Lab Partner: Navina

Navina is a leading innovator of AI driven clinical review. They partnered with family medicine and primary care practices to develop the AI assistant functionality to support clinical review, chart review, and visit preparation. Navina's reason for being is well aligned with the goals of the lab; helping physicians primarily care for their patients. The company is actively and successfully deploying their solution to primary care and family medicine physicians. The solution is readily adoptable, software only, not requiring any new hardware. The Innovation Lab with the Navina Digital Assistant was conducted on the eCW EHR and athenaOne EHR. This was based on the fact that this AI assistant was already being used by family physicians with these EHRs.

Methods

In this Phase 1 Lab, the goals were to significantly decrease family physician burnout and HIT-related stress based on clerical burden associated with clinical review, chart review, and visit prep. The objective is not just that the innovation can meet these goals but that the innovation is a product that is adoptable and the business model sustainable. The study was based on pre and post adoption time, a physician survey for qualitative assessments and a physician interview as well as key performance indicators (KPIs) collected from the practice organization.

Recruitment

The AAFP identified potential pilot participants using various selection criteria, which included: AAFP membership, use of athenaOne EHR and eCW, a qualification survey indicating the physician self-identified as having burnout, self-perceived clerical burden, reported being burdened with after-hours work, and self-identified as being motivated to change.

Provider Cohort

This Innovation Lab was conducted with 10 physicians in three practices in whose demographics are representative of key practice types within broader membership and described here.

Qualitative Provider Interview

An interview was conducted with each of the clinicians before and after their use of the AI Assistant for the trial period. In some cases, one interview was conducted asking the participant to answer the questions based on how they practiced before the trial and then after. The interview survey instrument is in Appendix A.

Quality Key Performance Indicators (KPIs)

For two of the practice organizations studied, value-based KPIs were collected before and after the use of the Navina AI Assistant such as captured diagnoses and hierarchical condition category (HCC) scoring such as risk adjustment factor (RAF) scores. We collected analyses of the chart summaries of 991 encounters for changes in ICD diagnoses found and in RAF scores.

Results

Below are quantitative results and interview findings for 10 clinicians in 3 practices after using the AI Assistant for 30 days.

Decreased Burnout

Which of the items below describes you best:

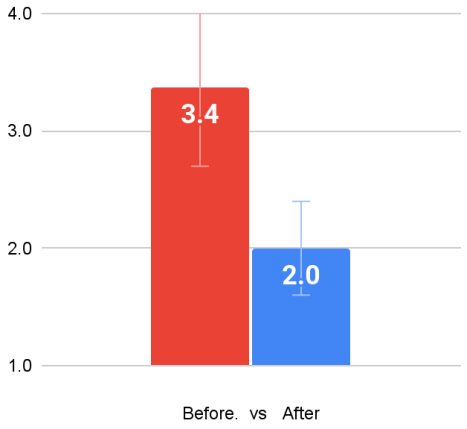
1) "I enjoy my work. I have no symptoms of burnout."

2) "I am under stress, but I don't feel burned out."

3) "I am definitely burning out."

4) "I think about work frustrations a lot. It won't go away."

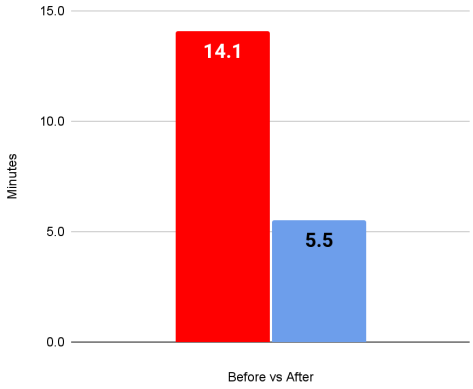
5) "I feel completely burned out. I may need to seek help."



Clinicians reported an average of 3.4 before, so between *"3) I am definitely burning out"* and "*4) I think about work frustrations a lot. It won't go away"*. After they reported on average *"2) I am under stress, but I do not feel burned out".* They reported practice stress but that the AI Assistant had helped to decrease much of the burnout that they has experienced.

Significant Time Savings

How much time does it take for you to adequately prepare for a complex patient?



