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# National TeleNursing Center: Program Evaluation Final Report

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*October 2018*

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## Executive Summary

The National TeleNursing Center (NTC) was established through a multi-year grant from the U.S. Department of Justice, Office for Victims of Crime (OVC) awarded to the Massachusetts (MA) Department of Public Health's Sexual Assault Nurse Examiner (SANE) program. The grant supports the development, implementation and evaluation of a telemedicine project to provide expert consultation to nurses conducting forensic sexual assault medical examinations in remote and/or underserved hospitals. The project was designed to address unmet need in four patient populations considered underserved: rural, military, Native American, and correctional. The initial four sites included two naval hospitals, a rural hospital, and a tribal hospital. The project later added two hospitals serving an urban and suburban population respectively. After initial attempts early in the project, the NTC decided not to recruit a correctional facility because the small number of reported cases in any given facility suggested that adding a correctional site would not be a good use of resources.

The Massachusetts Sexual Assault Nurse Examiner program staffs and operates the NTC, in partnership with the telemedicine firm American Doctors Online, and with the assistance of Newton-Wellesley Hospital. "TeleSANEs" from the NTC provide telemedicine assistance to clinicians conducting forensic medical examinations in sexual assault cases at six hospitals. This assistance includes *encounters*, in which teleSANEs are in the examination room on screen interacting with the site clinician and the patient during the examination. It also includes *consultations*, in which the teleSANE provide guidance to the site clinician without participating in an examination.

This report is the fifth in a series chronicling the development and implementation of the NTC. Chapter 1 introduces the report. Chapter 2 provides an overview of the development of the NTC. Chapter 3 summarizes findings and recommendations from past reports. Chapter 4 presents data on delivery of services. Chapter 5 provides updated results on site clinicians' experiences of telenursing services. Chapter 6 discusses lessons learned from over five years of project implementation.

### The Development of the National Telenursing Center

The project involved a considerable amount of development of the NTC as a Center. The leadership of the project came from the Director of the Massachusetts SANE Program and an Associate Director, who have been the co-directors of the NTC Project. The administrative staff of the Center has also included an NTC Associate Director/Director, an NTC Educator, an Operations and Strategic Planning Manager, and an NTC Administrator. A multidisciplinary Project Management Team (PMT) assists the NTC staff in an advisory and support capacity.

Newton-Wellesley Hospital in Newton, MA houses and supports the TeleNursing Center at the hospital as an in-kind contribution to the project. The office space at Newton-Wellesley is referred to as the "hub". The telenursing consultation offices at Newton Wellesley were designed to promote the effectiveness of the video encounter with site clinicians, using such design elements as sound deadening panels, appropriate lighting and a soothing background for the video image.

American Doctors Online (ADOL) manages the hub technology and remote site technology used by the TeleNursing Center. A key element is the telemedicine cart developed by ADOL and provided to the site hospitals. Because of the naval sites' certification requirements, the Chief Technology Officer maintained separate computer hardware and programs for the Navy hospitals (two computer stations)

and for the non-Navy hospitals (two computer stations). The NTC currently has the capacity to provide two simultaneous telenursing encounters at the same time.

In line with Massachusetts SANE program practice, the NTC expected each site to provide access to a victim advocate for every patient receiving an examination. In the two Massachusetts sites, the NTC had a large impact on advocacy, through brokering a relationship between these hospitals and well-developed advocacy programs in the community. Two PMT members with expertise in advocacy provided consultation to professionals in the other four sites. But this consulting relationship was transient because the naval sites had limited need for assistance, and, in other sites, it was difficult to be helpful because of the lack of infrastructure to support advocacy.

The NTC has acted to market itself and do outreach, including developing a logo, communicating about the NTC through speaking engagements and Internet resources, creating a video to showcase telenursing, doing 14 conference presentations, and provide informal phone consultations to hospitals in other states.

The NTC also invested a great deal in workforce development. TeleSANEs were recruited from the ranks of nurses in the Massachusetts SANE program who were providing forensic examinations in hospitals throughout the state. A total of 41 teleSANEs have been recruited and trained. The NTC developed a practice protocols and obtained licenses for all teleSANEs in California, location of three sites; and credentialed all teleSANEs in each site hospital. The NTC provides extensive training to teleSANEs to prepare them to provide telenursing consultations, and has provided ongoing training for teleSANEs throughout the course of the project.

Considerable effort was devoted to site development as well. Recruitment of naval sites required a separate process because of regulations that prohibit a military facility from receiving a subcontract from an OVC grantee, and the Navy recruited its own sites: Robert Bush Naval Hospital in Twentynine Palms, CA in April 2013 and Naval Hospital Camp Pendleton, in Oceanside, CA in 2015. Most clinicians in the naval hospitals had training in conducting sexual assault examinations, but limited experience in conducting them.

The initial recruitment for non-naval sites in January 2013 resulted in too few applications -- one issue was that few sites could meet the expectation for the volume of cases that was initially put in the request for applications. Using different methods that removed expectations for case volume, the NTC initiated a new recruiting effort for non-military sites in January 2014, which led to sites at Sutter Lakeside Hospital in rural Lakeport, CA and the Hopi Health Care Center in Polacca, AZ. Clinicians in these sites had SANE training, but, again, limited experience in conducting examinations. In 2016, the NTC added two Massachusetts sites: MetroWest Medical Center in Framingham, MA and St. Anne's Hospital in Fall River, MA. Massachusetts sites had advantages that facilitated expansion of the NTC. The teleSANEs were already licensed in Massachusetts and already experienced with the evidence kit used in Massachusetts examination, and adding these sites was also consistent with the Massachusetts Department of Public Health's mission of promoting the health of the state's citizens. With one exception, none of the clinicians in the Massachusetts sites were SANEs or had other training in conducting sexual assault examinations.

At each site, the NTC prepared clinical teams to participate in telenursing, and provided ongoing training and support. A key person is the site liaison, who is a nurse examiner or staff nurse who supervises the clinical team, represents the project at the hospital, and is the site's chief interface with the NTC. Weekly meetings with each site liaison address implementation issues, provide guidance on



clinical and administration issues, and educate the site liaisons on practice. The NTC assists the site liaison in supporting and developing clinical teams, providing especially substantial support to the Massachusetts hospitals in which no previous team existed.

The NTC planned to offer trainings for each site every six weeks over the course of the project, though scheduling limitations slightly reduced this frequency over time. Over the course of the project, the NTC has delivered over 125 customized training sessions, and 121 clinicians at the pilot sites have received training. Topics have included taking a forensic history, evidence collection, swab techniques/slide preparation, identifying wounds and physical signs of assault (e.g., indicators of strangulation), packaging evidence kits, taking photographs, and completing effective and accurate documentation.

The development and implementation of services across the six pilot sites varied considerably. The two Navy sites had a multilayered administrative approval process in place that NTC had to work with. These sites also had frequent turnover of personnel due to deployment and transfers that are characteristic of the military. The rural site in California had a dynamic site liaison who was highly instrumental in the success of the program, demonstrating just how critical this role is. The two non-SANE sites in Massachusetts required more consultation from the NTC to develop their capacity to serve sexual assault victims, as they lacked clinical teams and some of the necessary protocols for serving sexual assault victims. Implementation at the Hopi Health Care Center was challenged by victims' reluctance to come forward in a small, tightly knit community, a factor identified in site visits to the community by a Native American advocate on the project management team.

The NTC has taken a number of steps to explore how to sustain the project beyond the pilot phase which ends in December 2018. First, in early 2016, the NTC partnered with Babson College to assess the feasibility of growing the NTC. In line with the Babson team's recommendations, the NTC hired an Operations Manager to further research the market for NTC's services, identify resources needed to provide NTC services, devise implementation and outreach strategies, and determine ways to evaluate success. Second, the NTC also held a two-day sustainability retreat in February 2017. Third, in early 2018 NTC hired Impact Catalysts, a strategic planning firm with extensive experience in working with governmental agencies and non-profit organizations. Impact Catalysts is helping craft a strategic roadmap for expanding NTC's services within Massachusetts and selectively, on a nationwide basis. Fourth, NTC is seeking grants and contracts with individual hospitals and other healthcare services once the federal grant ends in December 2018. Fifth, the NTC is working to develop stable funding from state government. The NTC's focus has changed from providing direct teleSANE services to many states to providing technical assistance and education to states looking to develop teleSANE services, while embedding teleSANE services within the Massachusetts SANE service delivery system and reaching more underserved hospitals in the state.

## Overview of Previous Evaluation Reports

The program evaluation team developed four interim reports over the course of the project. Interim reports were designed to provide timely feedback to the NTC to inform program development. Some interim reports were developed in response to emerging program evaluation needs.

Completed in January 2015, the first report **documented the implementation** of the NTC during the first two years of the project, prior to the initiation of service delivery. It examined the development of Center staffing, infrastructure and protocols. It also detailed the process of recruiting and developing sites, and the development of the project's telemedicine technology. The report noted the successful recruitment of an extensive cadre of teleSANEs from the ranks of experienced nurses in the

Massachusetts SANE program, and the development of strong linkages to both regional and national experts. The NTC had a flexible, adaptive approach to individual sites, and was able to develop a functional telemedicine capability.

The report also described implementation challenges. It examined the initial difficulty recruiting sites. It reported the lengthy time period needed to negotiate several site agreements. This was related to the array of procedures required by the Navy. It was also related to the limited resources of the Hopi Nation and the Indian Health Service and the value they place on careful deliberation and consensus building. The report noted the delay in service delivery due to the need for teleSANEs to obtain licenses in California (where three sites are located) and the requirement of accreditation in site hospitals. It also detailed the NTC's successful adaptation to these unexpected events. The report also discussed the need for an adequate caseload to test and develop telenursing services and support sustainability of the Center beyond the OVC grant. It made a series of recommendations aimed at facilitating going to scale and expanding services.

The second program evaluation report, in November 2016, **described the training and education activities that the NTC is providing teleSANEs and remote site professionals**, assessed their impact, and discussed the implications for the development of the Center and for telenursing as an intervention. In an online survey, teleSANEs rated most elements of their training as very helpful or helpful. There were only 3 "not helpful" ratings across the more than 370 ratings that were provided. Across 12 different abilities in telenursing, most respondents (94% to 66%) strongly agreed or agreed that education and training had a positive impact on relevant knowledge and their understanding and ability to implement telenursing. They reported strengths of the training, including the variety of information presented, the knowledge of the trainers, and opportunity to do "hands-on" training simulating telenursing encounters. The primary challenge was the difficulty of learning telenursing skills without sufficient opportunity to practice, due to the low patient volume at that point in time.

To evaluate the impact of the training on the remote sites, the program evaluation team conducted semi-structured telephone interviews with site liaisons. Each interviewee cited the value of the NTC trainers' expertise and experience, and the useful knowledge they provided. Site liaisons mentioned the value of the training for getting to know the NTC staff as people. The collaboration has meant that the NTC has also learned from its interaction with sites about ways to improve telenursing practice.

Some training of site professionals was clearly essential to implement telenursing encounters, but other training appeared to be discretionary, in that it did not appear to be relevant for the effectiveness of the telenursing encounter per se. This type of training required time and money that could arguably be reallocated to activities that contribute directly to the development of telenursing; in particular, to adding new sites. On the other hand, the Center's investment in training may enhance the sustainability of the NTC if it adds value to NTC services and engages service providers and benefactors attracted by the Center's mix of service delivery, education and training.

The report offered several recommendations including: a) exploring the potential to market training to other clinicians outside the project, b) developing economies of scale by using telemedicine technology to train more than one site at a time, and c) developing an institute model in which the NTC would offer training on telenursing to other communities seeking to implement telenursing

The third report, completed in April 2017, presented interim results on the program evaluation's assessment of the **nature and quality of telenursing encounters**, based on interviews with both teleSANEs and site clinicians. Since this report was completed, additional interviews were conducted

through March 2018. This April 2017 report presented interim results. Results from cases through the early part of 2017 were included. Both teleSANEs and remote site clinicians reported positive effects of telenursing consultations, and pointed to specific ways in which it is helpful. Since this report was completed, additional interviews of teleSANEs and site clinicians were conducted for cases through March 2018. Results for all interviews are reported below.

The fourth report, completed in August 2018, was in response to a request from the NTC to explore the **impact of the NTC on systems** over and above the individual patient encounter. Key informant interviews were conducted with NTC staff, Program Management Team members, site liaisons, and site victim advocates and police officers who had knowledge of the program. The interviews conducted for this study provide support for the conclusion that the National TeleNursing Center has had a meaningful, positive impact above and beyond its assistance caring for individual patients. The impact affected multiple systems: the clinical team, the hospital, and the multidisciplinary response to sexual assault.

Several interviewees in the study reported that the NTC has had considerable impact on the development of clinical teams. The NTC facilitated the development of a team of nurses in each Massachusetts hospital, where teams had not previously existed, and core groups of nurses have been maintained despite some attrition. Interviewees from the rural and tribal sites credited the NTC with enabling them to recruit and retain more SANE nurses on their team. An interviewee at a military site felt that the NTC helped to provide a level of consistency to teams that were affected by staff transitions due to deployments and reassignments, though another interviewee felt that frequent staff transitions at the naval hospitals limited the impact of the NTC. One interviewee talked about how the project has brought a sense of accomplishment and recognition that their community can move toward the solution of the problem of sexual assault. However, one interviewee felt that the need for NTC support had diminished over time as nurses in her site had become more experienced, though she recognized the continued value of the NTC as a mentor for new nurse examiners.

We learned that the NTC helped move hospitals toward best practice through training and technical assistance. At two hospitals in Massachusetts, the introduction of the NTC led to such changes as the development of systems for storing images and medical records, obtaining a refrigerator to store evidence and a cart for exam supplies/equipment, increasing use of photography, billing a victim compensation fund for forensic examinations, and providing starter packs of medication to help prevent HIV.

The NTC had a substantial impact on advocacy in the Massachusetts hospitals. The NTC made sure that representatives from the local rape crisis centers (RCCs) were invited to the hospital for the NTC's initial site visits, and met with the RCCs' leadership and staff together with the site liaisons. In both Massachusetts hospitals, advocates are now routinely called and come to the hospital for examinations. Other sites needed help with advocacy and the NTC supported advocacy experts to consult to these sites, but burn-out and turnover of the limited number of advocates in these sites and the lack of infrastructure for advocacy made it difficult for these experts to provide assistance, and consultation fell off.

The investment of time and resources that system change efforts require for each site may make it more difficult to increase the number of sites that can be served. On the other hand, the Center's investment in systems change might enhance the sustainability of the NTC by adding value to NTC services and engaging service providers and benefactors. There are study limitations, but the evidence for a systems impact of the NTC is still substantial.

## Delivery of Telenursing Services

The number and types of telenursing encounters is important to understand because it has direct implications for training, staffing and sustainability. Program evaluators analyzed NTC data on: a) number of telenursing encounters, b) number and type of consultations, c) age and gender of sexual assault patients served by telenursing services, and d) length of time it takes to conduct telenursing services for sexual assault patients.

In total there were 129 encounters and 84 consultations through March 31, 2018, when data collection for the program evaluation ended. Thus the NTC assisted the sites with 213 patients during this time period. When all six sites were active, there was an average of 4.9 encounters with NTC per month. The average number of encounters per month for each site ranged from 0 to 4. There were many months without any encounters at each of the sites (7-19 months). There was no difference in the number of encounters by day of the week or month of the year. There was a significant difference by time of day, with more encounters occurring between 4 PM and 7:59 PM.

One important variable was whether patients accepted or declined telenursing services. We examined the overall rate of declining telenursing services, using the total number of encounters that could have benefited from NTC engagement (i.e., removing those in which the patient did not meet eligibility criteria, declined evidence collection, or was no longer at the facility). This resulted in a total of 155 incidents in which NTC services could be utilized and 22 patients (14%) who sought evidence collection but declined engagement with NTC. The overall rate of declining telenursing was primarily due to a higher rate of declining telenursing services at the military sites. When these sites were removed from the analyses, only four patients (3%) declined telenursing services with NTC but sought evidence collection.

Aggregate data on age was collected for four sites on a sample of cases (n=56). Almost half (48%) of patients were between the ages of 18 and 29. Of the 39 patients in which information on gender was available, 92% were female. These percentages were similar to those from other studies of patients seen for forensic examinations in sexual assault cases.

The average length of encounters was 2 hours and 29 minutes, not including pre- and post-encounter time when the patient is not present. Encounter length ranged from 37 minutes to 6 hours and 18 minutes. The two Massachusetts sites that lacked SANEs had longer encounters (average = 2 hours and 54 minutes) compared to the other sites (average = 2 hours and 13 minutes), a difference that was statistically significant.

In addition to providing telenursing encounters, NTC provided 84 consultations (as of March 31, 2018) in which teleSANEs assisted clinicians with cases even when they did not participate in an examination. The two most common reasons why telenursing encounters did not occur are that the patient did not meet eligibility criteria (n=24) and that the patient sought evidence collection but declined NTC involvement (n=22). The most common topics of consultation were discussing victims' declining services, reaching out to victim advocates, providing medical advice, and issues regarding patient consent.

## The Telenursing Experience

The core service of the NTC is the expertise the teleSANEs provide via telemedicine technology to clinicians conducting forensic medical sexual assault examinations. The program evaluator gathered data from 178 interviews and online survey responses of those providing and receiving telenursing

services. These data support the value of telenursing consultation in forensic medical examination in sexual assault cases.

The site clinicians reported that securing patient consent for telenursing consultation was straightforward for the vast majority of encounters that occurred. It was much easier than they thought it would be, some site clinicians volunteered, since people are generally comfortable with technology.

The range of assistance provided was wide. It encompassed a number of important objectives of the examination, including:

- collecting biological evidence
- documenting injuries
- supporting and educating patients
- providing quality medical care
- providing emotional and informational support.

Some clinicians mentioned that doing forensic evidence collection correctly was their biggest fear and that teleSANEs helped enormously with this. The degree to which teleSANEs intervened varied enormously, from intervening very little at one end to leading the examination and instructing the site clinician step-by-step at the other end. The experience of the site clinician and complexity of the case appeared to be factors in the degree of assistance provided.

Large majorities of site clinicians and corpsmen<sup>1</sup> gave positive scores on a rating of the impact of telenursing, often the maximum possible, and nearly all praised the program. Nearly all site clinicians and teleSANEs reported that they felt comfortable working with each other and that they had an open and professional relationship during the telenursing encounter. Clinicians at the Massachusetts sites, where clinicians lacked previous training on conducting sexual assault examinations, were significantly more likely to say that the telenursing encounter positively impacted their ability to provide an effective exam and positively impacted their ability to provide the patient with the best care.

