

Sentara Health Internship

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## **Introduction**

As a cybersecurity major at Old Dominion University, it is required that I complete an internship or take an internship class to fulfill my capstone credit. Aside from it being required, I wanted to be able to learn more about cybersecurity and technology from experience. Earlier this year, I applied to many internships, hoping that someone would be willing to offer me the opportunity to gain experience and guidance. Some of these companies included CrowdStrike, Honeywell, NASA, and a few other companies. They were not all the same position but were all related to either cybersecurity, computer science, or information technology. Unfortunately, all of these organizations and companies turned me down, but I was still determined to keep trying. Time was running out to apply for summer internships, and the last company that I applied for was Sentara Health. It was the only company that I didn't find through Handshake; I found it on the Sentara website. Luckily, after a one-way interview and an online interview with some of the team, they gave me an opportunity to be an IT Clinical Systems Intern for them. I have always been interested in the healthcare field; it was one of the industries I wanted to go into before choosing cybersecurity. So I believed that this internship would be best fitting for me. Three things I hoped to achieve from this internship are to use the education I have to help me in the internship, obtain knowledge about healthcare information technology, and help Sentara in some shape or form. This paper will cover various aspects regarding my internship at Sentara, starting from orientation day all the way to its conclusion.

## **Overview of Sentara**

Sentara Healthcare is a not-for-profit health system that has been dedicated to improving health every day for over a century. Established in 1888, Sentara has grown tremendously throughout the years. There are a plethora of health centers such as outpatient care centers, and integrated services within the states of Virginia, North Carolina, and Florida. Renowned for its commitment to clinical excellence and patient-centered care, Sentara continues to be a leader in the healthcare industry, innovating and adapting to meet the needs of the communities it serves.

Sentara's journey began with the opening of the 25-bed Retreat for the Sick in Norfolk, Virginia. Over the years, it has evolved into a comprehensive healthcare system that includes 12 hospitals, multiple outpatient facilities, and a broad range of medical services. Sentara is not only a provider of acute care but also offers home care, hospice, rehabilitation, and a variety of other health services. Its integrated approach ensures that patients receive seamless and coordinated care across different settings.

Sentara Healthcare is recognized for its high standards of clinical care. It has consistently received accolades for patient safety, quality, and satisfaction. Sentara's commitment to clinical excellence is evident in its adoption of advanced technologies and innovative practices. The health system was one of the first to utilize electronic medical records (EMR), which enhance patient care by providing clinicians with comprehensive and timely information. Additionally, Sentara's advanced cardiac care, comprehensive cancer treatment, and cutting-edge neuroscience services highlight its dedication to specialized and high-quality care.



### **Orientation and Training**

Although the Sentara internship program is completely remote, orientation was completed in person. Including myself, there were a total of three interns, and we were required to meet up at the Sentara Park location in Virginia Beach. Like most new young hires, I was nervous coming into the building. First, we were required to have our picture taken for our Sentara badge. This would be required anytime we entered the facility or any other location for whatever the reason may be. Next, we entered a conference room where we were all welcomed with Panera for breakfast and a gift bag filled with Sentara-related items (lanyard, coffee mug, badge clip). After eating breakfast, I had the chance to meet the team that I would be interacting with and learning from. This included my supervisor, mentor, the executive vice president, and the other team members. There were a total of three mentors; we were each assigned one, however, we would communicate with the other mentors often. I had the chance to introduce myself to everyone and communicate what I hoped to gain from the internship. They would then proceed to give a rundown of how the 10 weeks would look and what we should expect. After an overview of the 10-week internship, we were given a tour of the Sentara Park facility where we would be able to go if we wanted to work there. Besides the workspaces, there was a gym, showers, cafeteria, internet café, and other areas of the campus available for us. The tour was completed, and we had a chance to speak with our mentors. They helped us set up our work laptops, Sentara accounts, and basically got us ready to be able to work from home.

The training and onboarding process took up most of the first two weeks after the first day of orientation. This was, of course, completed on our work laptops from home.

Workday Learning and LinkedIn Learning were the primary tools used for training and onboarding. The work was simply this, watching numerous 2-10 minute videos and completing a quiz after to show that we learned the material.

