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Teaching Case

ComprehensiveCare and the Failed Implementation of an Electronic Health Records System

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ABSTRACT

Administrator Jennifer Stanton attempts to adopt an Electronic Health Records system at ComprehensiveCare, a multispecialty healthcare practice. Consultants from the vendor provide guidance to the organization, but do not provide that guidance in a way that the non-technical administrator understands. The project experiences escalation of commitment as the administrator attempts to budget for a project that requires unforeseen infrastructure investments. Customizations undertaken at the behest of the managing partner, Dr. Francine Harris, make using the system slow. This interruption in workflow incites user resistance, derailing the benefits that ComprehensiveCare expects to gain from the adoption. The owner-physicians on the board of directors must decide whether to require Jennifer to pull the plug on the system.

This is the first case in a series of three cases concerning ComprehensiveCare's adoption of Electronic Health Records. This case challenges readers to examine escalation of commitment in a real-life context and appreciate that while each decision could make sense on its own, in totality, the project is clearly out of control. Readers must then decide whether to abandon the system by "pulling the plug" or to undergo a rebranding plan to save the investments. This case provides a context that would be relevant in a graduate-level IS management course, an undergraduate fundamentals course, or a project management course.

Keywords: Escalation of commitment, Project management, Adoption failure, Organizational system, Electronic health records, Teaching case

1. SUMMARY

Jennifer Stanton, the administrator for ComprehensiveCare (CC), oversees the adoption of an electronic health records (EHR) system called DocCharts. The vendor provides consultants to assist with an implementation that was supposed to take three weeks. CC discovers unforeseen costs associated with making DocCharts work in their organization. The project extends over several weeks before the consultants leave. Dr. Francine Harris, the managing partner of the board of directors, works to customize DocCharts for CC because she will be the first doctor to use the system. The customizations require a significant level of detail that slows down the clinical processes, which in turn leads to user resistance. The board must decide whether to pull the plug or to try to salvage the investments in the EHR system.

2. CASE TEXT

"Things aren't going well," Jennifer thought. Secretive doctors cannot be a good sign. Dr. Harris will not even make eye

contact. They shut themselves in the conference room for lunch, and Dr. Franks looks downright sick. Pale, wan, puffy eyes. Jennifer cannot shake the foreboding that she will not like what is going on.

Sure, there have been problems. No practice is perfect, after all. But there have been more problems than usual these last few months. Growing pains can be expected with any organizational change. Jennifer knows that the practice has not given the new system enough time to show its promise.

It is time to go; the board of directors has called an emergency meeting, and Jennifer has been asked to attend. She takes a deep breath and steps into the room.

"Jennifer," Dr. Harris starts, "we have to talk."

2.1 ComprehensiveCare

ComprehensiveCare (CC) is a multispecialty healthcare organization. It is a group practice with twelve physicians who also own the practice and three additional physicians who work for the practice. The owner-physicians sit on the board of directors and provide oversight for the practice, primarily through Jennifer Stanton, the administrator. In physician

practices, the administrator role is analogous to a CEO role in most organizations. Jennifer has significant education in both business management and law and has been with the practice for ten years, a long tenure for most group practices the size of CC. Jennifer has demonstrated strong management skills through growth into complementary areas of medicine as well as the accompanying year-over-year revenue growth, even when the economy has been in a recession.

CC grew out of a merger of three individual practices. The three groups of physicians found complementary and overlapping skills between the practices. Due to the overlap, the physicians found themselves referring patients to out-of-town specialists rather than specialists in town because patients would sometimes stay with the specialist for follow-up care. When doctors referred patients to out-of-town practices, the patients generally came back as soon as possible to avoid the inconvenience of traveling. By merging into a single practice, referrals could be kept in-town and in-house, giving a better experience to patients while still avoiding losing patients to other practices.

CC sits in a mid-sized city in the Southeast United States. The community focuses on farming, and the annual festival celebrates the regional crop for which the town is known. The city is the center of civilization for about an hour's drive in every direction. It has the hospitals, the warehouse stores, the malls, the restaurants, and a branch campus of a regional university.

The city is experiencing a revival, recovering after some tough economic times. Houses are starting to sell while commercial real estate is starting to fill up, too. Jobs are becoming more plentiful, so workers in the community start to move around a bit, looking for better opportunities. The overall feeling is one of hope, though the city still has pockets of decay where projects were started and then abandoned in the recent recession.

CC provides the foremost in care for the specialties it offers for the surrounding community. It has the high-end diagnostic equipment, physicians that are fellowship-trained for a variety of health concerns, and an attached ambulatory surgical center (ASC) to provide care for patients that need procedures that require sterile operating rooms.

CC's growth includes several remote locations in the surrounding small communities, an idea that Jennifer brought to CC in the first three years at the practice. These offices are staffed primarily by the three physicians who do not hold ownership positions, though the owners rotate through the locations when there are enough specialty cases to make the travel financially feasible. Most offices will see a specialist about once per month, though some do not have enough volume to justify the doctor's travel. In those cases, the patients simply must drive into town to be seen at the main location.