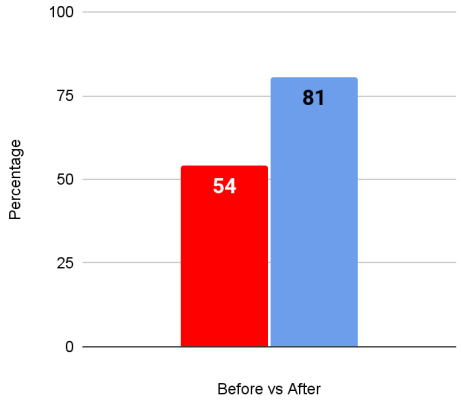
Clinicians reported an average of 14.1 minutes before and 5.5 minutes after the use of the AI Assistant. This was a 61% decrease in the amount of time physicians spent preparing for a visit. One provider reported,

"It has really decreased frustration, number of clicks and gave back time. It has improved my pre-visit preparation and planning. My time and effort have really decreased."

Being Fully Prepared

What percentage of visits do you feel fully prepared?

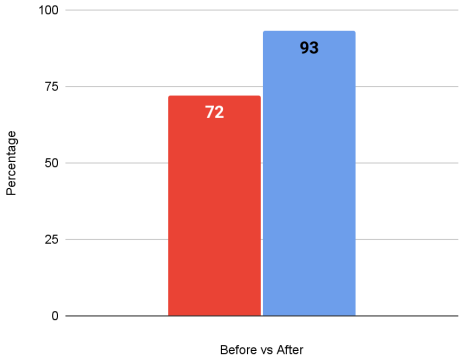
Clinicians reported they were fully prepared for 54% of their visits before and for 81% after with the use of an AI Assistant; a 27 % increase. One family physician reported: *"Now, I like to look at the last note that way I go in knowing what my thought process was the last time. Then I go into Navina, review the Patient Portrait, and look at what RAF scores are missing in the chart. I look to see what's happened to the patient since my last visit, what specialists they've seen. I look to see any other things I might be missing."*



Identifying Gaps in Care

What percentage of visits do you identify and act on gaps in care and care opportunities?

Clinicians reported they identified Gaps in care in 72 % of their visits before which increased to 93% after the use of the AI Assistant. One physician cited: *"For example, last night there was a patient with a microadenoma which was found in Jan 2020 and she had missed her follow-up with her neurologist and was due for a repeat MRI. Without Navina, there was a chance I might have missed that before I locked that note for the night. "*



Better Value-Based Outcomes and More Accurate Risk Adjustment Scores (n= 991 Encounters)

"We've seen a big increase in our HCC scoring and in ICD diagnoses captured. Oftentimes it's the simple diagnoses that are missed because we don't think to put morbid obesity into the chart because we're addressing that as we're talking to the patient about their hypertension. From an administrator perspective, we're closing those care gaps and capturing those HCC codes and getting credit for the patients that we're seeing."

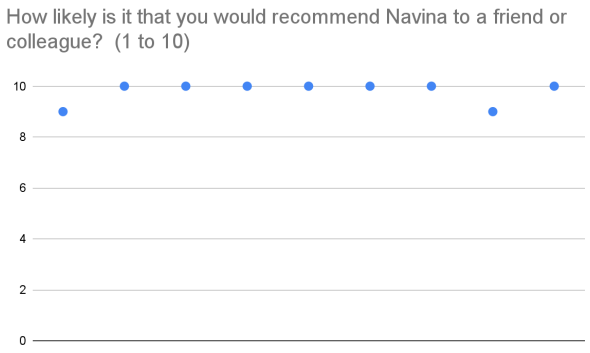
"My charts are more complete and I miss fewer RAF associated diagnoses. I meet more quality measures, I catch more vaccines and I frequently find issues that have fallen through the cracks because they are buried deep in the patient's medical records."

37%

Increase in HCC Scoring

25%

Increase in Found Diagnoses



Net Promoter Score

When asked "How likely is it that you would recommend Navina to a friend or colleague? Seven of nine respondents answered 10 while the remaining two answered 9 (avg 9.8).