Interviewees reported few problems related to the technology. When problems were mentioned, they tended to be minor and usually occurred during the early development phase of the project.

## Lessons Learned and Remaining Questions

The National TeleNursing Center has had success in establishing sites, developing the methodology of telenursing consultation in forensic medical examinations, and providing consultations that remote site clinicians have found helpful. The remote site clinicians' positive experience of telenursing is perhaps the most important finding of this evaluation. The NTC has also achieved measurable success in its training and system change efforts.

*Establishment of sites.* Through a substantial effort, the NTC was able to recruit sites and establish stable telenursing operations that have been maintained smoothly throughout each site's tenure in the project. After spending months seeking licensing waivers without success, the NTC also had to spend several months getting its entire teleSANE staff licensed in California (the location of three sites), and teleSANEs spent many hours studying the forensic evidence kits. Setting this up with the

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<sup>1</sup> This job title was in use at the time of the project interviews. The Navy has since moved toward instituting gender neutral titles.

Navy (for the naval hospitals) and the Indian Health Service (for the Hopi Health Care Center) required months of discussions and paperwork among attorneys and others from the Massachusetts Department of Public Health, the Department of the Navy, and the Indian Health Services administrations. Establishment of the project at other hospitals required less time, though it was still time-consuming. The NTC's experience suggests that state-based or regionally-based models of telenursing are more practical than a national center. Despite these obstacles, the NTC established productive relationships with each site hospital and the delivery of telenursing services has proceeded smoothly for many months with few obstacles.

*Delivery of telenursing services.* The modest number of encounters – an average of about one per month per site – is not surprising given that sites joined the NTC in part because they saw few sexual assault patients a year and lacked experience with these cases. The flow of cases over time provides evidence that telenursing services was consistently available. The number of encounters increased over time with the addition of new sites, but we did not see significant increases in the number of encounters within a site. Thus, we do not see evidence that the development of telenursing services increased the number of sexual assault cases brought to the hospital over the time periods we measured.

*Value of telenursing encounters.* The positive experience of the site clinicians with telenursing encounters is a significant achievement. The chief value of the telenursing project emanates from the central experience of help and support the remote site clinicians experienced with the teleSANEs. The impact of telenursing appeared to depend on the experience and training of the remote site clinician. Compared to SANE remote site clinicians, clinicians who lacked SANE training reported a greater impact of telenursing services on their ability to provide an effective exam, and on their ability to provide the patient with the best care. Our interviews suggest a qualitative difference between experienced and inexperienced remote site clinicians in their reaction to telenursing. The differential impact of telenursing services by site clinician experience raises important questions for telenursing practice. It is possible that the NTC's impact was reduced somewhat because four sites had clinicians with previous training in conducting sexual assault examinations, even if they were inexperienced. This did not occur by design, but because all of the site applicants responding to the early solicitations happened to have clinicians with some training. Not only was the impact on individual cases larger for the two non-SANE hospitals, the system impact of the NTC appeared to be larger as well. If the NTC is able to expand its services to non-SANE hospitals, it may increase its impact and thereby increase its marketability as it seeks to sustain itself.

*Training and system change efforts.* NTC training has consistently been well-received and helped to develop skills in the sites, even though attendance has sometimes been a challenge. The NTC also had some success in having an impact on systems, above and beyond the individual cases. It sees system change as necessary in conjunction with telenursing to provide an environment that supports the care of sexual assault patients. The NTC has helped increase its effect by helping hospitals improve their system of response to sexual assault, develop clinical teams, and engage advocacy services. Discretionary training and system change efforts could potentially redirect resources needed for expanding telenursing, or they could be attractive features that help in marketing the NTC. We recommend that the benefits and risks of training and system change efforts be thoroughly considered in strategic planning.

*Sustainability of telemedicine for sexual assault patients.* Sustainability is highly salient as the project approaches the end of federal funding and, as of this writing, no means of sustaining the NTC beyond

December 2018 have been secured. Regardless of the quality of a telenursing encounter, a telenursing program has limited value if it cannot be sustained.

Both a review of the literature and the experience of the NTC suggest several useful steps for developing a sustainable telenursing program for sexual assault patients. One step is to increase knowledge about the demand for telenursing services in sexual assault cases. Telenursing programs would benefit from market research to assess demand. A second step is to develop more information on viable business models for telenursing for sexual assault patients. It is likely that future telenursing programs related to sexual assault will need to seek funding from multiple sources beyond fees for service—the literature indicates that this is typical for telemedicine programs. A third step is to examine further the costs of telenursing services for sexual assault patients. We recommend that future evaluations of telenursing services in response to sexual assault include a cost analysis. A fourth step is to explore further the volume of service provided and the return on investment. An alternative approach to return on investment is to focus on enhancing the capacity of hospitals to provide quality care for survivors of sexual assault, which has value regardless of the number of patients seen. Telenursing programs will need to develop a cost per patient or per hospital that will be acceptable to potential investors, and develop a clear, written rationale for that cost. They need to start small, but eventually must expand to provide a return on investment that can justify continued funding.

A fifth step is to consider site attrition. Some hospitals may decide that enhancing their on-site capacity to provide expert examination might be a better choice than investing in telenursing services. Indeed, some sites might decide to “graduate” because they no longer perceive a need for telenursing services that justifies their investment in it. A sixth step is to conduct more research on telenursing in sexual assault cases. Studies are needed that assess the impact of telenursing on the quality of examinations and the relationship of telenursing to crime laboratory results and police and prosecutor actions. Such research results would strengthen the argument to prospective site hospitals and funders that telenursing enhances the quality of care and makes a difference in patients’ lives.

### *Conclusion.*

Telenursing services is a promising practice to provide care and seek justice for sexual assault patients who lack access to adequate forensic medical examinations. The National TeleNursing Center created an innovative, helpful intervention that had never been provided to adults and adolescents before. It recruited a skilled cadre of teleSANEs who adapted successfully to their new role as video consultants.

For more than three years, the National TeleNursing Center has successfully provided telenursing services that site clinicians consistently value and judge to be effective. TeleSANEs provided a wide range of assistance to site clinicians, providing specific advice consistent with best practice. The technology implemented by American Doctors Online has reliably supported the service, and patients appears to accept telenurses into their relationship with the clinician. The NTC has developed positive, productive relationships with six site hospitals, and demonstrated a positive impact on practice at these hospitals through its training and system change efforts. The NTC also facilitated consistent involvement of victim advocates in two hospitals that had rarely engaged with their rape crisis center.

These successes suggest that telenursing deserves further exploration as an intervention model for patients in underserved communities. Much needs to be learned to disseminate the model to new states and regions, bring telenursing to scale, and sustain the service financially. The Office of Victims of Crime has funded the Sexual Assault Forensic Examination Telehealth (SAFE-T) Center, which recently began providing telenursing assistance for sexual assault examinations in rural Pennsylvania.

The SAFE-T Center will move telenursing forward, and could be a bridge toward more widespread implementation of telenursing services. The need is substantial. Underserved patients experiencing the trauma of sexual assault deserve access to high quality services. Telenursing offers the potential to significantly improve the response to them.



## Chapter 1: Introduction

### The National Telenursing Center

The National TeleNursing Center (NTC)<sup>2</sup> was established through a multi-year grant from the U.S. Department of Justice, Office for Victims of Crime (OVC) awarded to the Massachusetts (MA) Department of Public Health’s Sexual Assault Nurse Examiner (SANE) program. The grant supports the development, implementation and evaluation of a telemedicine project to provide expert assistance to nurses conducting forensic sexual assault medical examinations in remote and/or underserved hospitals. This assistance includes *encounters*, in which teleSANEs are in the examination room on screen interacting with the site clinician and the patient during the examination. It also includes *consultations*, in which the teleSANE provide guidance to the site clinician without participating in an examination. The Massachusetts Sexual Assault Nurse Examiner program staffs and operates the NTC, in partnership with the telemedicine firm American Doctors Online, and with the assistance of Newton-Wellesley Hospital.

The NTC selected a rural hospital, a tribal hospital, and two naval hospitals as its initial sites, following OVC priorities for the project to provide services to underserved communities. Originally the NTC also planned to include a correctional health facility, but the small number of reported sexual assault cases in any given prison made this a poor fit with the project design.

In order to increase the NTC caseload and further test the model, two additional hospitals from Massachusetts were added in 2016, one suburban and one urban. Because of funding limitations, some hospitals in the state lack in-person SANE services from the Massachusetts SANE program, including these two. Thus, the NTC’s “teleSANEs” are currently providing consultation to clinicians conducting forensic medical examinations in sexual assault cases at six hospitals in California (3), Arizona (1) and Massachusetts (2), as shown in Table 1.

**Table 1. National Telenursing Center Sites**

Hospital	Location	Site Type	Launch Date
<i>Robert Bush Naval Hospital</i>	Twentynine Palms, CA	Military	November 2014
<i>Sutter Lakeside Hospital</i>	Lakeport, CA	Rural	June 2015
<i>Naval Hospital Camp Pendleton</i>	Oceanside, CA	Military	January 2016
<i>MetroWest Medical Center</i>	Framingham, MA	Suburban	April 2016
<i>Hopi Health Care Center</i>	Polacca, AZ	Tribal nation	June 2016
<i>Saint Anne’s Hospital</i>	Fall River, MA	Urban/suburban	July 2016

This report is the fifth in a series chronicling the development and implementation of the NTC. This report provides an overview of the development of the NTC, summarizes findings and recommendations from past reports, presents new data on delivery of services and updated data on participants’ experiences of telenursing services, and discusses lessons learned from the more than five years of project implementation.

<sup>2</sup> The center was originally named the National Telenursing Center for Victims of Sexual Assault

## Program Evaluation Approach

We conducted a process evaluation that focused on the implementation and operation of the NTC. The OVC asked for a process evaluation because the NTC was a new pilot innovation and telemedicine technology had never been utilized before to support the care of adult and adolescent sexual assault patients. It was necessary to learn whether such a program could be implemented and operated successfully and what methods of developing and providing telemedicine services were promising. Although we collected data on site clinicians' and teleSANEs' experience of telenursing, which is characteristic of evaluations of new programs (Jacobs 1988, 2003), we did not collect outcome data on quality of care and criminal justice and health outcomes. Assessing outcome data can be premature for new programs that are in a process of development and have not necessarily established the kind of impacts that can affect outcomes (Jacobs, 1988). Because of the vulnerability of patients in forensic medical examinations, the NTC and evaluators did not gather data from patients on their experience of telenursing.

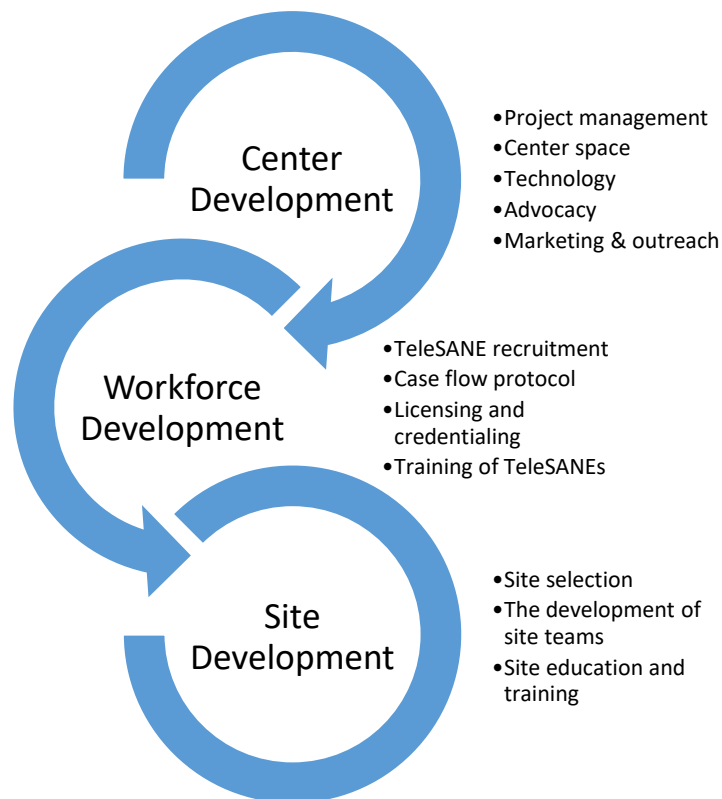
The primary program evaluation methods were interviews, surveys, and analysis of service delivery data provided by the NTC. Participation observation was also used extensively: the program evaluation team participated in (and recorded minutes for) the biweekly Project Management Team meetings, in which the NTC team reviewed its progress in implementation and discussed decisions it was making. The evaluators also participated in other planning meetings as well. Most data were qualitative, though we used quantitative data on service delivery (e.g., number of encounters) and on site clinician experience (Likert rating scale questions).

We developed and updated a logic model for the NTC that helped guide the program evaluation (see Cross, Cross, & Alderden, 2015). The current version, updated for this report, is in Appendix B. The logic model identified multiple levels of the project that required development. First is the Center/Hub level, representing the physical, technical and administrative infrastructure, which includes a management team, telenursing hub facility at Newton-Wellesley Hospital and a work force of Massachusetts SANEs ("telenurses" or "teleSANEs"). Next is the hospital level, representing the participation of site hospitals, the establishment of a site liaison (a nursing professional from the site hospital who oversaw the project at the site and was the primary interface with the NTC), and the engagement with each hospital's clinical team. Finally, the encounter level represents the individual forensic examination encounters provided by telenurses to SAFEs/site clinicians for sexual assault patients who present to the site hospitals.

## Chapter 2: The Development of the National TeleNursing Center

This chapter provides an overview of the development of the National TeleNursing Center. The project has been unfolding over the course of more than five years: the Massachusetts Department of Public Health received the award for the project from the Office for Victims of Crime in October 2012 and project funding ends December 2018. This chapter discusses in turn Center development, workforce development, and site development – see Figure 1 below. It also presents information on the National Telenursing Center’s efforts to sustain the project beyond its federal grant funding period. The chapter also presents a timeline of key start-up and implementation milestones of the NTC. The chapter draws from interim evaluation reports, and adds information from recent data collection.

Figure 1. NTC Core Processes



## Center Development

Included in Center development are the creation of a management team, the development of Center space, the development of technological capabilities, implementing advocacy consultation, and development marketing and outreach.

### Project Management

The management structure of the NTC reflects its origins in the Massachusetts SANE Program as well as decision-making made for the project. The Director of the Massachusetts SANE Program and an Associate Director are the co-directors of the NTC Project. Other administrative staff have been an NTC Associate Director/Director who oversees daily management of the NTC and teleSANEs; an NTC Educator to implement education and training for teleSANEs and site clinicians; an Operations and Strategic Planning Manager to work on business matters and sustainability; and a NTC Administrator to assist with day-to-day management of the NTC.

A multidisciplinary Project Management Team (PMT) assists the NTC staff. The PMT consisted of individuals with expertise in sexual assault and/or the populations served by the NTC (rural, Native American, and naval populations). The PMT participates in bimonthly conference calls in which they receive progress reports on the NTC development and service delivery. Members of the PMT have also assisted the development of the NTC on a number of specific tasks. For example, victim advocate professionals from the PMT have consulted with site personnel on advocacy, and PMT members with expertise in a given population (e.g., the Navy and native populations) have promoted the NTC within these populations.

**Table 2. NTC Partners**

<i>Partner Organization</i>	<i>Role</i>
<i>American Doctors Online</i>	Technology
<i>Boston Area Rape Crisis Center</i>	Expertise on sexual assault and victim advocacy
<i>Justice Resource Institute</i>	Staffing services
<i>MA Department of Corrections</i>	Expertise on corrections and prison rape legislation
<i>MA Department of Public Health</i>	Lead agency and fiscal agent
<i>MA Office for Rural Health</i>	Rural expertise and outreach support
<i>MA SANE Program</i>	Leadership and SANE staffing
<i>National Indigenous Women’s Resource Center</i>	Expertise on Native American population and outreach support
<i>Office for Victims of Crime</i>	Grantor/Adviser
<i>Partners Healthcare/Newton-Wellesley Hospital</i>	Hub hosting site and expertise
<i>U.S. Department of the Navy</i>	Expertise on military population; remote sites
<i>University of New Hampshire</i>	Program evaluation
<i>University of Illinois Urbana-Champaign</i>	Program evaluation

### TeleNursing Center Space

Newton-Wellesley Hospital in Newton, MA housed and supported the TeleNursing Center as an in-kind contribution to the project. Three office spaces were rehabbed for the Center: two rooms were set

aside for telenursing consultation (which allows two simultaneous telenursing encounters) and one office space for administrative functions. The NTC is currently working with Newton-Wellesley Hospital to obtain an additional office to enable three simultaneous telenursing encounters. Because of the nascent nature of teleSANE practice, security and privacy concerns for sexual assault patients, and the length of forensic examinations, the NTC decided to pilot a model that utilized a “brick and mortar” hub from which to provide telenursing services, and not to provide telenursing from teleSANEs’ homes. A major criterion for the design of the telenursing consultation offices was to provide those physical elements that promote the effectiveness of the video encounter with site clinicians. Thus, the physical design included sound deadening panels to reduce extraneous noise, proper lighting, and painting that contribute to a soothing background in the video image. Security of the office space was reviewed carefully because the program is operational 24/7 and the Center is maintained in a building separate from the main hospital building. The official open house for the TeleNursing Center was held on February 26, 2014.

### Technology

American Doctors Online (ADOL) is managing the hub and remote site technology used by the TeleNursing Center. A key element in service delivery is the telemedicine cart developed by ADOL and provided to the site hospitals. Created to be simple to use and portable, the cart is a specially designed video and computer system on wheels that can be moved to whichever room in the medical facility a telenursing consultation will be provided. A major contribution of American Doctors Online to the project is the sharing of patents at no cost that normally would involve fees to organizations using the processes covered by the patents. ADOL’s Chief Technology Officer installs and maintains all technology at the Hub and collaborates with information technology professionals at each site hospital to install and maintain the carts at each site hospital and manage Internet connectivity. He troubleshoots any technological difficulties that arise. Because of the naval sites’ certification requirements, the Chief Technology Officer maintains separate computer hardware and programs for the Navy hospitals (two computer stations) and for the non-Navy hospitals (two computer stations). This has created extra work, and increased the probability of “glitches” occurring, because two systems having to be operational in parallel.