CC's reporting relationships ensure that the organization is functioning well and according to established policies and form the organization's formal structure. The practice has about two hundred employees, allowing everyone to know everyone else. This is especially true as the practice has seen very little turnover. Most years, only one or two members of the staff leave, and many of them return after finishing school or moving back into "the big city." As flat as the formal structure (shown in Appendix 1) is, the informal structure is

even flatter. Technicians report through a head tech to the administrator. Except for the technicians that operate the diagnostic equipment, technicians are assigned to a physician. Technicians form close bonds with their doctor, especially the head tech whom the doctor has chosen. Because the doctors who practice in the main location are also owners, most technicians enjoy direct access to the members of the board of directors. Everyone in the organization refers to each other by their first name except the doctors who are known by their title. Thus, Administrator Jennifer Stanton is just Jennifer, while Dr. Francine Harris is Dr. Harris. The informal structure is made up of two tiers: Medical Doctor and Not-Doctor.

Philip Jennings leads the IT department as the Director of IT (much like a CIO in non-healthcare organizations). He is responsible for providing the strategic planning and to carry out about one-third of the IT work for CC. He is a self-taught expert, cutting his teeth at the local school district where he served as the desktop support supervisor. Philip has been with CC since the practices merged, as none of the three practices had an in-house IT staff prior to the change. Over the twelve years, Philip has expanded the department to two other full-time staff and one high school intern, Dr. Harris's nephew. Angela Burke, who provides desktop support, had worked with Philip at the school district. Curtis Day, the network administrator, had gained his experience working for the college in town. Dr. Harris's nephew, David Smith, works as needed with any of the full-time staff members on a broad assortment of projects. As Philip will proudly tell anyone, "We've never run into a problem we can't solve." They identify themselves as "a scrappy bunch, doing whatever it takes to support CC's mission of providing outstanding health care." Philip is also incredibly proud that all of the workers in IT have won Employee of the Month and have the plaques displayed prominently on the wall.

These plaques irritate Marilyn Schneider, the billing supervisor. Her job requires regular interaction with the IT department because of problems that arise with submitting insurance claims when insurance companies, commonly called payers in healthcare, change their filing rules. Marilyn loathes dealing with IT. She says, "They're all a bunch of jerks. They think they know everything, but they don't know what I do. They know absolutely zero about what I do."

Marilyn is not alone in finding the IT department difficult to deal with. Jonathan Crafton, the Head Technician for the diagnostic equipment, is a little kinder: "When IT wants us to change something, they expect us to learn about computers. They never bother to learn about healthcare. But I think they're kind of insecure, you know what I mean?" Jonathan describes a recent problem where he had to work with IT, "The network connection in one of the testing rooms wasn't working. But Philip proceeded to tell me that there's nothing wrong with the network and that maybe I'm just not using the equipment right. That is their only answer: user error." Jonathan feels insulted that Philip insinuates that he does not know how to use equipment that Jonathan has helped the vendor design.

Jennifer has instituted the Employee of the Month award to try to bridge these gaps that the IT and clinical staff are experiencing. Jennifer confides that she will "choose the employee that needs recognition rather than someone that did something great." It gives Jennifer the chance to highlight that

staff member at the monthly after-hours staff meeting. She tends to choose people who are widely disliked or ignored in order to get other people to know something about that person. Humanizing people makes it easier to start liking them. To make sure her purpose is not obvious, Jennifer chooses a popular staff member about once a year. The winners get a plaque and, for the next month, a parking space right next to the back door.

When talking about the Employee of the Month program, Jennifer bemoans, "It's not working. I still get complaints about IT being arrogant. And I still get complaints from IT about people not appreciating what they do." But now she is also getting complaints from hard-working clinical staff. "I worked over 60 hours last week, and I'm going to school to make me a better technician. Why is IT getting so many awards?" asks Joseph Martin, head tech for Dr. Johnson. To remedy this, Jennifer has started an Employee Spotlight in the weekly staff newsletter, giving her four times more spaces to recognize the great staff members that are not at the nexus of any controversy.

The key reason Jennifer worries about bringing IT together with clinical users is the adoption of an Electronic Health Records (EHR) system. This large-scale information system cuts across CC's entire organizational structure: appointments are scheduled in the system, patients are checked in for their appointment, technicians record the results of testing, and doctors take notes about the patients and the plans for treatment in the EHR system. Billing also uses the EHR system to request payment from patients and payers.

EHR systems differ from other large-scale systems like enterprise resource planning systems in one major way: the processes used to deliver healthcare are not standardized to the degree that they are in other processes codified in other information systems. For instance, the process of calculating a paycheck is well-understood: hourly rate times the number of hours worked, minus required deductions for taxes and insurance should be accomplished in the same way, no matter the employer or system used. The process of diagnosing and treating a patient, on the other hand, does not have a best practice in all cases. Doctors have significant latitude in the processes used and prefer to retain that professional independence.