Workday Learning Transcript:

Learning Record	Name	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Attendance Status	Grade	Score	Record Type
	Employee Benefits - New Employee Orientation	Digital Course	Enrolled	06/17/2024	Completed	06/17/2024 03:38:52 PM	Do Not Track	Pass	0	Enrollment
	2024 Annual Regulatory - Diversity, Inclusion, and Cultural Competency	Digital Course	Enrolled	06/17/2024	Completed	06/17/2024 03:25:48 PM	Do Not Track	Pass	90	Enrollment
	2024 Annual Regulatory - Preventing Workplace Violence	Digital Course	Enrolled	06/17/2024	Completed	06/17/2024 02:35:42 PM	Do Not Track	Pass	90	Enrollment
	2024 Annual Regulatory -	Digital Course	Enrolled	06/17/2024	Completed	06/17/2024 01:43:23 PM	Do Not Track	Pass	93	Enrollment

## Management Environment

The IT department at Sentara is filled with hundreds of people across many states in America. I personally fall directly under the IT Clinical Systems department or Patient Care Medical Systems - Consolidated Hospital Support. My supervisor is Shannon L. Becker, Vice President of Clinical Systems. My mentor, Kasey Jones, also works under Shannon but is the person who helps me day-to-day and provides me guidance. Kasey, however, is not the only person who has helped during my internship. As stated before, I have worked hand-in-hand with the other mentors, interns, and other individuals in the IT department. Although a lot of the positions in the IT department consist of individual work, they still work fantastic as a team to help each other and me.

## Major Work Duties

After the first two weeks of training and onboarding, my major work responsibilities finally began. Out of the few projects to select from, I chose the SaveClicks Optimization Project. Best Practice Advisories (BPAs) are alerts that notify clinicians and doctors about specific warnings. These alerts are very important as they may catch something that the clinician is not aware of. However, some of these BPAs are not as effective and useful as others. Every single month, there are millions of alerts that fire and interrupt the clinicians, ultimately causing errors. By improving these BPAs, the

precious hours of our clinicians are saved across the whole hospital system. My purpose is to do exactly that.

I have been tasked to choose a BPA from a selected few, and find ways to improve it. Before starting the hands-on work, I had to educate myself on BPAs as a whole. This meant how they work, how to edit them, and how to use Epic. Epic systems are used across the United States for the purpose of health information technology. They allow hospitals to have smooth operations digitally and store EMRs (Electronic Medical Records). With the help of the training companion assigned to me by one of the three mentors, I was able to get a better understanding of BPAs and how I could change my selected BPA to become more effective. BPA/Epic Training Companion:

The screenshot displays the Epic UserWeb Galaxy interface for the CLN2210v BestPractice Advisories Basics course. The sidebar on the left contains a table of contents with the following items:

- CLN2210v BestPractice Advisories Basics
  - February 2024 and later Training Companion
  - Anesthesia, ASAP, Breaker Clinical Pathology, Clin...
  - Pre-Class Tasks
    - Pre-Class Tasks: Start Here
    - Step One: Make Sure You Know the Following
    - Step Two: Complete the Overview of Clinical Decision Support Self-Assessment
    - Step Three: Learn the Basics About Rules (CER)
    - Step Four: Find Badge Documentation
    - Step Five: Learn the Basics about Boolean Logic
    - Step Six: Confirm Training Environment Access
    - Step Seven: You're Ready for Class!
  - Configuring Criteria Records
    - Name Change Update
    - Configuring Criteria Records
    - Planning and Evaluation
    - Build Criteria to Evaluate Diagnoses
    - Build Criteria to Evaluate

The main content area is titled "CLN2210v BestPractice Advisories Basics" and includes the following information:

- Download Options, Link, Share, and a note: "As always, remember your responsibilities for safe use of the software. Last Significant Update: 05/11/24"
- Request project specification for this version by: October 18, 2024
- Submit project for this version by: November 22, 2024
- Request exam for this version by: October 11, 2024
- Materials and assessments for the next version available: October 20, 2024

A section titled "Pre-Class Tasks" includes a "Pre-Class Tasks: Start Here" link and a list of tasks:

- Analyze an immense range of patient criteria.
- Appear passively in clinical navigators.
- Intrude on certain workflows (such as placing orders, filing flowsheet data, or administering medications).
- Fire behind the scenes, triggering task templates or sending In Basket messages.
- Prompt users to take follow-up actions such as place suggested orders, add diagnoses or allergies to the chart, etc.
- Allow or require users to acknowledge and/or dismiss them by choosing from a list of reasons.

A warning box states: "Please complete this entire chapter before attending virtual class. In class, your instructors will assume that you have completed this entire chapter."

The "Prerequisite Certification or Proficiency" section states: "In order to get certified in the BPA Basics Badge, you must be proficient, accredited, or certified in a prerequisite training track. To see the full list, go to the Course Catalog (https://training.epic.com/coursecatalog)."