In preparing for telenursing, the Chief Technology Officer purchased what he considered the optimal hardware and software for the NTC prior to launching service delivery, and this was used successfully with the non-military sites. However, the IT equipment in naval facilities have specific certification requirements regarding hardware, software, and computer programming that they deem necessary for security, and the choices made for the NTC were not tested to meet these requirements. The Chief Technology Officer purchased additional hardware and software specific to the Navy’s requirements.

The technology for telenursing functioned effectively for most encounters (see teleSANEs and site clinicians report on technology in Chapter 5 below). Occasionally equipment failed (one camera needed to be replaced, for example), human errors occurred, or networks problems occurred (weather was a culprit in one), or there were other problems. The NTC would alert the Chief Technology Officer who was available to address these problems in a timely way. The biggest problem occurred in one of the naval hospitals. In an effort to tighten Internet security on the base, information technology specialists working for the Navy took steps that restricted access to their network, without informing the NTC. It took several attempts at communication to diagnose the problem, and the Chief Technology Officer had to invest time in technological “fixes” for the NTC. This interfered with the audio and video of telenursing encounters for several months, leading the Sexual Assault Forensic and

Medical Examiners (SAFME) clinicians in the Navy sites not to engage the teleSANEs in examinations temporarily. This occurred in the summer of 2017, and the technology has functioned smoothly in the site once the “fix” was made. At one point, in response to concern that patients were not audible at the naval sites, the NTC purchased new microphones that could be placed closer to patients. However, these microphones have not yet been used, since the site liaison in one naval site found her own fix by moving the existing microphone, and the other naval site has not had any telenursing encounters since the new microphones were purchased.

In a recent interview with a program evaluator, the Chief Technology Officer described recent advances in technology that may facilitate the development of telenursing. Computer tablets developed in recent years are now a good alternative to the bulkier carts currently used by the NTC, and encryption has dramatically improved in the open source software that is an alternative to the software used by the NTC. The Chief Technology Officer estimates adequate technology for a site can be purchased at one-fifth the cost the NTC paid for the sites just two years ago. This does not affect current sites, given the technology investments already made for them, but it means that costs could be reduced for any new sites.

### Advocacy

An effective response to sexual assault couples a compassionate and effective forensic medical examination with supportive and effective victim advocacy. In the MA SANE model informing the development of telenursing services, MA SANEs routinely partner with a rape crisis counselor who can provide the victim additional support, information, and case management. Similarly, the NTC expected each site to provide patients access to a victim advocate for every telenursing encounter.

The NTC took steps to promote and support advocacy in the sites, as we discuss below in recapping the system impact interim report. Two PMT members have expertise in advocacy: one is the Executive Director of the Boston Area Rape Crisis Center (BARCC), and one is the Domestic and Sexual Violence Coordinator at Newton Wellesley Hospital. These PMT members provided consultation to professionals in the original four sites, though, in interviews with the program evaluation team, these PMT members reported that this consulting relationship was transient. The naval sites had relatively well-developed advocacy services and had limited need for assistance. In other sites, it was difficult to be helpful on advocacy because of the lack of local infrastructure to support advocacy. The NTC had a greater impact in promoting advocacy in the two Massachusetts sites. Well-developed advocacy programs were available to these hospitals, but the emergency departments in these hospitals had not been reaching out to these advocacy programs. The NTC helped broker a relationship between clinical teams at these hospitals and the advocacy programs. Advocacy is discussed further below.

### Marketing and Outreach

Between March 2013 and January 2014, NTC pursued a process to create a unique logo for the TeleNursing Center, to help instill trust for both the provider and patient during telemedicine encounters. The NTC sponsored an Internet contest with a cash prize to solicit potential logos and received 80 different possible logos. In addition, BARCC and the Rape Incest and Abuse National Network solicited feedback from 130 people, most of whom were sexual assault survivors. By early January 2014 the logo had been approved.

Since the inception of the Center, the Core Management Team, the Program Management Team and the Center’s partners have used a number of outreach strategies to create awareness in the field

about the opportunity for eligible sites to receive telenursing services. These were focused on Native American and rural communities, since the Navy had a separate, internal recruitment process for its sites. Team members representing various stakeholder groups have made use of speaking engagements, listservs, email blasts, conference presentations and other forums.

In 2017, NTC worked with the McDougall & Duval Advertising company to create a video to showcase the use of telenursing when responding to sexual assault. The video prominently featured two of the pilot sites and provides an overview of the telenursing experience. The video has been used during conference presentations and will be used by the pilot sites to help educate others about this service. Working with this company, NTC has also created a portfolio of brochures that describe the services.

Throughout the course of the pilot project, NTC has been committed to sharing their experiences developing this new initiative through conference presentations. Between 2014 and 2018 there were a total of 14 presentations at the following conferences:

2014

- International Association of Forensic Nurses

2015

- American Telemedicine Association Conference
- American College of Emergency Physicians
- New England Rural Health Conference
- End Violence Against Women International Conference

2016

- First Annual Tribal Summit, OVW Leadership Institute for Tribal Domestic Violence and Sexual Assault Coalitions Conference

2017

- American Telemedicine Association Conference
- International Association of Forensic Nurses
- Prison Rape Elimination Act Conference
- New England Rural Health Conference

2018

- End Violence against Women International Conference
- National Indigenous Women's Resource Center Webinar
- San Diego Conference on Child and Family Maltreatment
- Emergency Nurses Association
- International Association of Forensic Nurses Webinar
- International Association of Forensic Nurses Conference

The NTC has also provided a number of informal phone consultations to health care professionals from other states (including Montana, New York, and Colorado) who had expressed interest in learning more about the pilot project.

## Workforce Development

### Recruitment of TeleSANEs

A central component in staffing the TeleNursing Center is the cadre of nurses who provide the telenursing consultations. In mid-June 2013, the TeleNursing Center began soliciting applications for the telenursing positions. TeleSANEs were recruited from the ranks of nurses in the Massachusetts SANE program who provide forensic examinations in hospitals throughout the state. TeleSANEs were required to have a minimum of 3 years' experience providing in-person SANE care. By August 2013, offers had been extended to 26 of the 34 nurses interviewed, and 25 accepted. Over time, the NTC has had to recruit additional teleSANEs to handle staff transitions and expanded capacity. Over the course of the project, NTC has recruited and trained a total of 41 teleSANEs.

### Professional Practice Model and Protocols

The delivery of SANE services through videoconferencing technology was a new intervention that required the NTC to develop a framework for teleSANE practice and a number of protocols to support trauma informed patient care. The NTC developed a three phase professional practice model for each patient encounter, which was rooted in concepts from Duffy's (2013) Quality Caring© model. This model roots nursing practice in caring relationships, both with the patient and family and among the health care team. The model further identifies factors that support caring relationships in nursing practice: mutual problem-solving, attentive reassurance, human respect, encouraging manner, appreciation of unique meanings, healing environment, basic human needs, and affiliation needs. Caring relationships lead to the feeling of being cared for. Feeling cared for promotes the attainment of positive health outcomes and also facilitates self-advancing systems (including the nurse-patient relationship, the clinical team, and the hospital and health care systems). In the context of an encounter, Quality Caring fosters caring relationships with both the remote site clinician and the patient.

The first phase of providing telenursing services is the Pre-Encounter, in which the teleSANE and remote site clinician establish a team-based approach to patient care before interacting with the patient. The site clinician briefs the teleSANE about the case in the pre-encounter phase and they discuss how they want to collaborate. In the Encounter phase, the teleSANE interacts directly with both the remote site clinician and the patient, lending both technical support in patient evaluation and evidence collection methods, as well as emotional support and a trauma informed lens to patient interactions. Finally, in the Post-Encounter, the teleSANE reconvenes with the remote site clinician to debrief and to answer evidence collection and documentation related questions.

The NTC also established several other protocols related to patient care and evidence collection, including how and when to notify teleSANEs of a potential encounter. It created a "teleSANE script" and process to ensure the patient's informed consent to teleSANE services. In addition, the NTC developed administrative operating protocols for the management of a 24/7, 365 day service, such as staffing guidelines and technology protocols. Protocols were also developed to protect patient privacy and confidentiality. Finally, the NTC designed protocols and documentation for quality assurance activities.

The NTC required all pilot sites to include community rape crisis advocates into their response for patients presenting for care after an acute sexual assault, an expectation outlined in hospital agreements. The NTC brokered relationships between hospitals and victim advocates through periodic



meetings between the site staff and rape crisis centers. The NTC also worked with site liaisons to create or refine policies that detail the proper storage and chain of custody of completed evidence collection kits.

### Licensing and Credentialing

The NTC invested time and money in obtaining licenses for all teleSANEs in California, location of three sites. Licensing for nurses involves assembling and submitting a range of documentation (e.g., verification of licensing in a different state, education transcripts, and fingerprints) and paying fairly substantial fees. The turnaround time on the licensing application can be as much as several months. Thus, licensing imposed a substantial time and budgetary demand on the project. TeleSANEs were limited by having Massachusetts licenses, because that state does not participate in the interstate compact enabling nurses to practice in any state in the compact. Initially the NTC also needed to invest time and effort in credentialing teleSANEs in Navy hospitals, although this requirement was later eliminated. This involves submitting documentation for each nurse to demonstrate that they have the credentials necessary to provide nursing services in the Navy hospitals. The Indian Health Service (IHS) determined that the teleSANEs' Massachusetts license applied to nursing practice in IHS facilities.

### Training of TeleSANEs

The NTC provided extensive training to teleSANEs to prepare them to provide telenursing consultations (see information below and Cross, Cross, & Walsh, 2016 for a complete report on training). Again, Duffy's (2013) Quality Caring model informed the development of NTC training. The initial training educated teleSANEs about NTC policies and procedures and provided them an opportunity to practice using the telemedicine equipment. Topics included initiating a call at the TeleNursing Center, receiving calls, completing all required documentation, and dealing with any legal issues that nurses may face, including being subpoenaed. Refresher training was later provided as well because of the long period of time that elapsed between the hiring of the teleSANEs and the time when they began to provide telenursing services regularly.

TeleSANEs were also asked to complete three 60-minute practicums to experience what it was like to provide telenursing services and to experience feedback and self-reflection about the telenursing process. Using role plays, the practicums walked the nurses through cases from three different perspectives: the teleSANEs', the site clinicians' and the patients'. TeleSANEs play each role, giving them insight into the encounter from each perspective.

TeleSANEs have continued to receive training throughout the course of the project. Some training for teleSANEs has been didactic, with trainers using PowerPoint presentations, handouts and similar materials to impart information. The content of many of these trainings focuses on the specifics of a given site: its population and culture; and its hospital, medical and criminal justice systems. Many other trainings for teleSANEs involved simulation and practice. TeleSANEs worked in small groups or teams to practice using the telemedicine equipment, and to complete a kit and documentation from a particular site. They conducted mock encounters in which the teleSANEs learn from role play about providing telenursing consultations and about site clinicians' and patients' experience of these consultations. The NTC has also developed a series of online training and education methods that are responsive to the reality that teleSANEs have other jobs and have limited physical contact with the NTC hub. Altogether 41 teleSANEs were involved in training. For more information on NTC training, see the interim report on NTC training and education, which is summarized in Chapter 3.

## Site Development

The NTC put considerable effort into site selection and site team development, which are discussed in turn below.

## Site Selection

The NTC set requirements for site selection. Sites needed to...

- be a single medical facility that provides 24/7 care and forensic examinations to victims of sexual assault or two collaborating facilities within a 50-mile radius,
- have Internet connectivity via local area network (LAN), wireless or cellular service,
- have policies and/or protocols in place that are specific for the care of sexual assault victims,
- demonstrate support from the facility's administration, and
- collaborate with NTC staff and managers and the Project Evaluation Team

Sites were also expected to ensure that victims had access to victim advocates. The request for information from prospective sites also stated that the NTC anticipated that sites would have 75 to 100 cases per year

Recruitment for the tribal, rural and correctional sites began in January 2013. The request for proposals was opened March 2013, with a deadline of May 15, 2013. Only two proposals were submitted: one from a community that met criteria for both a tribal and rural site and one from a correctional facility. It was determined that the process did not result in enough applications to be considered competitive and the two applicants were informed of this decision by the end of May 2013. Through telephone follow-up with those potential sites who had responded, several possible reasons for the small number of proposals were identified. Patient case volume was identified as the primary reason why few sites applied; anecdotal information indicated that many sites did not have enough patients to meet the guidelines. Additionally, it was also suggested that the timing of the request for proposals may have reduced proposals—early/late spring is commonly the deadline for many federal grants. Other reasons were lack of experience preparing grant proposals and issues with technology. At least one potential tribal site did not apply over concerns about signing a memorandum of understanding. Correctional facilities at the time were focusing on the August 2013 deadline for compliance with the Prison Rape Elimination Act PREA, and this likely reduced responsiveness to the request for proposals.

Recruitment of naval sites required a separate process because of regulations that prohibit a military facility from receiving a subcontract from an OVC grantee. OVC set up an inter-agency agreement directly with the Navy, which solicited sites for the project. By early April 2013, the Navy had selected Robert Bush Naval Hospital, located on a remote Marine base in Twentynine Palms, CA, and Naval Hospital Jacksonville in Florida. However, the NTC discovered at that time that teleSANEs would need to be licensed in the state in which the naval hospitals were located (see Licensing and Credentialing above), and decided that it only had the resources to seek licensing in one state, California. It therefore declined to include Naval Hospital Jacksonville as a site. The need to obtain California licenses at Robert Bush Naval Hospital delayed the onset of service delivery until November 2014. Later Naval Hospital Camp Pendleton on a naval base in Oceanside, CA was added—service delivery began there in January 2016.

Due to the low number of responses to the initial request, the project initiated a new recruitment effort for non-military sites in January 2014. OVC used an alternative process in which it solicited concept papers from prospective sites; concept papers have a minimum of requirements compared to proposals, and allow prospective sites flexibility in how they describe their concept for being a site. The NTC decided at this point not to recruit a correctional facility because the small number of reported cases in any given facility suggested that adding a correctional site would not be a good use of resources. Concept papers were received March 7th from four prospective rural sites, two were invited to submit full applications, and Sutter Lakeside Hospital in rural Lakeport, CA was chosen in August 2014. However, because of the need to obtain California licenses, the service was not launched until late 2014 and the first patient was seen in May 2015. The solicitation for concept papers from prospective tribal sites was posted early in 2014 and followed a similar process. Reviews of the concept papers resulted in the selection of two sites that were invited to submit full applications. The Hopi Health Care Center in Polacca, AZ was chosen in May 2014. Again, time devoted to the licensing issue and other administrative matters delayed the launch of services at Hopi until June 2015. Clinicians at Sutter and Hopi had SANE training and clinicians in the naval sites also had specialized training in conducting examinations. However, these clinicians had limited experience because of the small number of examinations conducted in each of the sites yearly.

In 2015, the NTC sought to expand the number of patients it served while avoiding the obstacles related to providing services out-of-state. The Center decided to recruit two Massachusetts sites, taking advantage of teleSANEs' Massachusetts licenses and experience with the Massachusetts evidence kit. Adding Massachusetts sites was also consistent with the Massachusetts Department of Public Health's mission of promoting the health of the citizens of the Commonwealth. Late in 2015, two Massachusetts sites were selected and services were launched in the first half of 2016. The first patient was seen at MetroWest Medical Center in Framingham, MA in April 2016 and at St. Anne's Hospital in Fall River, MA in July 2016. With one exception, all clinicians conducting examination in these two sites lacked SANE training.

### The Development of Site Teams

Throughout the course of sites' involvement in the project, the NTC engaged in a process of preparing, training and supporting clinical teams at each site. A key person in the team is the *site liaison*, a role identified for each team that was supported at some level by grant funds. The site liaison is a nurse examiner on each team who supervises the clinical team, represents the project at the hospital, and is the site's chief interface with the NTC.

Once a hospital was selected, the NTC staff conducted a one or two-day site visit. In addition to the site liaison and clinical team, the NTC invited hospital management (e.g., the medical director, the ER director, the chief nursing officer, the ER nurse manager/supervisor) and allied community professionals such as law enforcement officers, assistant district attorneys, and victim advocates. During the site visit, the NTC learned about the hospital and community's system of response to sexual assault, and provided an orientation to the project and enlisted professionals' support. The NTC also provided an initial training on the telenursing project during the site visit to the site liaison and clinical team.

NTC staff had weekly video meetings with each site liaison. These meetings addressed any implementation issues regarding the project, but also provided the site liaison guidance on clinical and administrative issues regarding sexual assault that arose at the hospital, and helped educate site liaisons on a variety of aspects of practice.

The initial non-military sites had clinicians who had been trained as SANEs, although they were relatively inexperienced, and the naval sites had SAFME clinicians, who also had training in conducting examinations. Most of these sites had a functioning clinical team even prior to the NTC. The two Massachusetts sites lacked clinicians with such training however, and there was no clinical team. The NTC assisted the site liaison in supporting and developing clinical teams, providing especially substantial support to the hospitals in which no previous team existed. The NTC’s role in clinical team development is discussed in detail in the system impact report, which is summarized below.

### Site Education and Training

The NTC made a significant investment in educating and training site clinicians, consistent with the Quality Caring model. The NTC planned to offer trainings for each site every six weeks over the course of the project, though scheduling limitations slightly reduced this frequency over time. Over the course of the pilot, the NTC has delivered over 125 customized training sessions and 121 clinicians at the pilot sites have received training (see Table 3 below).

The NTC has labeled the trainings for the sites as *coordinated* trainings; the adjective coordinated is used to describe this training because the NTC tailors training to sites’ needs, and because sometimes both remote site clinicians and teleSANEs received related instruction in the same training. Examples of topics of coordinated training include: taking a forensic history, evidence collection, swab techniques, identifying wounds and physical signs of assault (e.g., indicators of strangulation), preparing slides, preparing evidence kits, taking photographs, completing documentation accurately and reviewing documentation. The NTC has sometimes studied forensic methods it does not have previous experience with, in order to help a site implement those methods. For more information on site education and training, see the interim report on NTC training and education activities, which is summarized in Chapter 3.