The U.S. government mandates that all physicians must use EHR systems when treating patients, with both a carrot and a stick to encourage adoption of EHR systems. The reward ("carrot") is that practices that implement EHR systems and actually use it before a given deadline will be given grants to offset some of the cost of the system. The penalty ("stick") for not implementing EHR systems is that Medicare and Medicaid will pay physicians less money for the healthcare that they provide to patients after a certain date. At the point in time of this case, the deadline to implement EHR systems for the maximum grant is three years away, for any grant at all is five years away, and the penalty for not using EHR systems is seven years away. Jennifer estimates that the incentive payments will be about \$8,000 per physician per year for the first four years.

Jennifer sees benefits in adopting an EHR system before the deadline. First, as the deadlines approach, vendors will likely see an uptick in the number of practices implementing EHR systems. CC wants to be at the front of the line, not stuck

waiting around with all of the late-adopters. Second, Jennifer knows it will take a little while for CC's staff members to get used to an EHR system. She figures that the sooner CC gets used to EHR, the quicker they can get back up to speed on seeing the patient volume they are accustomed to. And if the government estimates are correct, CC will build more capacity to see patients. CC can capitalize on this opportunity when the surrounding practices are implementing an EHR system closer to the deadline and cannot see as many patients.

2.2 Pre-Implementation

Before presenting her plan to adopt an EHR system to the board, Jennifer reached out through her professional association to find what other practices use. One brand is preferred in CC's specialties: DocCharts. In discussions with the other administrators, several of her friends are planning to go with DocCharts when they adopt EHR systems in the coming years. Jennifer contacted DocCharts and found that the licensing is straightforward. Each doctor pays \$10,000 per year for the licenses, and as many technicians and billing staff as needed can work with the system. The license allows doctors to see patients in as many different locations as needed as well. With the government incentives, the pricing seems reasonable. Based on this information, Jennifer presents Budget 1 to the board of directors. She touts the benefits of using an EHR system in general and DocCharts in particular for the practice. Dr. Franks and Dr. Shumway remain unconvinced, but everyone else expresses support. More information about the budget is described in Appendix 2.

As Jennifer thinks through the implementation, she realizes that CC does not have enough computers in the right places for DocCharts to be used. CC uses a practice management system that handles scheduling, billing, check-in, and check-out, but that only requires ten computers. There are 32 exam rooms, 8 nurse stations, and 11 diagnostic testing rooms that will also need computers, for a total of 51 new computers needed. After consulting Philip and Director of Finance Elouise Smoot, Jennifer presents Budget 2 (shown in Appendix 2) to the board by email to update them on the expected costs. All the doctors sign off, and Jennifer directs Philip to order the computers.

As Jennifer discusses the implementation with Philip, she recognizes that CC's IT department has never implemented a large-scale information system before. And with the IT staff coming from education and not healthcare, Jennifer proposes that CC contract with DocCharts to provide consulting help for the duration of the implementation. After discussing the practice and consultants with DocCharts, Jennifer updates the budget with the estimates provided by the EHR vendor and sends it out (see Budget 3 in Appendix 2). Once again, the doctors sign off, and in addition, Jennifer is given carte blanche to ensure successful adoption of DocCharts without having to see a new budget every few days.

Philip walks into Jennifer's office without knocking, as usual. "Jennifer, the computers came in. You know we're going to have to put them on the network, right?"

"How much will that cost?"

"Probably about \$100 per network drop, plus another \$6000 for the switches."

"Great," Jennifer says, "further over budget."

"Ok, Philip, go ahead and take care of it."

2.3 Installing the EHR

First thing Monday morning, the DocCharts consultants arrive at CC's main location. After a brief meeting with Jennifer, they go visit Philip. "Hello Philip, we're Kristi and Amanda. It's great to finally have a face to put to a name. Shall we get started?"

"Hello! Yeah. I got your emails. Sorry that I didn't answer. I got busy." Philip gave her a contrite grin. "I saw lots of information you asked for – but I'm not exactly sure why you need all of that stuff."

"Don't worry about it. We can just help get everything together now that we are here. What server are you planning to install DocCharts onto?"

"How much power do we need?" Philip asked, wondering which server to use.

"Not much. Just something with about 8 GB of RAM available and at least 500 MB of space. The real work is done by the SQL server anyway." Kristi, the technical expert on the installation team, is tired of the same question. Doesn't anyone read the specifications? No matter, she has to keep the customer happy, and besides, she is there on CC's dime.

"SQL server? Nobody mentioned an SQL server. We don't have one – the practice management system we use has its own database built-in." Kristi and Philip's eyes meet, and they each recognize the same thing: this installation is not going to be as easy as either had hoped. And Amanda, the training specialist, will have some spare time while CC gets the infrastructure ready.

"Amanda, would you please call Todd and let him know I won't be available next week after all? Phoenix will have to wait, or Todd will have to find someone else to go." Kristi hates calling Todd; he always makes her feel guilty when installations do not go as quickly as the sales reps promise customers over the phone. It is not her fault that they do not impress upon clients just how many things can go wrong. Such as when customers do not have the required systems.