Promoters (9 -10) = 100%
Passives (7-8) = 0%
Detractors (1-6) = 0%
NPS = Promoters - Detractors
100 - 0 = 100

The result is that all are promoters and the NPS score is a 100. The Net Promoter Score is calculated by subtracting the percentage of detractors from the percentage of promoters. (The percentage of passives is not used in the formula.)

Discussion

Offers Visceral Appeal

Clinical review burden undermines physicians' professional satisfaction leaving them worrying that they may have missed something, don't have the time or the means to review all the information, and this

can be distracting during the visit. One physician experience represents the broad visceral appeal of the AI Assistant:

"How can you place a price on a missed diagnosis? I am pretty thorough and hopefully didn't miss things in the past. I thought we had enough checks and balances, but boy it's wonderful to look at Navina and think "I could have missed that." Navina helps me be fully present during the visit."

"When I saw it, I felt my brain uncoil.

When I used it was an obvious game-changer."

Meets Value Propositions

When addressing the burden of clinical review and visit preparation, The AI Assistant offered physicians and their practices three distinct value propositions:

- Significant Time Savings
- Better Clinical Care
- Better value-based outcomes

The first two propositions were compelling to all the participants. The third was a driver for one of the organizations. The time saving and better clinical care were realized by all the participants who used the AI Assistant in practice. Better value-based scores were realized by the practice administration of the organization focused on value-based care.

Reduces Visit Prep Burden

The visit prep burden was often described in terms of clicks such as "death by a thousand clicks." Participants described having to click through the entire EHR to find new information. They looked for new information since their last visit such as notes, results, and referrals. Clinicians must find the new documents and then open them and review them and capture the new pertinent information for their new note. Results often reported as a panel require clicking to drill into each item to review the detail. If new documents come into the EHR from outside they are often just described as "New Documents" unless someone has already reviewed and created header information describing the type of document and source. Many of these New Documents are scanned images or faxes. These New Documents require the provider to open them and read them quite thoroughly to establish context and find any pertinent information. Many of these New Documents are scanned images or faxes. This was described by one family physician;

"Before, I was clicking in 10 different sections of the chart;

clicked into scanned documents,

clicked into my regional HIE,

checked my DI box,

checked my lab box,

then checked in "my documents" to find something that was missing.

So, I was going in a lot of circles and it was really slow."

AI does the Work

Time savings were a direct result of the AI Assistant doing the work for the physician. The burden of searching, clicking, and navigating across records was removed. The Assistant finds New Documents as well as performing character recognition on faxes and scanned images as part of its review. The AI Assistant summarizes all the information for the physician in what Navina calls a Patient Portrait. It's a problem-oriented summary that supports rapid review during patient care. The improvement was described well by one physician,

"Before using Navina, when flipping through screens, there was always a lag between screens. Because every time you go into a different screen, no matter how fast the EMR is, there's always a lag to get into each screen. I click on CBC, then click on CMP, then click on lipid, then click on thyroid, so each one of those is more clicks, more steps. Then click on another tab and go into diagnostic imaging. Then I have to go into my document screen and look at the referral, the ER visit. So everything is more clicks, more clicks, and that's the worst part, navigating between so many screens. I was going patient to patient, my choices were to close this out quickly or have a ton of work to do later. I felt more pressure to close the note, get out of the room or I would have to take home an hour or two of work.

"Now, I go through my Patient Portrait before going into the room. I go down my problem list during the visit, while at the same time paying attention to any open care gaps related to that particular problem. For my most complex patients, I keep the Portrait up as opposed to going back into my EMR and flipping back and forth between screens. It jogs my memory 3 months later when looking back."

The AI Assistant completely streamlines the review for the physician and team. Instead of searching for and collecting detail and summarizing it in the note or on a piece of paper. The Assistant finds, collects, and summarizes the entire chart in a problem-oriented review, then lets the physician review. Clinician time is spent synthesizing and caring, not on the mechanics of finding and summarizing.

Conclusion

The AI Assistant had three major impacts on physician clinical review: it saved time, provided thorough clinical review, and supported improved value-based care. The Assistant helped physicians be more prepared for their patient visits; saving them preparation time while thoroughly reviewing all the available records and summarizing it in a problem-oriented summary. The physicians had better information at the point of care and improved professional satisfaction.