**Table 3 National Telenursing Center Sites and Number of Clinicians who have Received Training from NTC**

<i>Hospital</i>	<i>Location</i>	<i>Site Type</i>	<i>Launch Date</i>	<i># Site clinicians</i>
<i>Robert Bush Naval Hospital</i>	Twentynine Palms, CA	Military	November 2014	29
<i>Sutter Lakeside Hospital</i>	Lakeport, CA	Rural	June 2015	10
<i>Naval Hospital Camp Pendleton</i>	Oceanside, CA	Military	January 2016	18
<i>MetroWest Medical Center</i>	Framingham, MA	Urban/suburban	April 2016	33
<i>Hopi Health Care Center</i>	Polacca, AZ	Tribal nation	June 2016	8
<i>Saint Anne’s Hospital</i>	Fall River, MA	Urban/suburban	July 2016	23

### Variability in Site Development

The development and implementation of services across the six pilot sites varied considerably. The two Navy sites had a multilayered administrative approval process in place that NTC had to work with. These sites also had frequent turnover of personnel due to deployment and transfers that are characteristic of the military. The rural site in California had a dynamic site liaison who was highly instrumental in the success of the program, demonstrating just how critical this role is. The two non-SANE sites in Massachusetts required more consultation from the NTC to develop their capacity to serve sexual assault victims, as they lacked clinical teams and some of the necessary protocols for serving sexual assault victims. Implementation at the Hopi Health Care Center was challenged by victims’ reluctance to come forward in a small, tightly knit community, a factor identified in site visits to the community by a Native American advocate on the project management team.

## Sustainability

The NTC has taken a number of steps to explore how to sustain the project beyond the pilot phase, which ends in December 2018. First, in early 2016, the **NTC partnered with a student team at Babson College** to assess the feasibility of growing the NTC as a private enterprise. The scope of the project, which lasted until early summer 2016, involved reviewing the NTC's operating model, assessing operational costs and strengths and weaknesses, and interviewing over twelve investment experts. At the time Babson's team viewed the NTC project, not all six sites were operational, so the team's conclusions were somewhat limited in scope. For example, at the time of their review the estimated cost for service per patient was \$20,000 because only 17 patients had received services. Based on this cost analysis and interviews with investment experts, they concluded that NTC could not operate as a private business. One of their recommendations was to hire staff with a business and marketing specialty to market the NTC project to a wider cross-section of hospitals and identify potential investors. Following this recommendation, in the fall of 2016 the NTC hired a dedicated Operations Manager to provide NTC with a realistic overview of the costs and a timeframe for NTC's program operations. The Operations Manager's role involved further researching the market for NTC's services, identifying resources needed to provide NTC services, devising implementation and outreach strategies, and determining ways to evaluate success. In addition, this role encompassed developing proposals for existing sites interested in contracting with the NTC and assisting with the framing and budget development for potential grant solicitations (NTC, 2018).

Second, NTC held a two-day **sustainability retreat** in February 2017. Twenty-six people attended the meeting and two additional people joined remotely. The purpose was to review evaluation findings, hear from a panel of all the site liaisons, and begin discussions about sustainability. The outcome of the meeting was a strategic plan of action for the following year.

Third, in early 2018 NTC hired **Impact Catalysts**, a strategic planning agency with extensive experience in working with governmental agencies and non-profit organizations to help craft a strategic roadmap for expanding NTC's services within Massachusetts and selectively, on a nationwide basis. Impact Catalyst consultants have been speaking with partners, stakeholders and others to assess the current climate and receptivity to the concept and possible expansion of teleSANE services. They will continue to work with NTC through December 2018.

Fourth, NTC is also seeking **grants and contracts**. The NTC recently applied for VOCA (Victims of Crime Act) grant funds, provided by the federal government to the states to support projects on behalf of victims. This grant would have funded telenursing services for seven Massachusetts hospitals and the service organization Boston Health Care for the Homeless, but the proposal was not accepted. The NTC has been discussing contracts with several current sites to continue to provide clinical support and/or training once the federal grant ends in December 2018. It has also been discussing a separate contract to provide telenursing services for Boston Health Care for the Homeless. The NTC is also exploring opportunities to provide training and technical assistance for other states and communities looking to implement teleSANE services.

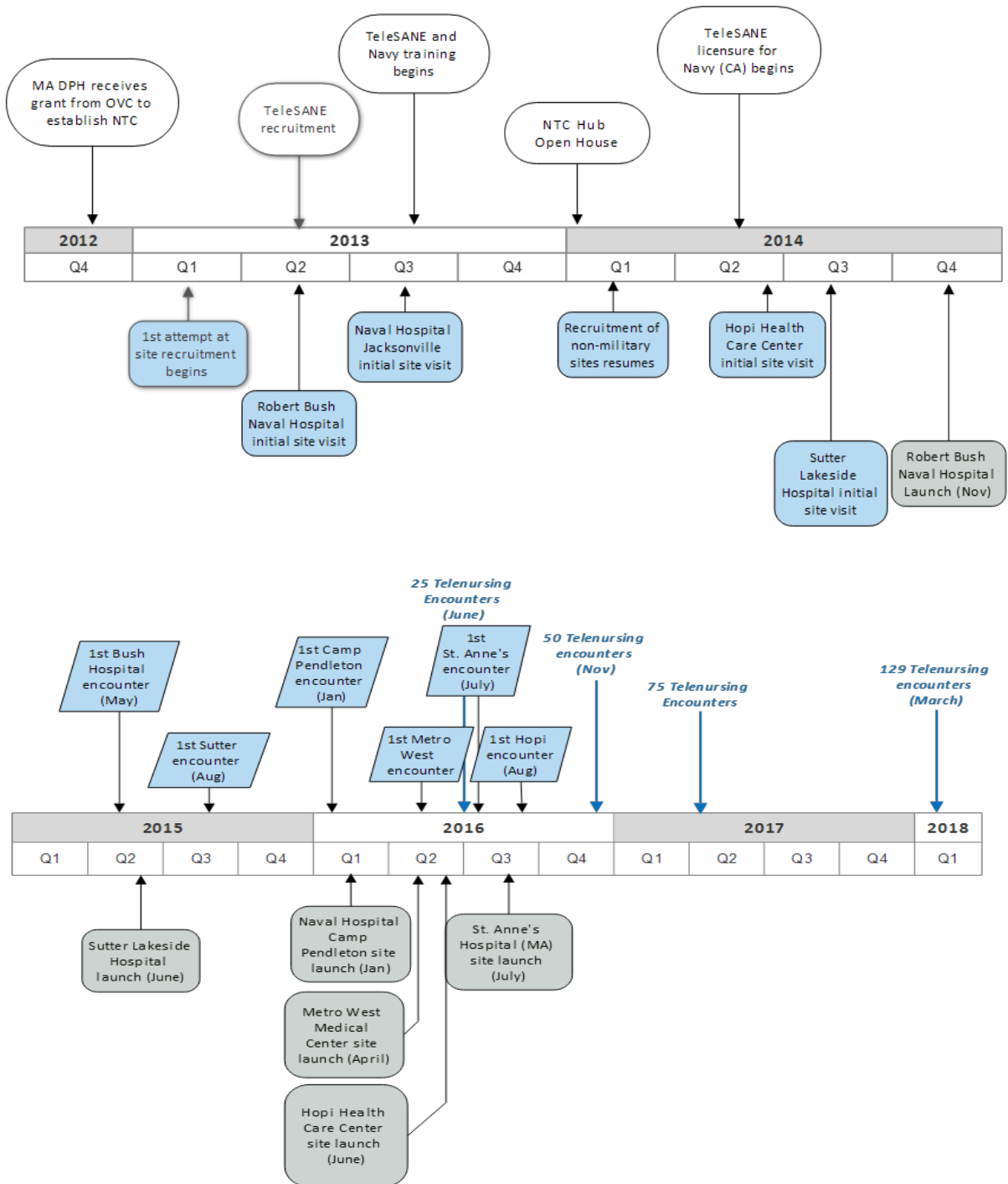
Fifth, the NTC is seeking **to maintain and expand telenursing services in Massachusetts by developing stable funding in the state**. The NTC would continue services for MetroWest Medical Center and St. Anne's Hospital, but also add other Massachusetts hospitals. It is discussing including telenursing services in the annual Massachusetts SANE program appropriation in the Massachusetts state budget for Fiscal Year 2020, and seeking state funding as a bridge to FY2020 in the meantime. The NTC's focus has changed from providing direct teleSANE services to many states to providing technical assistance and education to states looking to implement teleSANE services, while embedding teleSANE services

into the Massachusetts SANE service delivery system and reaching more underserved hospitals in the state.

### Project Timeline

Figure 2 below presents the timeline of key start-up and implementation milestones of the NTC. The upper part of the figure shows events from 2012 to 2014, a time during which the NTC established itself, the original four sites were recruited, and service delivery was launched. The lower part of the figure shows events, from 2015 to the present day, the time period during which the NTC provided telenursing services, enlisted the two Massachusetts sites, and is preparing for the project's completion and the possibility of sustaining the program following the end of the federal grant. This timeline shows in a glance the major differences between the project's first 9 calendar quarters, which focused on start-up, and the succeeding 13 quarters, during which the NTC has steadily provided telenursing services.

Figure 2. NTC Key Start-up and Implementation Milestones



## Chapter 3: An Overview of Previous Program Evaluation Reports

The program evaluation team developed four interim reports over the course of the project. Interim reports were designed to provide timely feedback to the NTC to inform program development. Some interim reports were developed in response to emerging program evaluation needs. Table 4 provides summary information about each of these reports, including strengths and challenges identified and recommendations. Below we summarize findings from each report.

### Process and Development of the National Telenursing Center

Completed in January 2015, this interim report documented the implementation of the NTC during the first two years of the project, prior to the initiation of service delivery (Cross, Cross, & Alderden, 2015). It examined the development of Center staffing, infrastructure and protocols. It also detailed the process of recruiting and developing sites, and the project's development of telemedicine technology.

The report noted the successful recruitment of an extensive cadre of teleSANEs from the ranks of experienced nurses in the Massachusetts SANE program, and the development of strong linkages to both regional and national experts. The NTC had a flexible, adaptive approach to individual sites, and was able to develop a functional telemedicine capability.

The report also described numerous challenges the NTC encountered in implementation. These challenges required changes in the program and delayed service delivery. One challenge was recruiting sites. In spite of the Center and its partners' strenuous efforts to market and publicize the availability of telenursing services through various rural and tribal information networks, grant solicitations for sites yielded a modest number of responses. Negotiating site agreements was time-consuming with the Navy, which is careful about following an array of procedures for monitoring and approval; and with the Hopi Nation and the Indian Health Service, which have limited resources and value careful deliberation and consensus building. As discussed above, licensing quickly arose as an issue delaying service delivery, as teleSANEs need to be licensed in the state in which a hospital is located in order to practice in most hospitals that were candidates for the project.

In this report, the program evaluators also discussed the need for an adequate caseload to test and develop telenursing services and support sustainability of the Center beyond the OVC grant. It noted the inherent challenge in doing so: rural, tribal and other remote hospitals who are likely to welcome telenursing services are not likely to have many sexual assault cases. Developing an adequate caseload requires recruiting more hospitals, and reducing the obstacles interfering with recruiting sites, developing agreements, and implementing telenursing services.

This interim report recommended that the Center develop systematic methods to assess, document, and act upon demand in the field for telenursing services. The report also recommended exploring strategies for dealing with the licensing obstacle, including expanding within states in which teleSANEs were already licensed, investing in licenses in additional states, and recruiting teleSANEs in other states. Other recommendations included articulating the role of the telenurse vis-à-vis both the clinician and the patient, exploring the implications of differences in practice standards between Massachusetts and site communities, investigating different telemedicine methods that might make it easier to recruit additional sites, preparing for more rigorous data collection, and planning for the development of telenursing services for correctional facilities.



The final recommendation was that the NTC make efforts to go to scale, expand services, and prepare to sustain services beyond the grant period. The report argued for expanding within the states and other domains (e.g., Indian Health Service, Naval Hospitals) in which it was already established. It also discussed exploring partnerships with existing telemedicine networks, and making use of knowledge on diffusion of innovations.

## Evaluation of the Training and Education Activities of the National Sexual Assault TeleNursing Center.

Given the growth in emphasis on training and education as the project evolved, the NTC leadership sought an enhanced evaluation of its training and education activities. This November 2016 report described the training and education activities that the NTC is providing teleSANEs and remote site professionals, assessed their impact, and discussed the implications for the development of the Center and for telenursing as an intervention.

The report described the wide array of training the NTC provided. The content of many of these trainings focuses on the specifics of a given site: its population and culture; information about its hospital, medical and criminal justice systems. Many other trainings for teleSANEs involve simulation and practice, using mock encounters. TeleSANEs work in small groups or teams to practice using the telemedicine equipment. The NTC has also developed a series of online training and education methods.

Training for site professionals, which was primarily didactic, has been provided remotely using telemedicine equipment. Topics include taking a forensic history, evidence collecting, swab techniques, identifying wounds and physical signs of assault (e.g., indicators of strangulation), preparing slides, preparing evidence kits, taking photographs, completing documentation accurately and reviewing documentation.

In an online survey, teleSANEs rated most elements of their training as very helpful or helpful. There were only 3 “not helpful” ratings across the more than 370 ratings that were provided. Across 12 different abilities in telenursing, most respondents (94% to 66%) strongly agreed or agreed that education and training had a positive impact on relevant knowledge and their understanding and ability to implement telenursing. In open-ended questions, Respondents endorsed a variety of strengths of the training, including the variety of information presented, the knowledge of the trainers, and opportunity to do “hands-on” training simulating telenursing encounters. Respondents were also asked what challenges training presented. A frequent theme was the difficulty of learning telenursing skills without sufficient opportunity to practice due to the low patient volume at that point in time.

To evaluate the impact of the training on the remote sites, the program evaluation team conducted semi-structured telephone interviews with a total of three site liaisons at two sites, who described a number of strengths of the training. Each interviewee cited the value of the NTC trainers’ expertise and experience, and the useful knowledge they provided. Two of the site liaisons stressed the collaborative nature of NTC training, and one stressed the value of the training for getting to know the NTC staff as people. The collaboration has meant that the NTC has also learned from its interaction with sites about ways to improve telenursing practice.

The results indicate that teleSANEs who responded to the survey credited training with having a positive impact on the skills they needed for telenursing, but the value of training for preparedness

was limited by the teleSANEs' inability to practice their skills because of the small number of patients seen at that time. The praise of the site liaisons interviewed is a testament to the investment of the NTC in its sites and the care the NTC has devoted to developing training and education.

Some training of site professionals was clearly essential to implement telenursing encounters, but other training appears to be discretionary, in that it did not appear to be relevant for the effectiveness of the telenursing encounter per se. This type of training required time and money that could arguably be reallocated to activities that contribute directly to the development of telenursing; in particular, to adding new sites. On the other hand, the Center's investment in training may enhance the sustainability of the NTC if it adds value to NTC services and engages service providers and benefactors attracted by the Center's mix of service delivery, education and training.

The report offered several recommendations including a) exploring the potential to market training to other clinicians outside the project, b) developing economies of scale by using telemedicine technology to train more than one site at a time, and c) developing an institute model in which the NTC would offer training on telenursing to other communities seeking to implement telenursing

### [National TeleNursing Center: Initial Program Evaluation Findings on the TeleNursing Experience](#)

This April 2017 report presented interim results on the program evaluation's assessment of the nature and quality of telenursing encounters, based on interviews and online surveys with both teleSANEs and site clinicians. Results from cases through the early part of 2017 were included. Both teleSANEs and remote site clinicians reported positive effects of telenursing consultations, and pointed to specific ways in which it is helpful. Since this report was completed, additional interviews of teleSANEs and site clinicians were conducted for cases through March 2018. Results for all interviews are reported in Chapter 5 below. Because the results in Chapter 5 supersede results from this interim report, we say no more about it here and refer readers instead to Chapter 5.

### [Program Evaluation Report: The System Impact of the National TeleNursing Center](#)

In July 2017, in response to a request from the NTC, the program evaluation team completed a report on the impact of the NTC on systems over and above the individual patient encounter. Key informant interviews were conducted with NTC staff, Program Management Team members, site liaisons, and with site victim advocates and police officers who had knowledge of the program. A snowball sampling method was used, in which interviewees suggested additional professionals program evaluators should interview.

The interviews conducted for this study provide support for the conclusion that the National TeleNursing Center has had a meaningful, positive impact above and beyond its assistance caring for individual patients. The impact affected multiple systems: the clinical team, the hospital, and the multidisciplinary response to sexual assault. Below we summarize findings on the system impact (for more information see Cross & Walsh, 2018).

Several interviewees reported that the NTC has had considerable impact on the development of clinical teams. Both Massachusetts hospitals lacked clinical teams to conduct examinations before the project; patients had long waits for the one or two clinicians with experience or were not able to receive quality exams. The NTC facilitated the development of a team of nurses in each Massachusetts hospital and core groups of nurses have been maintained despite some attrition. An interviewee from one Massachusetts hospital credited the positive experience with the NTC for attracting more nurses to the team, while an interviewee from the other Massachusetts hospital felt more training was

needed. According to one interviewee in a rural site, consistent interaction with the NTC helped to engage the clinicians with sexual assault work. Interviewees from the rural and tribal sites credited the NTC for helping them increase the number of SANE nurses on their team through more successful retention and recruitment. An interviewee at a military site felt that the NTC helped to provide a level of consistency to teams that were affected by staff transitions due to deployments and reassignments, though another interviewee felt that frequent staff transitions at the naval hospitals limited the impact of the NTC. The NTC supported teams through regular meetings with site liaisons, trainings of team members, in-person meetings (at the Massachusetts hospitals), and outreach in response to specific needs. All site liaisons talked about positive effects of the NTC on the team, although their reports of the magnitude of the effect varied. One interviewee talked about how the project has brought a sense of accomplishment and recognition that their community can move toward the solution of the problem of sexual assault. However, one interviewee felt that the need for NTC support had diminished over time as nurses in her site had become more experienced, though she recognized the continued value of the NTC as a mentor for new nurse examiners.

In interviews with NTC staff and with site liaisons, we learned that the NTC advocated for best practice at hospitals and helped move them toward it through training and technical assistance. The impact on the hospital was pronounced at the two non-SANE hospitals in Massachusetts. The introduction of the NTC led to such changes as the development of systems for storing images and medical records, obtaining a refrigerator to store evidence and a cart for exam supplies/equipment, increasing use of photography, billing a victim compensation fund for forensic examinations, and providing starter packs of medication to help prevent HIV. At the naval hospitals, the NTC supported the teams in developing a strangulation policy where none had existed before, modelled after Massachusetts' SANE's policy. Some interviewees felt that having access to NTC helped to create a culture change at their site in recognizing the importance of caring for sexual assault victims.