Kristi helps Philip select an appropriately-sized server to handle SQL, which Philip orders and pays to have overnighted to CC so that the installation can continue. He sends Jennifer and Elouise a copy of the order confirmation with a brief note that the server is for SQL and is required for DocCharts to work. Jennifer is not happy about the increased cost, but there is not much she can do about it, especially after the order is placed. The doctors are holding their monthly board of directors meeting that night, and because they do not like surprises when they review the cash flow statements, she will have to update them on the EHR system budget (see Budget 4).

When the server arrives on Tuesday, Philip buys the license for SQL Server and the required Client Access Licenses (CALs). He sends a copy of the order confirmation to Jennifer and Elouise. Jennifer responds immediately with an ominous, "Please come see me."

"Philip, I thought you already ordered the server. Didn't it come in this morning? Why is there another \$16,000 in charges for this?"

"I ordered the hardware, not the licenses. Oh, and I'm going to have to buy some Windows CALs too, so you can expect that in the next few minutes."

"What the heck is a CAL?" Jennifer did not like it when Philip used geek speak around her. It seemed like a foreign language.

"When you buy the server, you are paying for the hardware and the operating system. When you install SQL Server, you have to pay extra. And each computer that accesses it needs a license too."

"So I have to buy the SQL server, and then pay extra for SQL Server? Seems weird. Are you sure that's how it's supposed to work? You didn't order the same thing twice, did you?"

Philip's jaw clenched. "I know what I'm doing. This is how Microsoft licenses work. If you want DocCharts to work, this is what it takes."

"Sorry. I didn't mean to offend. It just seems strange, that's all. I'm so glad we have you here to make sure everything works. How much are the Windows license-things going to be?"

"I can get it down to about \$20 each if we buy it by the 100s. We already have 100, so 100 more should work. About \$2000 should do it."

"And then that's it, right? There are no more surprises?"

"As far as I know. But, they wouldn't be surprises if we knew about them, would they?"

By the end of the week, the EHR server is running on the same server as the practice management system, and the new SQL server is performing well. The software is installed on most of the computers. Kristi and Amanda are on their way out, having left instructions with Angela for installing EHR on the rest of the computers.

"Jennifer, do you want us to submit our travel and food expenses to you, or to Elouise?"

Jennifer silently berates herself for forgetting that the consulting arrangement is a standard time-and-materials agreement, so all expenses incurred by the consultants is CC's responsibility. "Go ahead and give it to Elouise."

"All right. We'll see you next week." Kristi delivers the expense reports to Elouise for \$2500 each for the week.

Jennifer proceeds to call Todd, the supervisor of consulting services at DocCharts, to determine how much longer the implementation will take. "You know, every practice is different. I'll have to follow up with Kristi when she returns, but I don't expect it will take more than about a week or so."

The next Monday, Kristi and Amanda again meet with Jennifer. They have some important topics to cover. "What features do you plan on using?"

"All of them," replies Jennifer, a little nonplussed.

"Perhaps you don't catch my meaning. ComprehensiveCare purchased the standard package for our DocCharts product. This includes several different functions, such as instant messaging from within the EHR, sending prescriptions direct to pharmacies and labs, and sending charts to any other practice using DocCharts. Do you plan to use these features?"

Jennifer explains, "These are the features that Dr. Johnson and Dr. Wilson are most looking forward to using."

"Then we need access to your Exchange server. I'll get with Philip on that. Now for interfaces – is there any equipment's results you plan to import directly into the patient record? Each type of equipment will require an interface."

"Sure, go ahead and interface everything you can. The easier it is to get data into the EHR, the more efficient the EHR will make us. And we avoid accuracy errors from typos."

"Great. I'll make a list of your equipment and get on the phone to get the engineers started on creating the interfaces."

Kristi and Amanda greet Philip and update him on their conversation. "Jennifer says we need access to your Exchange server to enable all of the features that you have bought. Also, we need an equipment list so we can get interfaces built by the engineers. Do you have one around?"

Philip replies simply, "What Exchange server? We don't have one."

"Then you need one."

"Jennifer knows?"

"Yes, we discussed it just a few minutes ago."

"OK. Help me pick out hardware."

"The same server we bought for SQL should do nicely. And you should probably get two, so if one of the servers goes down, you have a spare. I'll help you install everything on the backup, and you can turn it on in the case of an emergency."

After placing the order, Philip again sends the confirmations to Jennifer and Elouise. He also orders the Exchange Server licenses required. Philip, Angela, and Kristi immediately get to work on testing the computers Angela installed over the weekend. After making some configuration changes on the servers, Philip returns to an email from Jennifer saying, "I thought there were no more surprises."

Philip immediately heads over to Jennifer's office. She is visibly angry, angrier than Philip has ever seen. Another fifteen thousand dollars were spent without her authorization. Philip pleads his case – that the consultants told him she has already approved the expense. "You said they could have access to our Exchange Server. Well, we don't have one. So what was I supposed to do?"

After a few moments, Jennifer regains her composure. "I see your point. I didn't know what an Exchange Server was. I guess I would have authorized it anyway. But Philip, no more spending without my explicit approval. Got it?"