While this study was conducted on EHRs whose APIs allow for interoperability. The entire family physician membership have many different EHRs which are harder to integrate with, slowing the implementation of any third-party innovations. This remains a key challenge for any innovation that needs robust data exchange with the EHR. It continues to be an area of advocacy for the AAFP.

The dramatic impact on these family physicians suggests that an AI Assistant for Clinical Review may be an essential technology to optimize the family medicine experience. The goal of the Innovation Lab is the rapid evaluation of efficacy and adoption while creating a proof point in family medicine. It allows innovators to receive tangible feedback from practicing family physicians, coupled with expertise from national experts within the AAFP network. It is the stepping-off point to a larger scale Phase 2 Innovation Lab with over 100 family physicians to validate that this category of innovation is essential for family medicine.

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APPENDIX A- INTERVIEW SURVEY

AAFP Innovation Survey- Digital Assistant for Visit Preparation and Chart Review

As a participant in the AAFP Innovation Lab, we would greatly appreciate learning about your experience before using Navina and after. Below are a series of questions that ask you to think back to how you were practicing before and then after Navina.

What is your role with your practice? Please select all that apply:

- ❏ Owner
- ❏ Partner
- ❏ Employee
- ❏ Physicians Assistant
- ❏ Nurse Practitioner

What care do you provide? Please select all that apply:

- ❏ Primary Care
- ❏ Pediatrics
- ❏ OB Gyn
- ❏ Geriatrics

How many practitioners do you have in your practice?
What EHR do you use?
What is your age?

Which of the items below describes you best: 1) "I enjoy my work. I have no symptoms of burnout." 2) "I am under stress, but I don't feel burned out." 3) "I am definitely burning out." 4) "I think about work frustrations a lot. It won't go away." 5) "I feel completely burned out. I may need to seek help."	Before	
	After	
Comment:		
How satisfied are you with your overall practice? Scale of 1 to 10 with 10 being most satisfied	Before	
	After	
Comment:		
What is the biggest challenge or problem for you in your practice?	Before	
	After	
Comment:		

The EHR adds to the frustration of my day. Strongly agree Agree Disagree Strongly disagree	Before	
	After	
Comment:		
How much time after-hours did you spend completing your charting? Typical night Typical weekend	Before	
	After	
Comment:		
What percentage of your patient visits feel rushed? 0% 25% 50% 75% 100%	Before	
	After	
Comment:		

What percentage of your visits do you do prep in advance? O% 25% 50% 75% 100%	Before	
	After	
Comment:		
What percentage of these visits do you feel fully prepared? 0% 25% 50% 75% 100%	Before	
	After	
Comment:		
On average, how much time does it take you to adequately prepare for a complex patient visit?	Before	
	After	
Comment:		

How would you describe your existing tools to prepare for a visit? Poor Marginal Satisfactory Good Optimal	Before	
	After	
Why?		
Thinking about your complex patient visits, can you walk us through your steps and the process of preparing before the visit?	Before	
	After	
Comment:		
Is there a single most troublesome step?	Before	
	After	
Comment:		
What percentage of your notes reflect the complexity and level of care that was actually required? 0% 25% 50% 75% 100%	Before	
	After	
Comment:		
Why did you decide to try Navina?		
Comment:		

What percentage of visits do you identify and act on gaps in care and care opportunities? 100% 95% 85% 75% 65% < 65%	Before	
	After	
Comment:		
How would you rate your clinics compliance with quality metrics such as HEDIS? Low Medium High Unknown	Before	
	After	
Comment:		

What is your practice's current status on the shifting to value based care? Advanced In place Shifting Planning Considering	Before	
	After	
Comment:		
What percentage of your groups' patient population are in value-based programs? 0% 25% 50% 75% 100%	Before	
	After	
Comment:		
Are you familiar with HCC RAF (risk adjustment scores) and the economic implications of appropriate risk attribution?	Before	

Yes No Somewhat	After	
Comment:		
What is an example of how Navina has affected your family medicine experience?		
Comment:		

How likely is it that you would recommend Navina to a friend or colleague? Scale of 1 to 10 with 10 being most likely?	
Comment:	