The NTC had a substantial impact on advocacy in the non-SANE hospitals in Massachusetts. Prior to the NTC, neither non-SANE hospital routinely called its local rape crisis center (RCC) when a patient received a forensic medical examination following sexual assault, contrary to the standards of care of both Massachusetts SANE and the NTC. In initiating telenursing services in the Massachusetts hospitals, the NTC communicated its expectation regarding advocacy and took steps to improve advocacy at the hospitals. The NTC made sure that representatives from the local RCCs were invited to the hospital for the NTC's initial site visits, and met with the RCCs' leadership and staff together with the site liaisons. In both Massachusetts hospitals, advocates are now routinely called and come to the hospital for examinations. Other sites needed help with advocacy and the NTC supported advocacy experts to consult to these sites, but burn-out and turnover of the limited number of advocates in these sites and the lack of infrastructure for advocacy made it difficult for these experts to provide assistance, and consultation fell off. Nevertheless, an advocate in one of these sites felt that the NTC had a positive indirect effect on advocacy, because it freed her to do advocacy work, whereas before she had to focus half her time on helping the inexperienced medical examiners conduct the examination appropriately.

Influencing law enforcement directly was not a part of the design of the NTC, but one officer thought that the NTC had reduced the waiting time before patients' received an examination, making it easier for police officers to stay at the hospital to do more investigation. One rural pilot site was participating in a special program with its crime laboratory on conducting rapid DNA testing on samples in sexual assault cases. The NTC helped site clinicians with the quality of samples submitted to the crime laboratory, both in the individual case consultations it provided and in special training with this site on

sample collection to promote effective DNA testing. There were small increases in searchable DNA profiles and hits in the FBI's CODIS database since the introduction of the NTC that were not statistically significant.

Systems change efforts may have implications for sustainability of the project beyond the end of the Federal grant period in December 2018. The investment of time and resources that system change efforts require for each site may make it more difficult to increase the number of sites that can be served. A smaller number of sites may decrease the likelihood that funders will invest in the NTC and may limit the amount of funds that can be raised. On the other hand, the Center's investment in systems change might enhance the sustainability of the NTC by adding value to NTC services and engaging service providers and benefactors.

The NTC deserves credit for having a positive impact on multiple systems above and beyond its positive impact on the individual patient encounter. There are study limitations (reliance on interviewees' memory over several years, limited input from stakeholders outside the project, the difficulty of generalizing given the wide variation across sites), but the evidence for a systems impact of the NTC is still substantial. Full consideration of the role of system impact is an important part of the conversation as the NTC prepares for the future and the sexual assault professional field considers future development of telenursing.

Table 4. Summary of NTC Project Evaluation Reports 2015 - 2018

Project Element:		Process and Development of the NTC (Cross, Cross, & Alderden, 2015)			
Evaluation Focus	Methods	Respondents/sources	Findings		Recommendations
			Strengths	Challenges	
<ul style="list-style-type: none"> <li>▪ Center development</li> <li>▪ Project planning,</li> <li>▪ Site recruitment</li> <li>▪ Site development</li> <li>▪ Technology planning</li> </ul>	<ul style="list-style-type: none"> <li>▪ Participant observation</li> <li>▪ Document reviews</li> <li>▪ Individual and group interviews</li> <li>▪ Literature review</li> </ul>	<ul style="list-style-type: none"> <li>▪ Program Management Team meetings</li> <li>▪ NTC leadership</li> <li>▪ Center staff</li> </ul>	<ul style="list-style-type: none"> <li>▪ Expertise</li> <li>▪ Strong linkages to network of national experts</li> <li>▪ Responsiveness to unique requirements of sites</li> <li>▪ Technological adeptness and flexibility</li> </ul>	<ul style="list-style-type: none"> <li>▪ Determining demand and reaching areas of greatest need</li> <li>▪ Negotiating agreements with client organizations</li> <li>▪ Determining an appropriate model for training site clinicians</li> <li>▪ Licensing &amp; credentialing</li> <li>▪ Subpoena and giving testimony.</li> <li>▪ Small caseload</li> </ul>	<ul style="list-style-type: none"> <li>▪ Develop systematic method to assess, document and act upon demand for NTC services.</li> <li>▪ Future contracts, grants or fee-for-service agreements should be structured to account for the costs of licensing teleSANEs.</li> <li>▪ More fully articulate what is considered the “ideal” or best practice for an encounter with a remote site clinician and patient.</li> <li>▪ Achieve closure on the prison component of the project.</li> <li>▪ Explore more fully the implications of differences in practice standards between potential sites and the NTC.</li> <li>▪ NTC and ADOL should work together to identify a range of different technological options in addition to the “cart” for future sites to use.</li> <li>▪ The NTC should anticipate and plan for more rigorous evaluation activities as required by the developmental state of the program.</li> <li>▪ Identify best strategies for sustainability and going to scale given the siting challenges of the first two years.</li> </ul>

Project Element: Training and Education Activities of the NTC. (Cross, Cross, & Walsh, 2016.)					
Evaluation Focus	Methods	Respondents/sources	Findings		Recommendations
			Strengths	Challenges	
<ul style="list-style-type: none"> <li>TeleSANE and Site clinician training and education</li> </ul>	<ul style="list-style-type: none"> <li>Literature review</li> <li>Document review</li> <li>Post-training feedback documents.</li> <li>Individual interviews (phone)</li> <li>Online survey (TeleSANEs only)</li> </ul>	<ul style="list-style-type: none"> <li>NTC staff</li> <li>Site liaisons (3)</li> <li>TeleSANEs (53% - 18 of 34 respondents)</li> </ul>	<ul style="list-style-type: none"> <li>Majority of TeleSANEs responding to survey rated trainings positively.</li> <li>TeleSANEs played important role in developing training.</li> <li>TeleSANEs demonstrated strong commitment and interest in the NTC.</li> <li>Site liaisons praised the NTC training.</li> </ul>	<ul style="list-style-type: none"> <li>Low rate of survey completion by TeleSANEs.</li> <li>A substantial minority of teleSANEs who responded did not provide rating for a number of training events.</li> <li>Low case load means greater need for “refresher” training.</li> <li>Education and training may pose challenge for sustainability.</li> <li>Low attendance at discretionary trainings for sites due to schedule conflicts.</li> </ul>	<ul style="list-style-type: none"> <li>Develop practice opportunities for core training.</li> <li>Assess the role of discretionary training.</li> <li>Explore marketing discretionary training.</li> <li>Develop economies of scale.</li> <li>Train teleSANEs outside the NTC.</li> <li>Explore developing an institute model.</li> </ul>
Project Element: The Telenursing Experience Interim Report (Walsh, Cross, & Cross, 2017)					
Evaluation Focus	Methods	Respondents/sources	Findings		Recommendations
			Strengths	Challenges	
<ul style="list-style-type: none"> <li>Telenursing encounters</li> </ul>	<ul style="list-style-type: none"> <li>Individual interviews (phone) or online survey</li> </ul>	<ul style="list-style-type: none"> <li>79 interviews re: 40 consultations: <ul style="list-style-type: none"> <li>TeleSANEs (39)</li> <li>Site clinicians (27)</li> <li>Corpsmen (13-Navy)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Large majorities of site clinicians and corpsmen gave positive scores, on the impact of telenursing on: <ul style="list-style-type: none"> <li>their ability to provide an effective exam</li> <li>their confidence in providing the exam</li> <li>their ability to provide their patient with the best case</li> <li>their sense of feeling supported during the experience</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>If pre-encounter meeting is missed, the encounter does not go as well.</li> </ul>	<ul style="list-style-type: none"> <li>Telenursing consultation in forensic sexual assault examinations is a promising intervention and should be maintained, developed further, disseminated to more sites and a larger patient pool, and eventually rigorously evaluated.</li> <li>NTC is well-positioned to: <ul style="list-style-type: none"> <li>share its knowledge with other potential providers of telenursing</li> <li>use its capacity for training and problem-solving to help other professionals pilot test telenursing for victims of sexual assault in their regions.</li> </ul> </li> </ul>

			<ul style="list-style-type: none"> <li>○ their patients' level of comfort</li> <li>▪ Patient consent easily obtained.</li> <li>▪ TeleSANE/Site clinician relationships are open, comfortable and professional</li> </ul>		
<b>Project Element: The System Impact (Cross &amp; Walsh, 2018).</b>					
Evaluation Focus	Methods	Respondents/sources	Findings	Challenges	Recommendations
			Strengths		
Using ecological theory as framework, evaluation focuses on impact of NTC on site system response to sexual assault.	Semi-structured, in-depth 30-60 minute interviews.	<ul style="list-style-type: none"> <li>● 19 interviews: <ul style="list-style-type: none"> <li>○ 4 NTC staff,</li> <li>○ 8 current and former site liaisons,</li> <li>○ 3 PMT members</li> <li>○ 4 key site stakeholders, (e.g. advocates and law enforcement officers)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● NTC has helped build and/or support clinical teams in each site.</li> <li>● NTC has helped change practice and attitudes at several hospitals participating in the project.</li> <li>● The NTC appears also to have influenced the multidisciplinary response to sexual assault in several sites—focused mainly on advocacy.</li> <li>● Several interviewees also saw the potential for the NTC to influence positively the broader community around the hospital by communicating the importance and availability of services for victims.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Small numbers of interviews.</li> <li>▪ Not every stakeholder for each site was interviewed.</li> <li>▪ Some nurses have missed trainings because of other demands at the hospital, and one site liaison felt that she personally needed to do considerable additional training about the project.</li> </ul>	<ul style="list-style-type: none"> <li>● As the federal funding for NTC is ending, it may be subject to budget constraints it did not experience while federally funded.</li> <li>● The NTC may need to make difficult choices about what system change efforts it should invest in and not invest in.</li> <li>● There may be trade-offs between efforts to improve care in a given site versus providing adequate services across an array of sites. It may need to make more choices about what system changes are necessary to provide adequate telenursing consultations versus discretionary.</li> <li>● The NTC's experience will provide important lessons for the field.</li> </ul>

## Chapter 4: Delivery of Telenursing Services

This chapter analyzes quantitative data on the delivery of telenursing services, using data collected by NTC staff. We report on telenursing services provided during a three-year, four-month timespan -- between November 2014, when service delivery in the first site was launched, and March 2018, when data collection for the program evaluation ended. In total there were 129 encounters and 84 consultations through March 31, 2018. Thus the NTC assisted the sites with 213 patients during this time period.

The chapter presents information on the frequency and length of telenursing encounters in which teleSANEs provide live assistance during examinations. It also presents information on the frequency and nature of consultations, in which teleSANEs provide assistance with clients but do not participate live in examinations. Data on age and gender are examined as well. These analyses help to profile teleSANE service delivery over time, and inform reflections on the project's impact. They are also relevant for our discussion of sustainability in Chapter 6

### Telenursing Service Utilization

Telenursing service utilization data was collected by the NTC staff as a function of ongoing quality management. These data were collected without any patient identifiers and therefore cannot be linked to the telenursing encounter assessments. The data include:

- a) Number of telenursing encounters,
- b) Number and type of consultations,
- c) Age and gender of sexual assault patients served by telenursing services, and
- d) Length of time it takes to conduct telenursing services for sexual assault patients.

### Number of Telenursing Encounters

When reviewing the number of telenursing encounters, it is important to keep in mind that the six pilot sites began receiving services at different times. The first site started November 2014 and the sixth site started July 2016. Table 5 shows the launch date, the length of time a site was active during the project, the total encounters for the grant period, and the average monthly number of telenursing encounters. Excluding the Hopi Health Care Center, which had only two encounters over the course of the period we observed, the average number of encounters per month per site was .9, the median was 1, and the mode was 0. A test of site differences in the number of encounters per months was not quite statistically significant, Kruskal-Wallis test,  $\chi^2(4) = 8.58$ ,  $p < .073$ .



Table 5. National Telenursing Center Sites, Length of Time Open and Number of Encounters

<u>Hospital</u>	<u>Location</u>	<u>Site Type</u>	<u>Launch Date</u>	<u>Length of time open as NTC site±</u>	<u>Total Encounters</u>	<u>Monthly average</u>
Robert Bush Naval Hospital	Twentynine Palms, CA	Military	November 2014	3.33 yrs.	18	.45
Sutter Lakeside Hospital	Lakeport, CA	Rural	June 2015	2.75 yrs.	32	.97
Naval Hospital Camp Pendleton	Oceanside, CA	Military	January 2016	3.25 yrs.	29	1.15
MetroWest Medical Center	Framingham, MA	Urban/suburban	April 2016	1.92 yrs.	30	1.30
Hopi Health Care Center	Polacca, AZ	Tribal nation	June 2016	1.75 yrs.	2	.09
Saint Anne’s Hospital	Fall River, MA	Urban/suburban	July 2016	1.67 yrs.	18	1.00

Note: ± Length of time opened as of 3/31/18 when evaluation team began analyzing encounter data.

Figure 4 shows the number of encounters per month for the project from May 2015, the date of the first case, until March 2018. Across all six sites there was a range of 0 to 10 encounters in a given month. The average number of encounters per month since July 2016, when all six pilot sites were launched, was 4.9.

We conducted a hierarchical multiple regression analysis to examine trends over time in the number of encounters (additional data from March and April 2018 were added for this analysis). We found evidence for both a linear trend [ $R^2 = .173$ ,  $F(1, 34) = 7.10$ ,  $p = .012$ ] and a quadratic trend [ $R^2$  change =  $.213$ ,  $F(1, 33) = 11.483$ ,  $p = .002$ ]. Linear trends measure linear relationships and quadratic trends measure curvilinear relationships with one bend in the curve. This means that there was evidence for an increase in the number of encounters over time, but also that there was a decrease toward the latter part of the period measured. Additional figures in Appendix C show the number of cases per month for each site, except for Hopi Health Care Center, which had only 2 cases during our observation period and 3 overall. Figure 5 shows the cumulative frequency of encounters over the 34-month period of service delivery.

It is also important to understand when encounters occur, such as the day of the week, month of the year, and time of day, because this could impact staffing decisions. A one-way chi square goodness of fit test indicated there was no significant difference in the number of encounters by day of week,  $\chi^2(6, 129) = 4.651$ ,  $p = .589$  (see Figure 6) or by month of the year,  $\chi^2(11, 129) = 11.930$ ,  $p = .369$  (see Figure 7). A one-way chi square goodness of fit test indicated significant differences by time of day,  $\chi^2(5, 129) = 20.907$ ,  $p = .001$  (see Figure 8). There were significantly more encounters between 4 PM and 7:59 PM.

Figure 3. Number of Telenursing Encounters by Month and Year

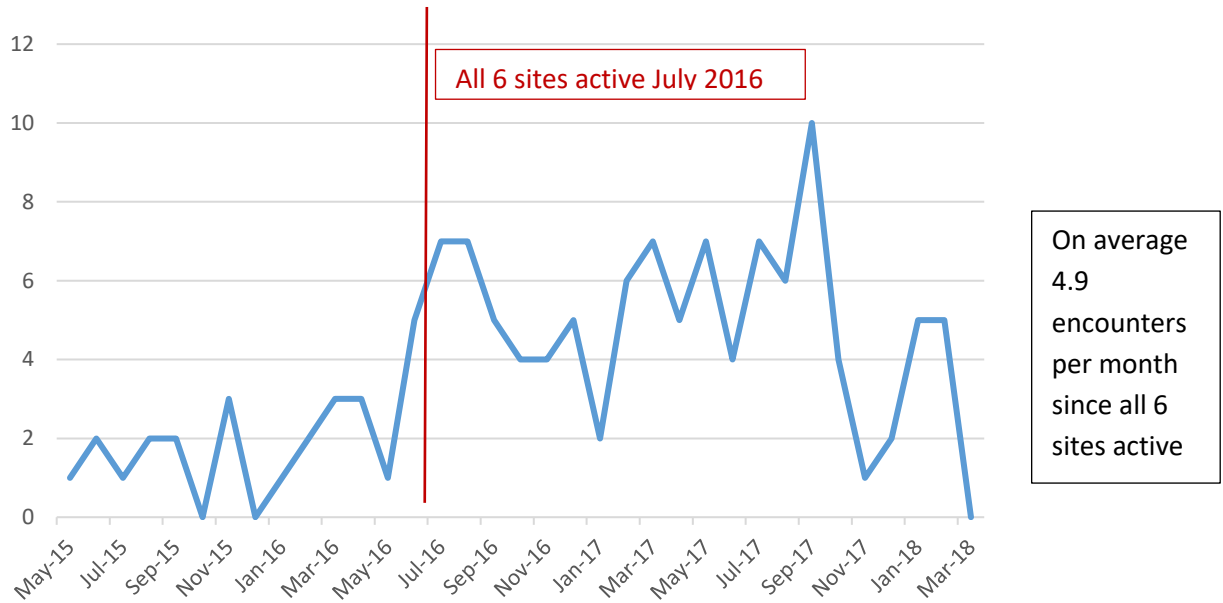


Figure 4. Cumulative Total of Telenursing Encounters between May 2015 and March 2018