"Sure thing, boss."

Through the rest of the week, the consultants work with Philip and the rest of CC's IT department to install, configure, and troubleshoot the systems. They provide training for backups, disaster recovery, and security. The interfaces from the engineers are installed and tested so that diagnostic information from the equipment is inserted into DocCharts with only a few clicks. Philip is trained by Amanda on how to customize DocCharts through something called templates. It allows CC to specify the information required at each phase of the patient's visit, called an encounter, before moving on to the next screen. The order of the screens is also customizable within the template. After depositing their travel expenses with Elouise, the consultants head home.

2.4 Customizing and Training

Philip works with Dr. Harris over the weekend to customize the templates because Dr. Harris will be the first to use DocCharts. Dr. Harris, as a researcher, prefers copious amounts of information. "You never know when you will find a new relationship. You know? So what if it takes a few extra seconds." Philip follows the steps Amanda taught him and creates the templates.

The next week is filled with training. All the employees are scheduled to have small group training sessions. The technicians for each doctor meet separately with Amanda and Kristi to learn how to use DocCharts. Because there are twelve doctors using eight groups of exam lanes (rooms used to privately evaluate patients), there are always four doctors not scheduled. Usually, the technicians are not scheduled either as the clinic is open ten hours per day, but Jennifer authorizes overtime for training on the EHR system. Some technicians grumble about having to give up their day off, so Jennifer also buys lunch to try to appease the staff.

The reaction to the system is not encouraging. "This is stupid!" objects Patricia White, Dr. Shumway's head tech. "We already have enough to do, and paper works fine. What's the point of this, anyway?"

"We have to do it. It's a government mandate," explains Angela. "So you just have to get used to it. And besides, you don't think we'd install the software if it wasn't going to make your job easier, do you?"

"I don't think you know what our job is, Angela," replies Patricia.

Seeing the training session about to be derailed, Amanda decides to step in. "Thank you, Angela. But there are other good reasons to use DocCharts. Practices using the same EHR system can see more patients than before they started using our software. And it gives you a higher-tech feel, which most patients like. And remember those lost charts you've had to deal with? They'll be a thing of the past."

With the objectors pacified, Angela and Amanda train all of Dr. Shumway's techs to use DocCharts.

"Wait a minute. Can we go through that again?" asks Patricia.

Angela sighs loudly and exchanges a see-I-told-you-so look with Amanda. "I told you they weren't up to learning the new system. They're always so slow to catch on."

"Thanks for the vote of confidence, Angela. No, what I'm referring to is in the medical history – click through to smoker, and click yes. What're all of those boxes for underneath?"

Amanda pauses and looks at the screen. "This is new," she thinks. But Amanda knows she must measure her words carefully. After the briefest of pauses, she responds, "These are customizations made just for your clinic. If someone smokes, it's important to know how much they smoke, how long they have smoked, and their two most-commonly-smoked brands of cigarettes." She secretly hopes nobody asks why that is important because she has no idea.

Hearing the raised voices from down the hallway, Philip joins the training session.

"This is going to take forever!" Patricia exclaims. "There's no way we're using this." Patricia texts Dr. Shumway and asks him to come over from the ASC, where he is in surgery for the day. He comes in the room between cases.

"What's this all about?" asks Dr. Shumway.

"She says we have to ask patients all kinds of irrelevant details to use this software," responds Patricia, pointing at Amanda. "There's no way we have time for all of that. We have too many patients, don't we, Dr. Shumway?"

"Excuse me, but this is what Dr. Harris wants," says Philip. "If you don't like it, I suggest you take it up with her."

Dr. Shumway, visibly affronted, says, "Of course we can't. I'll make sure we'll be last on the EHR system. And if

there are any problems, we just won't switch. Sound good, Patricia?"

"Thank you, Dr. Shumway," responds Patricia.

The following training sessions over the course of the week do not go much better. The techs are not happy. An interesting point is raised by Jonathan, the head testing tech: "So, let me get this straight. We have to use the EHR system for the doctors using EHR, and paper for everyone else? How are we supposed to keep up, switching back and forth?" To resolve this concern, techs will direct patients needing their information entered into the EHR system through the East equipment lanes while non-EHR patients will be tested on the East and West lanes, whichever is available first. As more doctors come online with DocCharts, the East will be solely for EHR patients, and then eventually the West lanes will start using DocCharts as well.

2.5 Going Live

While it adds a bit more to the expense, Jennifer prefers to have the consultants present during the go-live. This implementation is already over the original budget by several times, and failure is not an option she wishes to contemplate. It simply must be done. And if the adoption fails, CC will not qualify for the estimated \$120,000 in annual government grants. Risking the grants over \$25,000 in consultant expenses seems to be an unthinkable gamble. Especially as Dr. Harris keeps reminding Jennifer that DocCharts is her idea and that with all of these investments, they expect results.

With the go-live date shifting several times, a full complement of patients is scheduled for the entire week. Jennifer originally planned a lighter patient volume for the first week so everyone could get used to the system, but the adoption has overrun the original estimate of implementing, training, and going live within one week. The lighter week has come and gone.