After learning enough about BPAs, I chose the one I would be working on: RX MU Ischemic Stroke Antithrombotic Therapy. After analyzing this specific BPA using an Epic tool called "SlicerDicer" and Excel sheets, I would find that after firing about 1000 times in a year, it was only 6.2% effective. The low efficiency is due to a few reasons: the BPA didn't fire at the appropriate time, it was out of the window (didn't pop on their screen), and sometimes it didn't apply to the problem at hand.

## BPA: RX MU Ischemic Stroke Antithrombotic Therapy

**Antithrombotic Therapy is Recommended for Ischemic Stroke**

[SCCM Reference](#)  
 Last PLATELET, collected/resulted: DD/MM/YYYY = Result value  
 Last INR, collected/resulted: DD/MM/YYYY = Result value

Open Order Set

Do Not Open

Add Allergy

Do Not Add

Add Allergy

Do Not Add

IP Admission: Ischemic Stroke/Transient Ischemic Attack Order Set. IF TENECTEPLASE IS GIVEN, also use order set ED/IP: Stroke Post Tenecteplase Order Set (#1882) [Preview](#)

ASPIRIN [Edit details](#)

Add new allergy [Edit details](#)

[NIH Reference](#)

Acknowledge Reason

Antithrombotic Allergy or Complication

Aortic Dissection

Bleeding Disorder

Brain CNS Cancer

Hemorrhagic CVA

Extensive/Metastatic CA

Hemorrhage, Any Type

Intracranial Surgery/Biopsy

Patient/Family Refusal

Peptic Ulcer

Risk of Bleeding

Unrepaired Intracranial Aneurysm

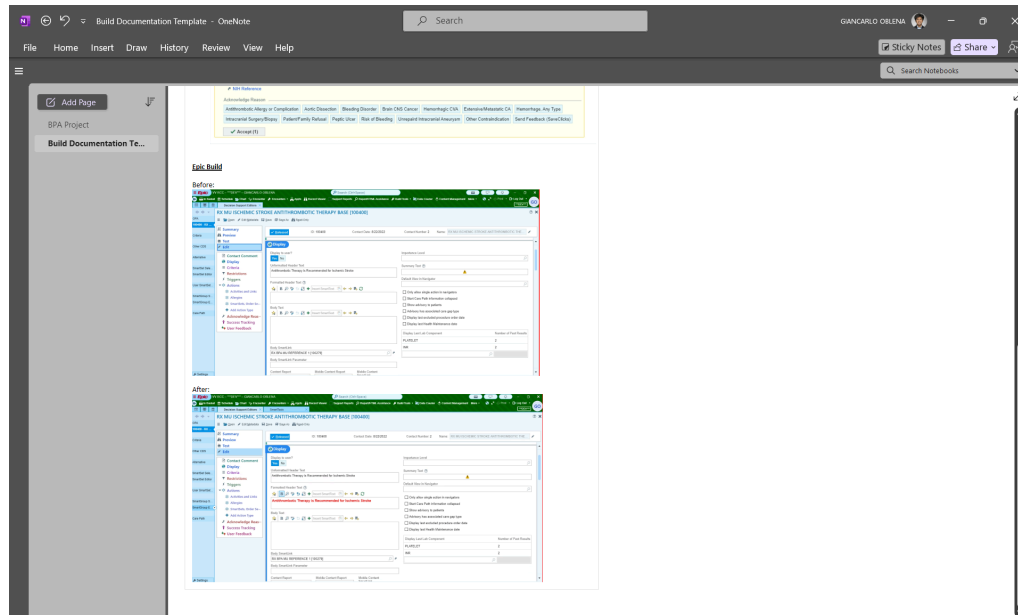
Other Contraindication

Send Feedback (SaveClicks)

Defer

For my BPA, I was assigned a project mentor (not my main mentor) that will help me throughout the project process. We would brainstorm a few ideas that could potentially improve the BPA, but only ended up changing one aspect of the BPA build. Some of the ideas we had were changing the font, lessening the amount of acknowledgement reasons (shown in the picture above), adding a quick link, and many more. We only ended up changing the font, as this would pop out more to our clinicians. Our timeline for the project would end up being behind schedule. As a result of this, I would not be able to see how efficient my configuration/edit would be. Based on what my project says, although it is a small change, it should increase the efficiency. I was taught that documentation is of most importance when completing work like this. This is so if the change needs to be reverted or someone needs to know the process of configuring the BPA, they can go back and check the documentation. After that, I continued to analyze other BPAs and offer up changes and suggestions to improve them for our clinicians.