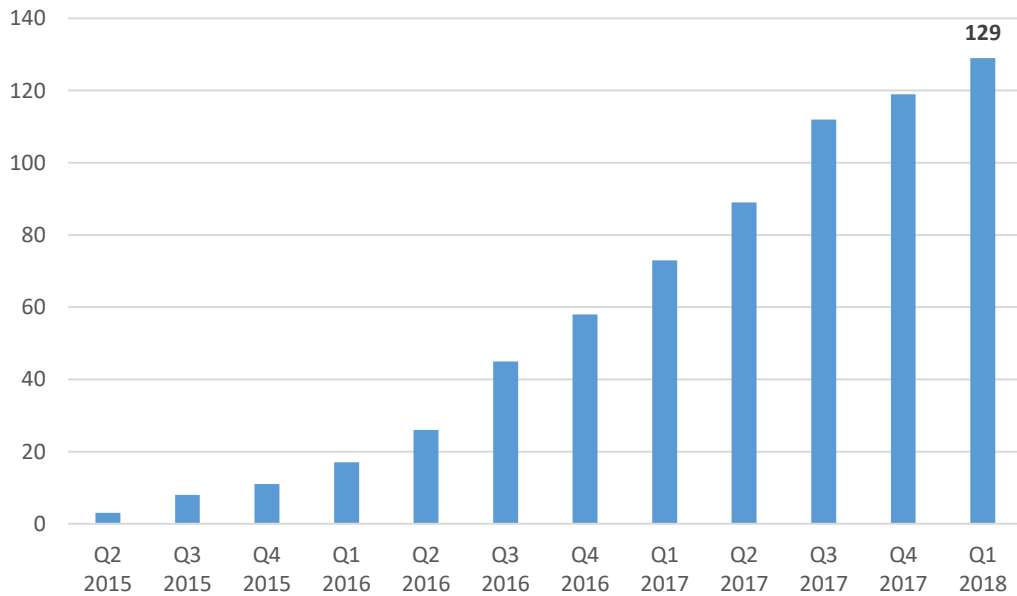


Figure 5. Percentage of Encounters by Day of Week

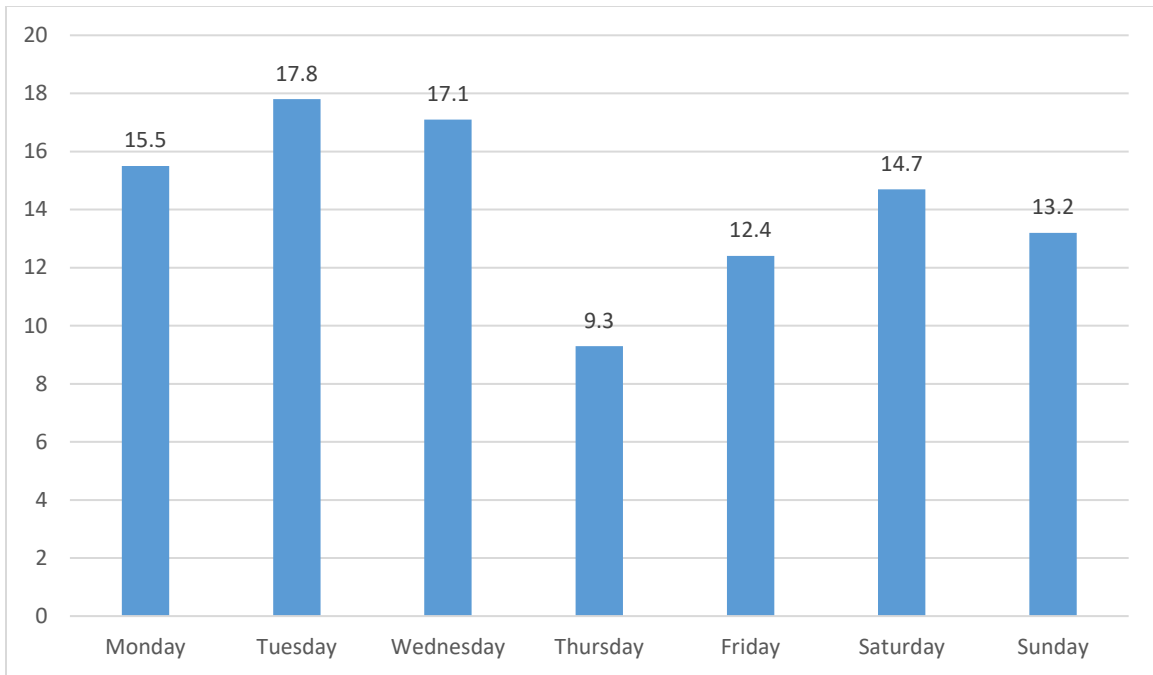


Figure 6. Percentage of Encounters by Month of Year

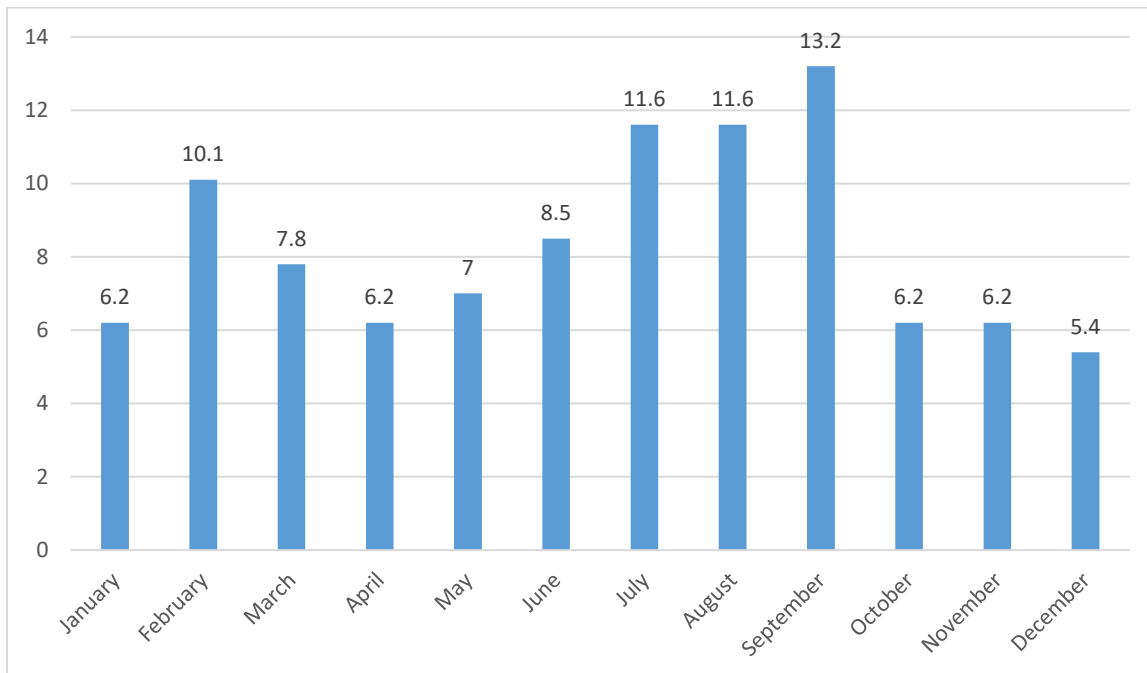
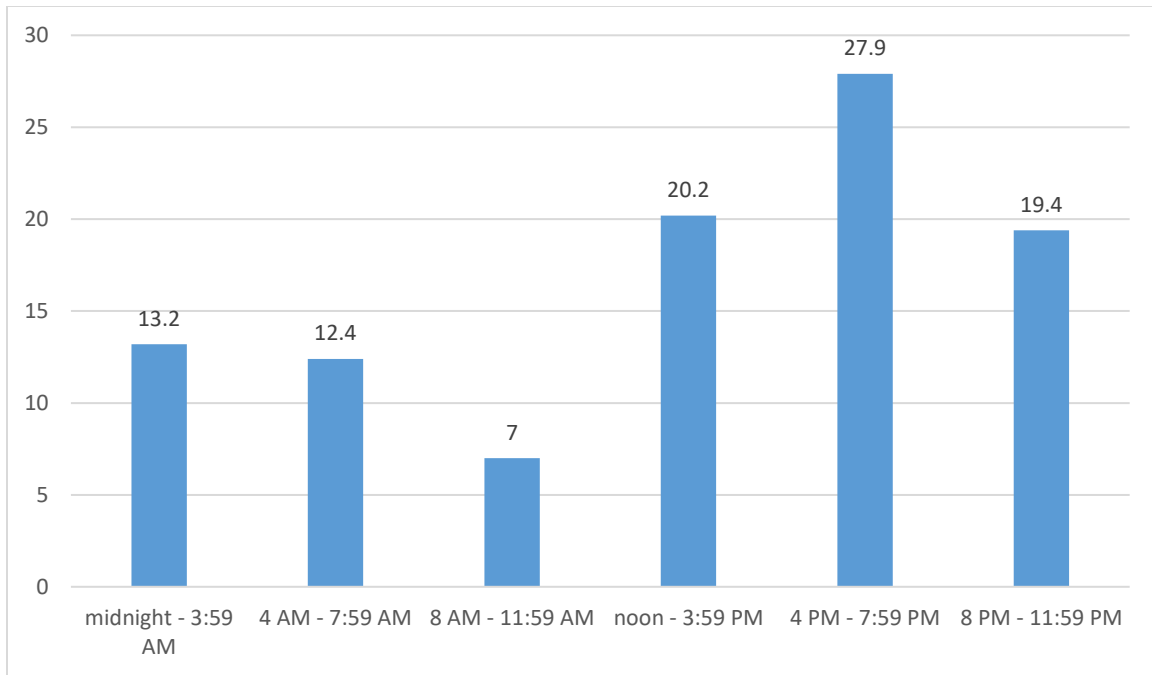


Figure 7. Percentage of Encounters by Time of Day



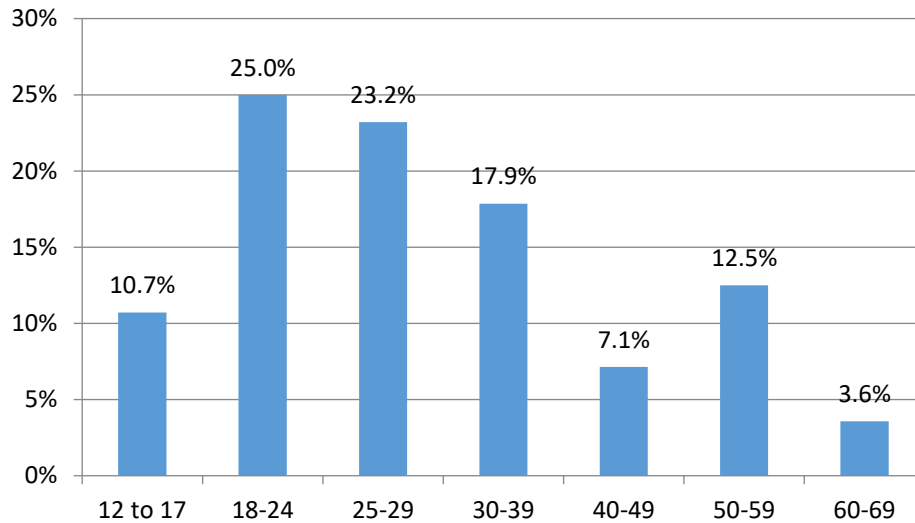
Because the NTC is considering expanding to serve other hospitals in Massachusetts, we examined whether the day of the week, month of the year, and time of day for encounters in Massachusetts differed as compared to other sites. There were no significant differences for when encounters occurred in Massachusetts compared to the other sites. A two-way chi square test indicated there were no significant differences by day of week for the Massachusetts sites compared to other sites,  $\chi^2(6, 129) = 10.266, p = .114$ ; by month of the year,  $\chi^2(11, 129) = 6.420, p = .844$ ; and by time of day,  $\chi^2(5, 129) = 1.427, p = .105$ .

#### Age and Gender of Sexual Assault Patients

The NTC did not track any patient-specific information. However, aggregate level data were collected for four of the sites on a sample of cases. A large percentage of patients were between 18 and 29 (see Figure 9). The age distribution was very similar to distributions in other samples of patients seen for forensic exams (see, e.g., Cross et al, 2014).

Gender was provided for 39 patients and the distribution was also very similar to other samples of patients seen for forensic exams, with 92% female patients, 5% male, and 3% transgender.

Figure 8. Distribution of Age of Sexual Assault Patients (n=56)



### Length of Encounter

The length of the encounter is a critical aspect of the exam. Sexual assault forensic examinations are much longer than other types of medical consultations in which telemedicine is used. The length of the encounter is defined here as the time between the beginning and end of encounter, exclusive of the pre and post encounter. The length of the encounter refers to the time in which the clinician, patient, and teleSANE are together in the examination room (see Table 6).

Table 6. Length of encounters by site

Hospital	Number of Clinical Encounters	Average(SD)	Length of most encounters±	Minimum length	Maximum length
Overall	128*	2:29 (1:10)	2:17-2:41	0:37	6:18
Robert Bush Naval Hospital	18	1:50 (0:42)	1:29-2:11	1:00	3:45
Sutter Lakeside Hospital	29	1:56 (0:55)	1:35-2:17	0:37	4:15
Naval Hospital Camp Pendleton	29	2:44 (1:19)	2:14-3:14	1:00	6:18
MetroWest Medical Center	32	2:54 (1:12)	2:28-3:20	0:40	5:14
Hopi Health Care Center	2	2:35 (1:46)	--	1:20	3:50
Saint Anne's Hospital	18	2:54 (1:03)	2:22-3:25	1:50	5:38

\* missing time for 1 encounter. ± = 95% Confidence Interval.

A one-way analysis of variance (ANOVA) was conducted to compare length of encounter by site. Due to the fact that Hopi Health Care Center only had two encounters, this site was not included. There was a significant effect in length of encounter by site,  $F(4, 121) = 5.624, p < .0001$ . Tukey post hoc tests revealed that the length was statistically significantly longer at the two non-SANE sites, MetroWest

Medical Center and Saint Anne’s Hospital, compared to Robert Bush Naval Hospital and Sutter Lakeside, and that examinations were significantly longer in Naval Hospital Camp Pendleton than in Sutter Lakeside Hospital.

Because of inconsistency with how nurses were recording the start and end times for both the pre and post encounters, it was not possible to calculate the length of encounters including the pre and post aspects of the encounter. However, in June 2017, there was a change in recording time for the post encounter. Table 7 shows the length of the post encounters in which teleSANEs provide additional support regarding the documentation.

Again, a one-way analysis of variance (ANOVA) compared length of post encounter by site. Due to the fact that Hopi Health Care Center only had one encounter with this information, this site was not included. Using the subset of cases with data available, there was no significant effect in length of post encounter by site,  $F(4, 55) = 0.899, p = .471$ .

Table 7. Length of post encounter (June 2017- March 2018), by site

<u>Hospital</u>	<u>Number of Post-encounter reviews</u>	<u>Average(SD)</u>	<u>Length of most encounters±</u>	<u>Minimum length</u>	<u>Maximum length</u>
Overall	61	0:36 (0:30)	0:29-0:44	0:02	2:40
Robert Bush Naval Hospital	4	0:22 (0:11)	0:04-0:40	0:15	0:39
Sutter Lakeside Hospital	10	0:30 (0:34)	0:05-0:55	0:03	2:05
Naval Hospital Camp Pendleton	15	0:33 (0:28)	0:17-0:48	0:10	2:04
MetroWest Medical Center	20	0:46 (0:36)	0:28-1:03	0:05	2:40
Hopi Health Care Center	1	--	--	1:13	1:13
Saint Anne’s Hospital	11	0:33 (0:16)	0:22-0:44	0:02	0:55

### Declining Telenursing

One important question concerns how acceptable telenursing is to patients. We developed a method of calculating the rate of declining telenursing services. We first calculated the total number of encounters that could have benefited from NTC engagement (i.e., removing those in which the patient did not meet eligibility criteria, declined evidence collection, or was no longer at the facility). We then divided the number of cases in which patients declined telenursing services by this adjusted total. Using this method, we found a total of 155 incidents in which NTC services could be utilized and 22 patients who sought evidence collection but declined engagement with the NTC (14%).

It is notable that 18 out of the 22 consultations in which the patient sought evidence collection but declined NTC services occurred at the military sites (and 13 of these occurred at one of the military sites). This suggests that there could be some differences in the messaging about telenursing at the military sites or there could be differences in how patients in the military perceive civilian assistance.

If we remove these 18 incidents at military installations, out of a total of 137 incidents in which NTC services could be utilized, **only 4 patients (3%) sought evidence collection but declined engagement with NTC.**

Table 8 shows the reasons why telenursing encounters did not occur. The most frequent reasons were patients not meeting eligibility criteria and patients declining telenursing. The nine cases without an encounter that were coded as “other reason” generally had to do with the patient being transferred to another facility, patient leaving the facility or never arriving at the facility. We saw no differences across sites and reasons why encounters did not occur.

**Table 8. Reason why Encounters Did Not Occur (N=84)**

<i>Reason</i>	<i>% (n)</i>
<i>Patient does not meet eligibility criteria</i>	29% (24)
<i>Patient seeks evidence collection, declines engagement with NTC</i>	26% (22)
<i>Patient declines all evidence collection, seeks medical care</i>	15% (13)
<i>Patient declines all evidence collection, declines medical care</i>	13% (12)
<i>Other reason encounter did not occur</i>	11% (9)
<i>Nurse did encounter without NTC</i>	5% (4)

### Consultations

In addition to providing services in a telenursing encounter, NTC is also providing assistance to sites in the form of consultations when a patient presents at the hospital and a telenursing encounter does not occur. As of March 31<sup>st</sup>, the number of consultations was 84. Table 9 shows the number of consultations by site.

Beginning in June 2017, the NTC has tracked the type of assistance provided in consultations (see Table 10). The most common topics of consultations were: victims declining services, reaching out to victim advocates, medical concerns, and questions about patient consent. The category “patient’s ability to consent” pertains to patients meeting age criteria for consent, being medically cleared, or being under the influence of drugs or alcohol in the emergency department.

**Table 9. Number of Consultations by Site**

<i>Site</i>	<i># Consultations</i>
<i>Robert Bush Naval Hospital</i>	10
<i>Sutter Lakeside Hospital</i>	16
<i>Naval Hospital Camp Pendleton</i>	21
<i>MetroWest Medical Center</i>	9
<i>Hopi Health Care Center</i>	1
<i>Saint Anne's Hospital</i>	27
<i>Total</i>	84

**Table 10. Consultation Assistance (June 2017-March 2018, N=38)**

	<i>Discussed</i>	<i>% (n)</i>
	<i>Victim declining services</i>	57% (22)
	<i>Reaching out to rape crisis</i>	37% (14)
	<i>Medical advice</i>	34% (13)
	<i>Questions regarding patient consent</i>	34% (13)
	<i>Toxicology kits/testing</i>	29% (11)
	<i>Victim personal safety</i>	23% (9)
	<i>Advice about patient qualifications for evidence collection (i.e. age, hours since assault)</i>	18% (7)
	<i>Advice when patient does not qualify for evidence collection</i>	15% (6)
	<i>Patient's medical clearance status</i>	13% (5)
	<i>Working with law enforcement</i>	13% (5)
	<i>Patient's ability to consent</i>	11% (4)
	<i>Advice when patient does not meet age criteria</i>	2% (1)

## Summary

The number and types of encounters is important to understand because it has direct implications for training, staffing and sustainability of telenursing services to support sexual assault patients.

- Sites varied in the average number of encounters per month; the lowest was an average of 0.09 encounters per month and the highest was an average of 1.30 encounters per month.
- When all six sites were active during the pilot, there was an average of 4.9 encounters with NTC per month. The average number of encounters per month for each site ranged from 0 to 4. Across the project, two sites went more than 15 months (16 and 19 months) without any encounters. The other four sites had 7 to 8 months without any encounters.
- There was no difference in the number of encounters by day of the week or month of the year. There was a significant difference by time of day, with more encounters occurring between 4 PM and 7:59 PM.