Amanda places herself in the testing lanes on the East to help with any problems with DocCharts or interfaces between the equipment and the database. Kristi remains near the tech station in Dr. Harris's pod of lanes. Kristi likes to be on-hand when techs run into anything they do not know how to do.

In the first hour of seeing patients, Kristi runs from room to room, helping the techs to correctly input information into DocCharts. Dr. Harris only manages to see three patients during that first hour, far lower than her typical eight patients per hour. The slowdown causes patients to back up in the waiting room, and the stress levels in the practice are rising. Meanwhile, the testing techs require Amanda to retrain them because they are struggling to remember where the different equipment interfaces place information in the patient records. As soon as the testing techs in the East work through all of Dr. Harris's patients on the schedule to this point, Amanda proceeds to Dr. Harris's pod to help Kristi with Dr. Harris's techs.

Linda, Dr. Harris's head tech, threatens to quit. She cannot take the high level of stress. Patients are getting angry about waiting so long, and no matter how many times the technicians try to explain the delays to the patients, the technicians are getting yelled at. And Linda has been frustrated since the beginning of training. She has never been very good at computers, and these computers are across the room from the patients. Angela's habitual comments about

Linda needing remedial computer training may be true, but they only add to her anxiety. And why is she typing in so much information, and why do all of their patients smoke?

"Linda," Dr. Harris replies, "you don't have to use the EHR. I need you. Please go take a ten-minute break and come back ready to work. Please go get Tami and let her know I need her."

Tami enters the exam room and Dr. Harris says, "Tami, you seem to be the best at using DocCharts. You are going to be my scribe, and I am counting on you to help the other techs get information into the EHR."

When Amanda and Kristi hear the new arrangement, they are concerned, but Dr. Harris is the managing partner. There is no way they would go against her decisions. When Jennifer hears about the change, she is outraged. She is Linda's supervisor, not Dr. Harris. But there is little she can do about it.

"Tami," says Jennifer, "I need you to work closely with IT to make sure we can get Dr. Harris on DocCharts."

"Not likely," replies Tami. "I can't stand IT. I'll just figure it out on my own."

"Please," begs Jennifer, "we have to make this work."

As Jennifer heads to lunch, she hears, "So I said I'm not using it." It was definitely Linda's voice from the lunch room.

"I didn't know that's an option," says Stephen, one of Dr. Harris's techs. "I'm going to go talk to Dr. Harris. Maybe Tami can use DocCharts for me, too."

"Me too!" adds Wanda, one of the testing technicians. "This switching back and forth is crazy. I bet I can get her to move me to the West lanes."

Jennifer joins Kristi and Amanda in the lanes working with the techs. By general request, the IT group has stayed away and focused on their normal work. Together, they try to help the techs get information into DocCharts quickly enough to keep patients moving. But by Wednesday, only Tami is using DocCharts in Dr. Harris's exam lanes, and only Jonathan is using it in the testing lanes. Other doctors are having to see several of Dr. Harris's patients because she and the techs cannot keep up. She is down to thirty patients per day rather than her normal eighty. That is going to be quite the pay cut. But she is done with clinic hours for the week; she is in surgery for Thursday and Friday. She can worry about the drop in patient levels next week.

2.6 Dealing with the Fallout

On Monday, Dr. Harris starts seeing patients using the standard paper charts. "This way," she explains, "I can see the patients at the same pace I always have before. We'll just have the techs enter the information after the last patient leaves. It will give them good practice on using the EHR, too, so they should come up to speed quickly."

Jennifer has reservations, but does not feel like now is the time to raise them. They are surrounded by Dr. Harris's techs, and questioning her authority in front of her techs is never a good plan. Overtime costs are going up, and mandatory overtime is bad for morale.

Later in the afternoon, Jennifer receives an invoice in the mail from DocCharts. She immediately calls Philip as she walks back to her office from her mailbox. "What did I tell you about spending without authorization? Can you explain this \$550,000? What are interfaces?"

Philip meets Jennifer in her office and looks at the invoice, a bit confused. "These are the model numbers of all of the diagnostic equipment in the testing lanes. I didn't authorize this."

Jennifer sits down. She is feeling dizzy right now. There is no way she authorized this. But she is starting to remember a conversation with Kristi. No mention of over half a million dollars, though. She could be sure of that. "All right, Philip. Thanks. Sorry. Could you close the door on your way out?"

Jennifer calls DocCharts and asks to talk to anyone that can do anything to fix the problem. After several transfers and getting disconnected twice, she finally speaks with the VP of Finance who gives her a 20% discount, bringing the interfaces down to \$440,000. But when DocCharts has already paid license fees to the manufacturers of the equipment, there is only so much wiggle room they have to negotiate. Besides, the engineers already worked to build all of the interfaces at Jennifer's request. At least those are one-time expenses, the VP reminds Jennifer. The VP also gives her a discount for next year's license fee. Jennifer does not have time to strategize about this right now. She will have to deal with it later.