## BPA Configuration Before & After Documentation:



## ODU Preparation

As I enter my junior year at Old Dominion University, I have completed numerous courses in cybersecurity, computer science, and information technology, in addition to general education courses. Despite this extensive coursework, I found that much of the cybersecurity and computer science curriculum did not directly prepare me for my recent internship. Although I have learned various skills such as Linux, Python, and networking, these were not utilized during the internship. However, this was not a drawback; instead, the internship provided a valuable learning experience, exposing me to a new field of technology in healthcare.

## Skills & Knowledge Used

One aspect of my education that proved particularly useful during the internship was my knowledge of Microsoft applications. The course STEM 251G - Computer Literacy: Communication and Information, was a great help in teaching me the intricacies of Microsoft Excel, PowerPoint, and Word. Prior to this course, I primarily used macOS and Google applications for my school work. The skills I gained from STEM 251G were especially beneficial, as some of my internship tasks involved analyzing Excel sheets. In the last few weeks of my internship, I also had to put together a PowerPoint giving an overview of my time at Sentara. This course, therefore, played a crucial role in equipping me with the necessary tools to succeed in my internship.



Learning about good, basic cybersecurity hygiene has helped me as well. This includes creating a password that is long, different characters, special characters, numbers, etc. I also know to log off applications and the laptop when I am no longer using them. This protects their systems in the event someone tries to infiltrate my system.

### **Objective Progress**

As a reminder, my objectives or goals for this internship are to use the education I have to help me in the internship, obtain knowledge about healthcare information technology, and help Sentara in some shape or form. Unfortunately, the first goal could not be achieved as most of my cybersecurity knowledge could not apply to my project work. I was definitely able to learn about different aspects of healthcare technology by working in Epic, accessing EMRs, and configuring BPAs. I would like to say I achieved my last goal of helping the Sentara organization by configuring/editing my BPA and offering up suggestions for fixing other inefficient BPAs. Overall, I was able to meet two out of the three goals I had for this internship.

### **Aspects of the Internship**

The whole internship experience brought out many different emotions throughout the whole time. It was challenging to me as I have never dealt with healthcare systems or healthcare technology. It was a little discouraging knowing that I have been in college for a little bit over two years and the knowledge that I have gained from my cybersecurity classes couldn't be used. I wasn't able to bring my education and carry it over to help the Sentara organization. It being challenging wasn't a bad thing, however; it was more so motivating for me. As I stated before, the medical field and cybersecurity/technology were my two choices when deciding what to major in for college. By learning about Epic systems and healthcare, I got the best of both worlds.

### **Recommendations for Future Interns**

Surprisingly, this was the first time the Information Technology department tried out the IT Clinical Systems Internship. They were still figuring out how things should run; basically, the other two interns and I were their guinea pigs.

The internship was an overall great experience, but there are some things that I would recommend to the next set of interns. To start off, since Sentara is still learning and experimenting with the internship, do not expect everything to be perfectly organized. It's rare that anything is perfectly organized, so expect changes in schedules and stuff of the sort. Next, if you are coming from a similar background and education, you will most likely not understand 90% of the information given at the beginning. Information

technology in healthcare is a lot different than other systems in other fields. Another piece of information is that a lot of people in the field will overestimate your knowledge. I remember talking to a few individuals, trying to learn from them, but they expected me to know a lot more information than I really did. The last piece of advice I would give is, be curious and do not be afraid to ask questions. Internships are where you learn and gain experience, and that can't be achieved without asking questions. Sentara is a great place to intern, so make the most of it.

## **Conclusion**

As my position as an IT Clinical Systems Intern at Sentara Health comes to an end, I can only be grateful and appreciative to everyone who has helped me throughout it all. I am especially grateful to my mentor, Kasey Jones, who has supported me and provided guidance the entire duration of the internship. Although it was not directly related to my major of cybersecurity, I was able to learn about information technology in the healthcare industry. In the end, my efforts in my SaveClicks Alert Optimization Project will help the organization and hopefully save hours of wasted time for our clinicians.

Aside from the project work learning experience, Sentara has provided me with professional development help that I have not received before. I was given the opportunity to attend a weekly internship series that provided career advice such as resume help and interview tips. Not only that, I had a professional headshot taken at a studio that I currently use for job and networking sites such as Handshake and LinkedIn. I have had the opportunity to talk to numerous professionals that have only offered great advice for my future.

This internship has caused me to give serious thought to working as an IT professional in the healthcare field, hopefully at Sentara again. Jamisson Fowler, the Chief Digital Officer and a Vice President of the Information Technology Department, said something to me when I had the chance to interview him that has stuck with me: "Unlike other places, working for Sentara is a blessing; you are able to actually help people in need and improve their health everyday."

## References

*Home - sentara history.* Sentara History - Sentara through history. (n.d.).  
<https://sentarahistory.com/>