- Approximately one in ten patients (14%) sought evidence collection but declined NTC services. This was primarily due to a high rate of declining services at the military sites. When these were removed from the analyses, only 4 patients (3%) declined engagement with NTC.
- The age and gender distribution of patients was very similar to other sexual assault samples, with the majority of patients female and between the ages of 18 and 29.
- The average length of encounters was 2 hours and 29 minutes, not including pre and post encounter time when the patient is not present. The range was 37 minutes to 6 hours and 18 minutes, with most encounters taking between 2 hours and 17 minutes to 2 hours and 41 minutes. The two non-SANE sites had significantly longer encounters (2 hours and 54 minutes) compared to the other sites (2 hours and 13 minutes).
- In addition to providing live telenursing encounters during examinations, the NTC also provides consultations to site clinicians. The most common topics of consultations were: victims declining services, reaching out to victim advocates, medical concerns, and questions about patient consent.

## Chapter 5: The Telenursing Experience

A previous report presented interim findings on the telenursing experience (see Walsh, Cross, & Cross, 2017). This chapter updates our analysis of the telenursing experience by adding additional cases. This section will describe the methods, analysis and results from 178 post-encounter interviews with the teleSANEs, site clinicians, and corpsmen (personnel who assist site clinicians with examinations at the naval hospitals). The evidence from these interviews supports the value of telenursing consultation in forensic medical examination in sexual assault cases. Large majorities of site clinicians and corpsmen gave positive scores on the impact of telenursing, often the maximum possible, and nearly all praised the program. The range of types of assistance provided was wide and encompassed a number of important objectives of the examination, including effectively collecting biological evidence and documenting injuries, supporting and educating patients, and providing quality medical care, and providing emotional and informational support to much less experienced clinicians. The teleSANEs made numerous suggestions about evidence collection, examination procedures, and patient care that in tangible ways brought the examinations in compliance with best practice. These results support the conclusion that telenursing consultation in forensic sexual assault examinations is a promising intervention.

The interviews explored the process of obtaining patient consent, the nature of telenursing relationships, ease of technology, the assistance provided, the helpfulness of telenursing for the site clinicians, teleSANEs' experience initiating the telemedicine encounter, challenges to providing assistance, and recommendations for future training of teleSANEs and site clinicians.

### Evaluation Methods

In order to capture the process of providing and receiving telenursing consultation and assess the assistance the consultations provide, program evaluation activities included interviewing both site clinicians receiving the telenursing consultation, corpsmen who assisted with the Navy examinations (if applicable), and Sexual Assault Nurse Examiners providing the consultations (the teleSANEs). Post encounter interviews continued until March 31, 2018.

Questions were designed to explore how the consultation worked; what the teleSANEs' relationships with the site clinician and patient were like; what types of assistance the teleSANE provided; to what degree the site clinicians experienced the teleSANEs as helpful (on several dimensions), and what the training implications were for both site clinicians and teleSANEs. In addition, questions were asked about initiating the consultation, obtaining patient consent, debriefing and interacting post-encounter (i.e., after the examination was completed and the patient had left), and using the telemedicine technology. We also asked background questions on interviewees' overall experience as forensic examiners and previous experience with telemedicine (outside of the NTC consultation).

NTC staff alerted the program evaluation team when an encounter had occurred. Program evaluators then sent email invitations to teleSANEs, site clinicians, and, if applicable, corpsmen who assisted with the examination. Included with the email invitations were a program evaluation description and an informed consent form. To limit the burden on respondents, interviewees were interviewed no more than four times within a 12-month period, with a few exceptions for interviewees in key roles who were willing to do more. All interviews were conducted by telephone until September 2017, when the option of completing the survey online was extended to interviewees. Because of restrictions in using online

survey technology with the military sites, all post-encounter data collection at these two sites were conducted over the telephone.

Interviews were conducted between June 23, 2015 and March 13, 2018. A total of 178 interviews (either telephone or online) were conducted on 112 telenursing encounters, including 66 site clinicians, 18 corpsmen, and 94 teleSANEs. The second author of this report did a large majority of the interviews, and the first and third authors did the remainder. Four clinicians and 18 teleSANEs completed the survey online. Six times, two teleSANEs were interviewed about the same examination, because they provided consultation in the same encounter (one teleSANE’s shift had ended during these encounters and another teleSANE’s shift had begun). As of March 31, 2018, 129 telenursing encounters had occurred across the six sites, and interviews had been conducted with at least one person for 112 encounters. Thus, we have information on 87% of the encounters that had occurred by that time point. In addition, 43% of these (48 out of 112) include an interview with both the teleSANE and site clinician or corpsman.

The overall response rate was 63% (178 individuals completed interviews out of 185 invited to participate). The response rate was 79% for teleSANEs, 55% for clinicians, and 39% for corpsmen. Table 11 shows the distribution of interviews by site.

A number of site clinicians, corpsmen, and teleSANEs were interviewed more than once because they had been involved in multiple encounters. Across the two years and 9 months conducting post encounter data; 18 teleSANEs were interviewed between 1 and 9 times, the average was 5 times; 34 site clinicians were interviewed between 1 and 8 times, the average was 2 times; and 14 corpsmen were interviewed between 1 and 2 times, the average was 1 time.

**Table 11. Distribution of interviews by site (total completed interviews n=178)**

<i>Hospital</i>	<i>Total encounters as of 3/31/18<sup>a</sup> (N=129)</i>	<i>At least one interview per encounter<sup>b</sup> (N=112)</i>	<i>TeleSANE interview<sup>c</sup> (N=94)</i>	<i>Site clinician interviews (N=66)</i>	<i>Corpsmen interviews (N=18)</i>
<i>Robert E. Bush Naval Hospital</i>	18	15	16	10	6
<i>Sutter Lakeside Hospital</i>	32	26	17	16	
<i>Naval Hospital Camp Pendleton</i>	29	24	19	13	12
<i>MetroWest Medical Center</i>	30	28	25	18	
<i>Hopi Health Care Center</i>	2	2	2	2	
<i>Saint Anne’s Hospital</i>	18	17	15	7	

<sup>a</sup> Date when post encounter interviews ended. <sup>b</sup> Clinician/corpsman or teleSANE <sup>c</sup> There were six encounters in which two teleSANEs were interviewed about the same encounter, because they provided consultation in the same encounter in successive shifts.

On average, the 94 interviews with teleSANEs occurred 15 days after the consultation (SD=11, range = 1 to 55 days later). More than half of the interviews (61%) occurred within 2 weeks, 32% within 3-4 weeks, 6% within 5-6 weeks, and 2% occurred 7-8 weeks later.

On average, the 84 interviews with site clinicians and corpsmen occurred 27 days after the consultation (SD = 25, range = same day to 126 days later). Some interviews occurred closer to the consultation than others; 37% occurred within 2 weeks, 30% within 3-4 weeks, 15% within 5-6 weeks, 11% within 7-8 weeks, and 7% occurred 2 to 4 months later.

We entered the interviewees' verbal responses into the Qualtrics survey software and then used Dedoose qualitative software to code and organize themes in the interviews. We typed the respondents' answers into the software to represent what respondents said, but do not have interview transcripts, so for the most part we do not directly quote respondents. After reading the interviews, two researchers independently developed coding for each of the domains. The researchers then discussed the codes and agreed upon the final categories. For an initial set of cases, they each independently coded all of the interviews, compared the codes, and discussed and resolved any disagreements. Once program evaluators judged that the method was successful, the second author coded a later set of cases by herself.

## Post-encounter Interview results

### Patient consent

Part of the interview focused on the process of securing patient consent for telenursing. Securing patient consent for telenursing was straightforward for the vast majority of encounters. This is extremely important to recognize because, without patient consent, telenursing during a forensic medical examination would not be an option. It is encouraging that patients felt comfortable with the technology and expertise available. We had information on consent from site clinicians and corpsmen for 75 encounters.

- For the majority of patients who consented to telenursing (92%) the interviewees described the consent process as straightforward and patients had no issues consenting to a telenursing consultation (n=69). Below are some quotes from site clinicians:
  - *Way easier than I thought. Very easygoing individual; open to everything.*
  - *Very easy. Teenagers have everything on line. This is nothing new to them.*
  - *It's not difficult to get consent. People are comfortable with technology.*
- 8% of patients consented to live consultation from the teleSANE, but not to a video link to the entire examination (n=6). Clinicians attributed this to the discomfort these patients felt with someone seeing them on the video. The lack of video placed some limits on the telenursing consultations, but the consultations were still described as helpful. Below are quotes from site clinicians:
  - *She didn't want the visual so we just turned the camera off. But it was still helpful. This patient was nervous and didn't want anyone to see her. She seemed to understand why the nurse was there.*
  - *The patient didn't want [the teleSANE] to see him during the exam. It was a little hard to follow because he didn't want her to see him.*
- 4% had some kind of complication with the process (n=3). Once the site clinician forgot to ask for consent for the telenursing and the consultation was delayed 30 minutes; once the patient was developmentally delayed, and it was not clear if the patient fully understood the telenursing consulting she consented to; and once consent was delayed for unclear reasons.

### Working together as a team

Nearly all interviewees reported that they felt comfortable working together and had an open and professional relationship during the telenursing encounter. Without the ability to have such positive relationships it would be difficult to have an effective telenursing experience.

- Site clinicians thought the relationship was *“very professional”*, *“it was easy to think of the teleSANE as a person in the room and not just a head on the monitor”*, *“very congenial”*,

“very easy going and positive”. Similarly, corpsmen noted, “it was very personable. There was not an awkward picture on the screen”, “the nurse was so approachable - she was very supportive”.

- TeleSANEs also noted the comfortable relationship with site clinicians, mentioning the good rapport and easy back and forth.
  - *I really felt like a part of the team. I think because we see each other and there isn't the awkwardness of just audio. It is easy to engage and a very easy flow back and forth.*
  - *Very easy; she was lovely and personable. I really felt like I was part of the team which I was really thrilled about because this was my first encounter and I wasn't sure what it was going to feel like.*
  - *[The clinician] really seemed to like the fact that I was there whenever she had a question; to let her know that what she was doing was correct. I thought we had a good rapport and she was glad that I was there. Easy to work with.*

### Effectiveness of technology

Interviewees reported few disruptions to telenursing services due to problems with technology. When problems were mentioned, they tended to be minor, such as not hearing the patient. Again, this is encouraging because, without access to effectiveness technology, a telenursing consultation would not be possible. We had information on technology for 110 encounters.

- Most of the encounters (63%) did not experience any problems related to the technology (n=69).
  - *Just as we had practiced, trained and discussed (Site Clinician).*
  - *The technology worked out perfectly. There were no glitches (TeleSANE).*
- 29% of encounters had minor problems (n=32). Despite these minor problems, interviewees generally said that they didn't have a problem with the technology.
  - *The hardest part was that I couldn't really hear the patient (TeleSANE).*
  - *Overall [the technology was] fine, the only thing that needed to be fine-tuned was zooming in during the exams (Site Clinician).*
  - *One time during the pelvic exam, [the technology] got pixelated and I was just listening-- it happened at a good time. The screen started to morph (TeleSANE).*
- A small minority (8%) of encounters had technological disruptions that diminished the quality of the telenursing experience (n=9). Nearly all of these occurred within the first year of the project. The lack of recent disruptive problems suggests that the NTC has responded successfully to these issues.
  - *The whole thing kept going down. At first we had audio but no visual but then it kept timing out and the call was dropped. So it just looked silly and then [the clinician] didn't know the nurse was gone. Because of the frustration with the equipment, it was more frustrating than helpful (SC).*
  - *It didn't work at all. Immediately there was freezing of the system and severe a/v difficulty. We did basic trouble shooting with them but it did not improve the quality. The patient observed all of this. The IT folks never responded. We then made the decision to just use the phone, which we also had difficulties with - could not get their phone to work. I had to ask if we could use the nurse's personal cell phone to call my office phone. (TeleSANE).*

### Assistance provided during encounter

There was a wide range of different types of assistance provided in the telenursing encounters. The assistance provided by the teleSANEs addressed a number of important objectives of the examination, including effectively collecting biological evidence and documenting injuries, supporting and educating patients, providing quality medical care, and providing emotional and informational support. The teleSANEs made numerous suggestions about evidence collection, examination procedures, and patient care that in tangible ways brought the examinations in compliance with best practice. Because of the limitations of memory in these interviews conducted sometime after the examination, our method probably underestimates the number of ways in which a teleSANE in a given encounter was helpful.

The specific help provided depended on the experience of the clinician, which varied enormously. Approximately half of the interviews (55%, 37 out of 66) were conducted with clinicians who had limited experience conducting exams. For some this was their first time, others had completed a few. Approximately one-quarter of the interviews (27%, 18 out of 66) were conducted with clinicians who had conducted five to six exams. Typically their experience was sporadic and occurred over a number of years. Less than 20% of the interviews (18%, 12 out of 66) were conducted with clinicians who had at least five years' experience and had done significantly more examinations.

The types of assistance also depended on the patient—some cases were more complex and required more telenursing assistance. We coded all aspects of assistance we learned about in each case. One consultation typically resulted in multiple categories of assistance provided. Figure 10 shows the frequency of different types of telenursing assistance provided, as coded from site clinician, corpsmen and teleSANE interviews.

*Monitoring, review, and leadership.* This is a broad category referring to the teleSANEs' monitoring the examination step-by-step, reviewing the examination with the site clinician after the examination, or actually leading the clinician step-by-step through the examination. Most site clinicians and corpsmen mentioned this type of assistance and often cited it as the most valuable aspect of the examination. Just over half of teleSANEs reported assistance in this category. Interestingly, this was often described using metaphors connoting almost a physical presence: "another set of eyes", "an additional brain". Clinicians appreciated having someone there to make sure that they did not miss any steps and that everything was done appropriately. In many cases, the site clinician had enough knowledge and experience to conduct the examination very independently, but appreciated the more experienced teleSANE's monitoring as a safeguard against making a mistake.

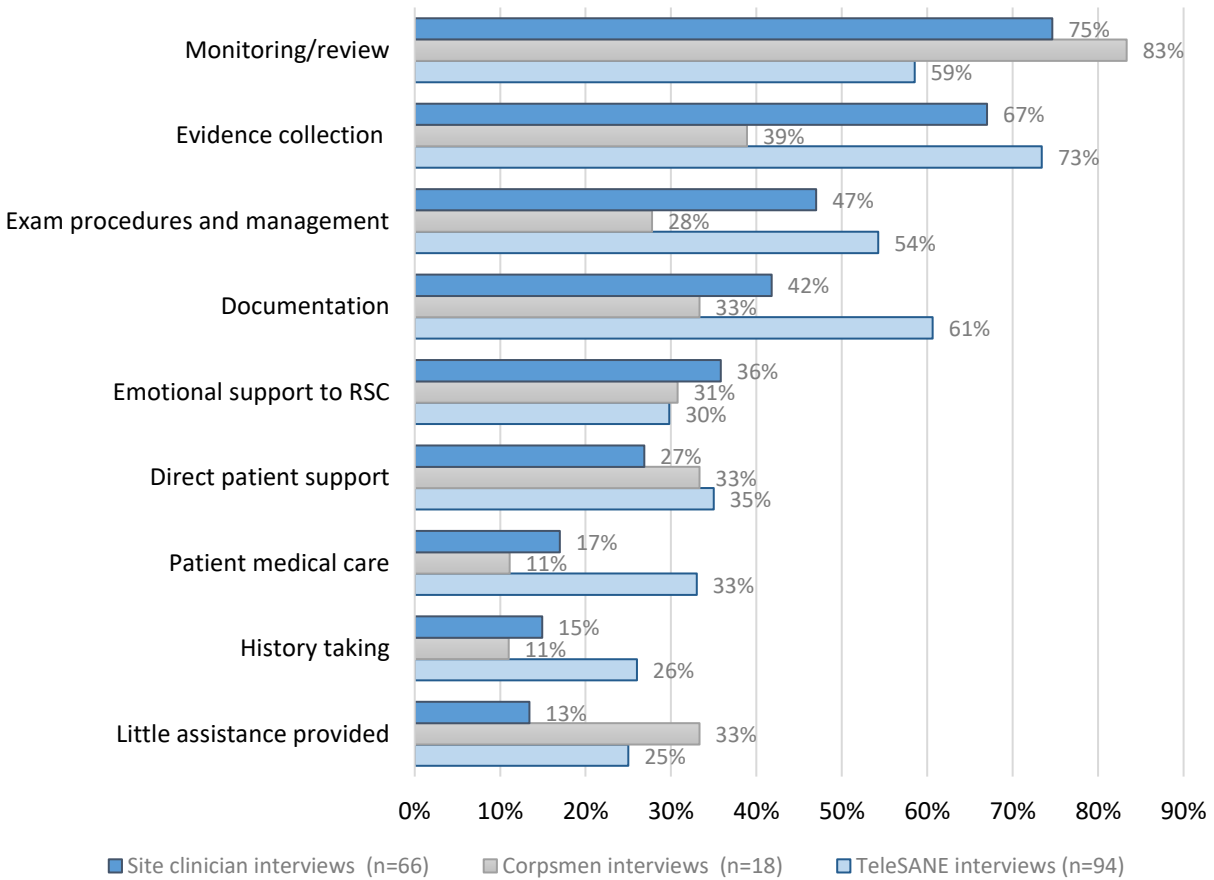
*Site clinician: She helps me be more of an expert. Some of it was just knowing that they're there. Each case is different and you want to make sure you do it right.*

*Site clinician: It really helped me be more comfortable in case I got stuck on something. It was fortunate the patient had no problems. It was helpful using it as a support because this was my first (sexual assault case) in a while.*

*Corpsman: Overall, it was helpful to have a discussion with an experienced provider. We have a good deal of experience, but the validation is so important - it helped to hear about suggestions for the future.*

In some cases, the site clinician was so inexperienced that she needed the teleSANE to be the executive in the room and manage the case step-by-step. The teleSANE took the initiative and the site clinician followed the teleSANE's lead.