Jennifer spends the day learning all she can about using DocCharts. If the techs have to stay late to enter data, she is going to be there too. She is salaried, so at least that will not hit the bottom line. Solidarity with the staff and showing the priority she places on using the EHR system is far more important than her dinner plans with her husband. Jeff will just have to wait.

Jennifer and Tami are the only two that are in the pod after the last patient leaves. Jennifer calls the techs to see where they went. "Oh, Dr. Harris told me I don't have to use the EHR," explains Linda. A similar story comes from Stephen and the rest of the techs. Tami and Jennifer work for three hours to enter the information from six patients. There is information missing that was not captured during the encounter, and DocCharts will not let them skip it and move on. The now-infamous cigarette brand blank prevented two patients' information from being able to be completed. "This is really bad," thought Jennifer. "I wouldn't want to use this." But she puts on a brave face for Tami's sake.

"Thank you, Tami. I'll see you tomorrow."

"No, you won't. I'm going to be sick tomorrow. I can't do this."

"Please don't do this. I understand. Come in, and you won't have to stay late."

2.7 Preparing to Regroup

In a meeting first thing the next morning, Jennifer tells Philip, "Something has got to change. This isn't working."

"DocCharts works fine. The techs just won't give it a chance. You should make them work in it so they learn how to use it."

"No, Philip. It doesn't work fine. I've used it."

"So have I. It's fine. I like it. Have you read the manual?"

"I shouldn't have to," retorted Jennifer. "It's supposed to be easy to use, remember?"

"What do you want me to do? We installed everything, and it works fine. If people can't make it work, then they either need more practice, or you need to call DocCharts and make them change the system. It's not my fault."

"What about the template?" Jennifer asks hopefully.

"Take that up with Dr. Harris. I just did what she told me to."

In the meantime, Jennifer hires a few high school students to enter data from the day's encounters. In this way, at least the billing department can use the new system to transmit information to payers, and hopefully, CC can use the EHR system for 90 days to qualify for meaningful use for the government grants.

The students are able to enter about four patients successfully per day of the approximately 80 patients seen by Dr. Harris. Other doctors see a lower number of patients, but none of them are willing to put their license on the line because they have no confidence in the EHR. Fraudulent charges can cost them their livelihood, even if it stems from software errors.

Dr. Harris is willing to change the template to whatever will work best. Jennifer works with support at DocCharts to streamline the templates, but the damage is already done. None of the doctors are willing to use DocCharts with their patients. And none of the technicians are willing to use it anyway.

2.8 The Ending

Jennifer provides the board with a report on the final costs of DocCharts (see budget 5). In response, the board of directors schedules an emergency lunch meeting. Although Jennifer typically sits ex officio in their meetings and is directed to take minutes, she is not invited today. The absence of an invitation for Jennifer to join them is ominous.

In the evening, after all of the patients and staff leave for the day, Dr. Harris asks Jennifer to meet with the board. None of the doctors make eye contact as they pass, and the doctors close the door for a couple of minutes. Dr. Brown opens the door and asks Jennifer to join them. She takes a deep breath and steps into the room.

Dr. Harris breaks the awkward silence. "Jennifer, we have to talk."

3. REFLECTION QUESTIONS

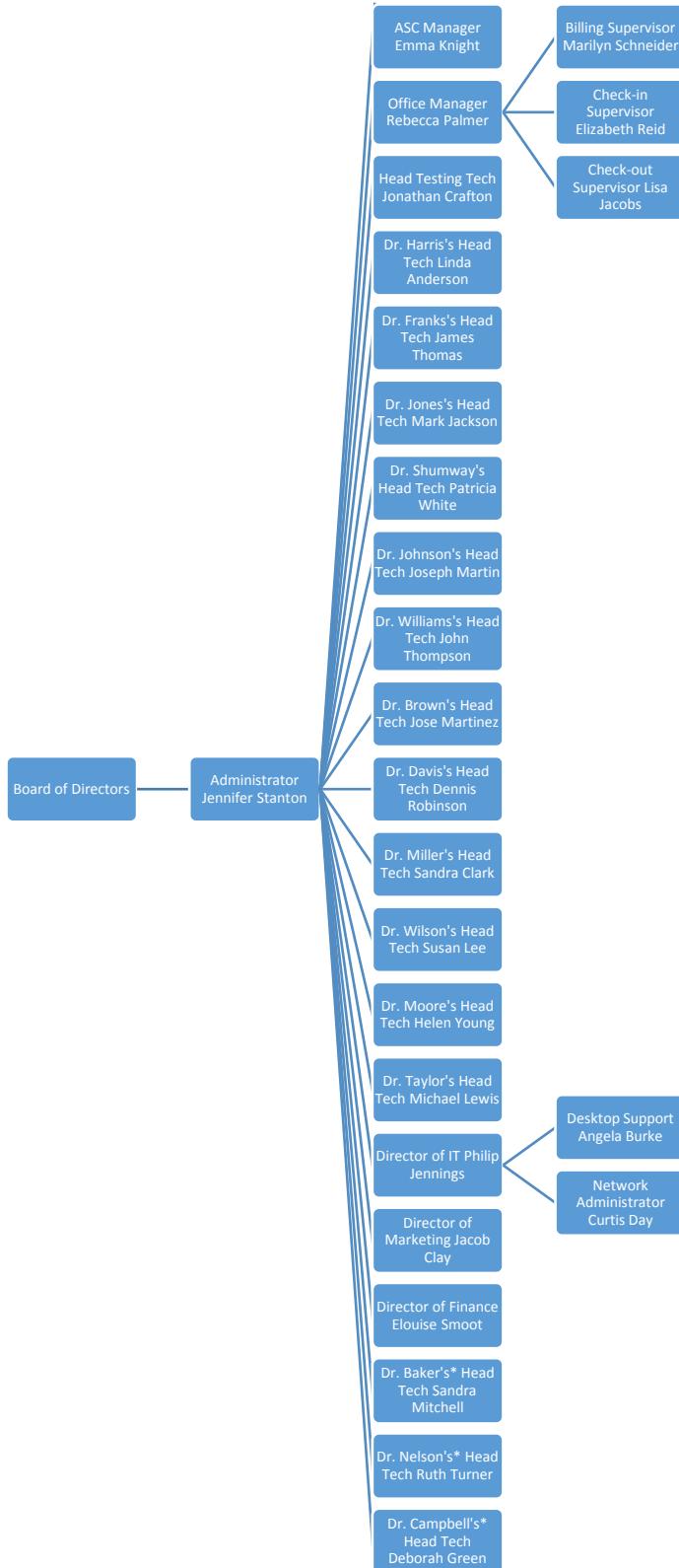
1. Who is responsible for the project going over budget?
2. What is (are) the root cause(s) of the problems CC is facing?
3. What should the board do?
4. Who should be held accountable for the system failure, and how?

AUTHOR BIOGRAPHY

David L. Gomillion is a Clinical Assistant Professor in the Department of Information & Operations Management, Mays Business School at Texas A&M University. He earned his Bachelor of Science degree in Computer Science from Brigham Young University and a Master of Science and a Ph.D. in Management Information Systems from Florida State University. Prior to academic life, Dr. Gomillion served as a Director of Information Technology to a group of physicians, a role similar to a CIO position. Dr. Gomillion's teaching interests include systems analysis and design, networking, cyber security, health information technology, and project management.



APPENDIX 1: ORGANIZATIONAL CHART



APPENDIX 2: BUDGETS

Budget 1:

Description	Cost per item	Count	Total
DocCharts Licenses	\$ 10,000.00	15	\$ 150,000.00
Government Incentive	8,000.00	15	120,000.00
\$ 30,000.00 Total Cost			

Budget 2:

Description	Cost per item	Count	Total
DocCharts Licenses	\$ 10,000.00	15	\$ 150,000.00
New Computers	1,500.00	51	76,500.00
Government Incentive	8,000.00	15	120,000.00
Tax Savings (Depreciation)			10,000.00
\$ 96,500.00 Total Cost			

Budget 3:

Description	Cost per item	Count	Total
DocCharts Licenses	\$ 10,000.00	15	\$ 150,000.00
New Computers	1,500.00	51	76,500.00
Consulting	250.00	80	20,000.00
Government Incentive	\$ 8,000.00	15	120,000.00
\$ 126,500.00 Total Cost			

Budget 4:

Description	Cost per item	Count	Total
DocCharts Licenses	\$ 10,000.00	15	\$ 150,000.00
New Computers	1,500.00	51	76,500.00
Consulting	250.00	80	20,000.00
Network Connections	100.00	51	5,100.00
Network Switch	3,000.00	2	6,000.00
Server for SQL	4,500.00	1	4,500.00
Government Incentive	8,000.00	15	120,000.00
\$ 142,100.00 Total Cost			

Budget 5:

Description	Cost per item	Count	Total
DocCharts Licenses	\$ 10,000.00	15	\$ 150,000.00
DocCharts Interfaces	40,000.00	11	440,000.00
New Computers	1,500.00	51	76,500.00
Consulting	250.00	320	80,000.00
Consultant Travel	2,500.00	8	20,000.00
Network Connections	100.00	51	5,100.00
Network Switch	3,000.00	2	6,000.00
Server for SQL	4,500.00	1	4,500.00
SQL Server License	1,200.00	1	1,200.00
SQL Server CALs	200.00	75	15,000.00
Windows Server CALs	20.00	100	2,000.00
Server for Exchange	4,500.00	1	4,500.00
Exchange Server	1,200.00	1	1,200.00
Exchange CALs	50.00	100	5,000.00
Backup Server	4,500.00	1	4,500.00
IT Overtime	8,000.00		8,000.00
Staff Overtime (training)	12,000.00		12,000.00
Staff Costs (data entry)	3,000.00		3,000.00
			\$ 838,500.00 Total Out-of-Pocket
Government Incentive	8,000.00	15	\$ 120,000.00
			\$ 715,500.00 Total Cost



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