Figure 9. Types of Assistance Reported in TeleSANE, Site Clinician, and Corpsmen Interviews



*TeleSANE: It was her first case. So I did a lot of reminding her and telling her what to do next. It was a MA kit and I could provide step by step instruction. For her honestly, she wanted me there for everything. She wanted me there for all the meds and was very nervous. It was great that we were there for her.*

*Site clinician: I hadn't done a case so I definitely wanted 100% just assistance. Just from the beginning to end I wanted [the teleSANE] available if I needed any help with any portion of the exam. Reassuring to have this back up resource.*

**Evidence collection.** Most site clinicians and teleSANEs and almost half of corpsmen said that the teleSANE helped with evidence collection. Many aspects of evidence collection were covered, including sample collection (use of swabs), labeling and packaging evidence, photographing injuries, and describing wounds. Some clinicians mentioned that doing forensic evidence collection correctly was their biggest fear and that teleSANEs helped enormously with this.

*Site clinician: (The teleSANE) helps a lot with knowing the right place to get swabs. Patient had showered and 24 hours had passed so (the teleSANE) really helped me decide where and what to look for. This was my 1st time using the blue light to look for evidence and I would not have thought about using it if (the teleSANE) had not been there.*

*Site clinician: What was especially helpful was (helping) with the oral swabs and telling me to get in the creases of the mouth, and changing the order of steps to increase the flow of the exam.*

*Site clinician: Well, you never know what you are going to get. This was the most complicated case I have ever done. She was super helpful. There were multiple bites on the patient's body and she suggested some other areas to get samples that I wouldn't have thought of. The patient was still intoxicated and I had my hands full. We tag teamed.*

*TeleSANE: This clinician had not done a case in a while, she told me to jump in whenever I needed to. I had a few suggestions like using sterile water versus regular water and not collecting the patient's underwear and some questions on the DNA slides.*

**Documentation.** Evidence kits completed following forensic sexual assault examinations include standardized forms on which the clinician documents examination findings. Completing these documents is as much a specialized skill as any other part of the examination, since these documents both inform subsequent medical care and provide information and evidence that can be used in the criminal justice system. Crime laboratories need accurate documentation to guide their analysis of samples collected during the examination. Prosecutors need accurate, forensically relevant description of the assault to inform decisions about criminal charges. Poor documentation of an examination can lead to findings being inadmissible in court or vulnerable to legal challenge. If the clinician later testifies in court, she will need clear and accurate documentation to assist her. The interviews revealed a number of instances in which teleSANEs helped site clinicians with documentation.

*Site clinician: It's always hard to write the whole history of an incident like this. She helped to know what was important to write in the documentation, and what to leave out. The teleSANE helped, saying "Remember she said this?" She helped make choices about what to describe.*

*TeleSANE: We reviewed paperwork page by page via video conferencing.*

*TeleSANE: RSC required step by step guidance filling out forms.*

**Examination procedures and management.** Approximately half of teleSANEs and clinicians, and almost a third of coroners reported that the teleSANEs provided specific advice regarding examination procedures and management. Clinicians received advice about a range of actions and decisions, such as positioning the patient, deciding which dye to use, and deciding which procedures could be omitted to reduce the length of the examination for the patient.

*Site clinician: (The teleSANE) was so amazing. She showed me how to be more efficient and ways to do things, even though I know things.*

*TeleSANE: (The clinician) would not have used the camera and card because she had never done this and I helped her document that and the wounds, color and shape and size, I assisted with the whole pelvic exam and recommended collection of all external genital swabs. Last time the physician did this. This time the nurse did but had never done this before. This is our protocol to have nurses do the external genital swabs, then the physician will come in and I talked to patient about what he would be doing.*

*TeleSANE: (The clinician really wanted me to do everything. She was going to do the lab work at the end and I said that the toxicology is strongly suggested and time sensitive so I would prioritize this first rather than wait for the end, so suggested to do the blood work first. She was*



*hesitant to get patient undressed and was not looking for injury so I suggested that she look for injury. Patients doesn't remember everything that might have happened and we need to be thorough and look from head to toe for injury and for anything that is related to the assault*

**Direct patient support and education.** Experiencing a sexual assault is traumatizing. The forensic medical examination has the potential to exacerbate stress on the patient, because it can remind them of the assault and lead to discomfort, embarrassment or shame. Patients need emotional support, which is a major role for the advocate who was often present in these cases, but also important for the medical personnel to provide as well. Patients also need information to reassure them and to guide their decision-making about medical care and participation in the criminal justice response.

TeleSANEs helped patients directly by providing them information, guidance or emotional support. This included talking to the patient about what would come next, explaining why procedures were performed, providing information about counseling services and providing the patient with social and emotional support during the examination.

*Site clinician: (The teleSANE) was also good communicating with the patient. Lots of times the doctors don't know what to do and (the teleSANE) would say to the patient this is what they are going to do, so she is instructing the doctor step by step by telling the patient. While I am reading something or putting stickers on or prepping, the teleSANE is talking to the patient so there is no awkwardness in room.*

*Site clinician: The patient was also supported. This patient had previous sexual assault exams and she said this time it was much better.*

*TeleSANE: Because the rape crisis person came late, I talked with the patient for one hour about depression and concerned about her safety. It didn't seem like she needed psychiatry but she kept talking to me.*

*TeleSANE: Rape crisis did not arrive until after kit completion so I stepped in to provide emotional support during the exam and reviewed components of the patient packet such as information on victim compensation and follow up with rape crisis.*

**Patient medical care.** TeleSANEs sometimes advised the site clinician on patient medical care. Medical topics on which teleSANEs have advised site clinicians include sexually transmitted diseases, patient bleeding, follow-up diagnostic procedures, HIV care, and medication decisions.

*Site clinician: The doctor didn't want to give the patient the morning after pill and the teleSANE recommended this. We went back and talked to another doctor who said yes it was best to give this to the patient. (The teleSANE) supported the patient with pregnancy prevention.*

*Site clinician: (The teleSANE) provide advice for anti-nausea medicine, specific antibiotics and dispensed medication for home.*

*TeleSANE: (This clinician) required a lot of guidance regarding HIV medications. The physician and primary nurse were unaware of policy regarding take home medication and the need for infectious disease follow up.*

**History-taking.** Interviewing the patient to obtain a history is critical to every aspect of the examination. It informs the clinician about what medical care is needed, guides decision-making about evidence collection (e.g., where on the patient's body to collect samples, based on the patient's description of the

assault), and is essential to the documentation of the assault. TeleSANE helped take the patient's history, asking the patient additional interview questions during history-taking. TeleSANEs also advised the site clinician what to write down and what to leave out. In one case, the teleSANE helped the clinician with the difficult task of interviewing a patient who had no recollection of the assault.

*Site clinician: The help (the teleSANE) gave me with how to start with the narrative was especially helpful. I wasn't sure how to begin.*

*TeleSANE: The clinician required a lot of assistance in reassuring the patient and guiding interview questions. One example was that the patient said I laid on bed next to him (the offender) for hours. The clinician left it at that. After I rephrased statements back to her and asked her how she was feeling (the patient) said, he tried to suffocate me, threatened me, he was asleep but I was terrified to move, I knew he would kill me. (Because of these statements) we examined the neck and upper back and found tenderness from him forcing her face down into the bed.*

*TeleSANE: Because I helped the clinician redirect her questions and probed (the patient's) history, (the clinician) was able to document more and find more injuries, and include the patient's state of mind in the narrative. These areas of the record would have been empty (had I not redirected the questions).*

**Emotional support.** TeleSANEs' involvement helped support site clinicians emotionally. TeleSANE support helped increase clinicians' confidence, provide reassurance, and calm clinicians' anxiety. The emotional support seemed mostly to be a by-product of the assistance the teleSANE provided throughout the examination rather than a direct attempt to provide emotional support, though a teleSANE could provide a "pep talk" when needed.

*Site clinician: It has been a few months since I have done an exam so I was a little nervous. It is helpful to have the sense that someone is right there. This was my first time with a toxicology kit. So it was great to have her there because there is always something different with each case.*

*Site clinician: The teleSANEs are very supportive of the patient as well as myself. This really is the best part. I don't want to blow it for the patients and have anything be thrown out of court. I think a strength of this (program) is just how supportive the teleSANEs are and they do not make us feel bad.*

*Site clinician: I would say her friendliness (was very helpful). At one point it was just me and the patient and the teleSANE being there made me feel more comfortable and made the patient feel more comfortable. This was my first time being alone with a (sexual assault) patient and I think (the teleSANE) had 10 years' experience.*

*TeleSANE: The clinician appeared very nervous (at the beginning) and became more relaxed as exam unfolded.*

**Little assistance needed.** In some cases, site clinicians reported that they did not feel they needed assistance. Likewise teleSANEs sometimes reported that they provided little assistance because the clinician did not need much help. Sometimes, the case was fairly straightforward. However, it is important to note that even in these cases, most of these clinicians mentioned that they appreciated that the support was there if they needed it and were enthusiastic about the NTC model.

*Site clinician: There was not really much (assistance). It was nice to have her but I don't know if she added anything.*

*TeleSANE: This was the clinicians 7th case and did not need as much support.*

*TeleSANE: I think that because the clinician was so experienced I wasn't able to engage as much as I would have with someone less experienced.*

### Impact of telenursing services

Site clinicians and corpsmen were asked to rate the impact of telenursing services on several dimensions, using a scale from -3 (strong negative impact) to +3 (strong positive impact), with 0 meaning no impact. Table 12 shows the average ratings for site clinicians and corpsmen along with a margin of error for each (consistent with a 95% confidence interval). Site clinicians and corpsmen were also asked to provide an overall rating of the quality of the consultation, on a scale from 1 (poor) to 6 (excellent). Figure 11 shows the average rating for site clinicians and corpsmen on the overall quality scale.

**Table 12. Average Ratings of Impact of Telenursing**

<i>Question</i>	<i>Site clinicians (n=66)</i>	<i>Corpsmen (n=18)</i>
	<i>Average (margin of error)</i>	<i>Average (margin of error)</i>
<i>Your ability to provide an effective exam</i>	2.23 (.25)	2.39 (.35)
<i>Your confidence in providing an effective exam</i>	2.42 (.21)	2.61 (.35)
<i>Your ability to provide your patient with the best care</i>	2.53 (.17)	2.44 (.46)
<i>Your sense of feeling supported through the experience</i>	2.75 (.14)	2.78 (.21)
<i>Your patient's level of comfort during the forensic exam</i>	2.05 (.25)	2.11 (.45)

Thus interviewees reported on average a positive impact on the specific dimensions measured and an overall assessment of the quality that approached the maximum positive score. The distribution of scores underlines these conclusions: majorities of the site clinicians and corpsmen gave the teleSANEs the maximum possible score on the impact on their confidence in providing an effective exam, their ability to provide their patient with the best care, and their sense of feeling supported. Likewise a majority of interviewees gave the teleSANEs the highest possible score on quality of the consultation. A number of clinicians mentioned that they gave a lower rating for the patient's level of comfort because, no matter what one does, the examination is not going to be comfortable. Some clinicians noted that the reason they had not given the highest rating on overall quality was because of technical difficulties with the connection.

The vast majority of site clinicians and corpsmen could not think of any advice from the teleSANE that was less than helpful, nor could they think of any assistance that they wished the teleSANE had provided but had not. A handful of clinicians noted that the nurse not being there at the beginning of the encounter because of individual case circumstances made the experience less than they had hoped for

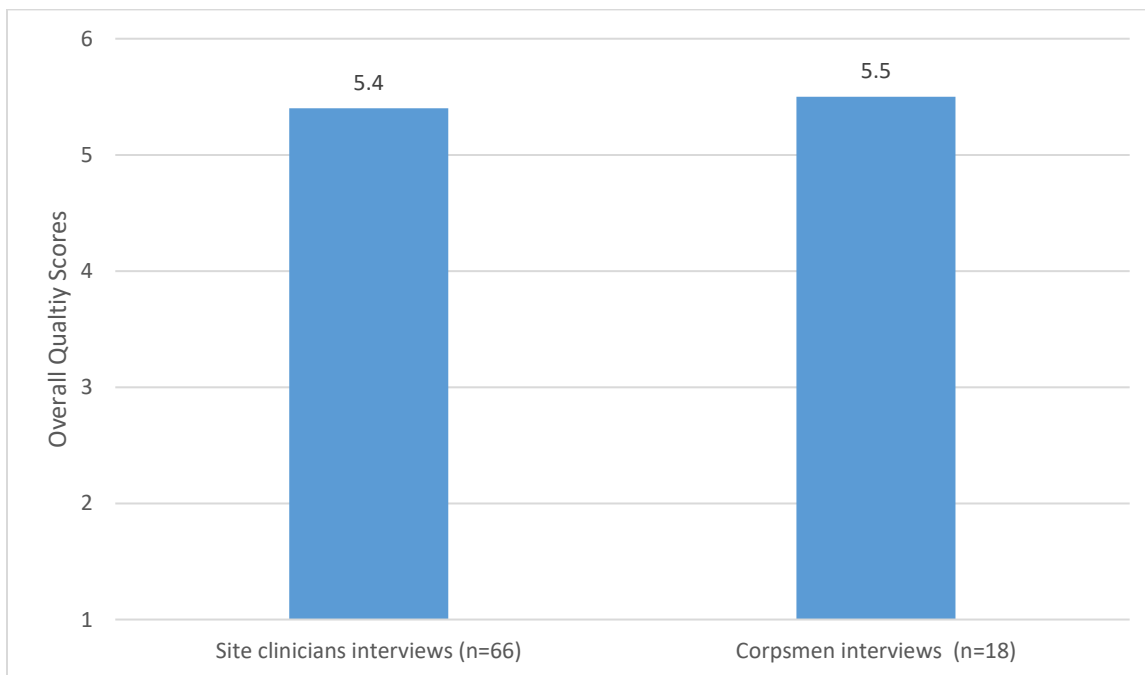
### TeleSANEs' experience providing support

We asked teleSANEs about a) initiating the telemedicine support, b) challenges to providing assistance, c) what they might do differently next time, and d) recommendations for future training of other teleSANEs and site clinicians.

**Initiating the telemedicine support.** Consultations were initiated when the remote site called the NTC's answering service, which then alerted the teleSANE on call. TeleSANEs were typically off site when an encounter emerged and sometimes the site clinician was as well. Before the examination began, the teleSANE on call had to travel to the NTC Hub where the equipment was located and the consultations took place (unless an NTC staff member at the Hub was the teleSANE on duty). The teleSANE also communicated with the site clinician before the examination began; these interactions were known as pre-encounters. TeleSANEs considered pre-encounters essential to learn background information about the case that might affect decision-making during the examination, and to meet the site clinician and agree on strategies for tailoring the encounter to the clinicians' needs and style. One question in our teleSANE interview explored the process of initiating the encounter.

The vast majority of teleSANEs interviewed said that initiating the encounter was straightforward and worked as planned. Initiating the encounter was more complicated in a handful of cases. Delays occurred occasionally, because of problems with the answering service, traffic delaying the teleSANE arriving at the hub and beginning the telenursing encounter, or the patient not yet being available for the examination. .

**Figure 10. Average Ratings of Overall Quality of Telenursing**



**Challenges to providing assistance.** Overall few teleSANEs mentioned challenges to providing assistance. Eleven out of 94 teleSANEs (11.7%) mentioned technological issues as the most challenging aspect of providing telenursing services. This was the only challenge that was mentioned by more than one or two respondents. Many of the technological problems occurred within the first year of the project and have since been resolved. Some teleSANEs mentioned that it was especially challenging when they could not hear the patients. A few teleSANEs said it was challenging connecting with the patient because they are not in the room. Other challenges included the following:

*The clinicians hurry through the exam and I tend to be more methodical, mechanically driven.  
There's a difference between the SANE, the ER nurse, and the ER nurse who has taken a SANE*

*class. When clinicians are talking to the patient and explaining the exam, it's more of a mechanical procedure, they just need to get it done.*

*The challenge for me is that the frequency of providing telenursing consultation is low and this was the first [CA kit] I have done, and the details are unfamiliar to me.*

*The most challenging was the lack of interest by the clinician in having the teleSANE participate in documentation. The teleSANE would have liked to participate with the documentation because it is really beneficial to have someone review your documentation.*

*I think the photography piece was most challenging. It is an area which is fairly complex requiring practice, and even experienced SANE nurses feel unsure of their technique. I felt that I did the best I could to help the nurse through it, without really being able to teach her from scratch. It would have taken up too much time to go through the entire photography protocol step-by-step, and I don't know if the patient would have been able to go through the added length of the time it would have added.*

**What TeleSANEs might do differently next time.** Few teleSANEs said they would have done things differently next time. Thirteen out of 94 teleSANEs (13.8%) said they would have done the pre-encounter differently should a similar scenario present itself. This was the only change mentioned by a large number of respondents. Changes suggested for the pre-encounter included clarifying the plan of who would be doing what and confirming the teleSANEs' arrival time.

*Had I known the RSC was starting the exam, I would have done the pre-encounter on the phone in route to the hospital.*

*I would find out what the set-up is going to be. So who is giving meds and when, what is going on with the pelvic exam, what is happening with the lab? There is a lot of waiting in between all of these steps. A half-hour wait between each of these steps can be very tiring for a patient. The key finding that I have from the two encounters that I have done is that the rhythm of these steps takes a while until it is smooth.*

Other things teleSANEs would do differently include improving the transition when a second teleSANE takes over the consultation because of a change in shifts, feeling entitled to interrupt the clinician earlier when the teleSANE felt she had something to contribute, having a better debriefing process, and having a better system when the technology does not work.

**Recommendations for future training of other teleSANEs and site clinicians.** Most teleSANEs did not have any recommendations for future training. A handful of teleSANEs recommended training about the pre-encounter. Respondents said the pre-encounter was critically important in order to learn the style of communication beforehand, to make sure that each person knows what they are going to do ahead of time, and to have a clear overall plan. This was the only recommendation that was mentioned by more than one or two respondents.

Other recommendations for future training of teleSANEs included having a checklist, better transitioning when a second teleSANE is involved, and tips for talking to a patient remotely.

Other recommendations for future training of site clinicians included training on documentation, cheat sheet for the narrative, training for physicians (in non-SANE hospitals) about the SANE protocol, and training on what the crime lab does with the different samples.

*Site clinician perspective: telenursing experience as a great resource.*

*Site clinician: It was such a complex case and I was a little overwhelmed so having an expert nurse in the room really helped me because it was challenging.*

*Site clinician: I thought it was one of the better sane kits that I have done and I appreciated the support I received. I didn't enjoy doing it but it made it much easier to do when you have the extra support.*

*TeleSANE: I think patients in rural areas seem to be really impressed by it.*

*TeleSANE: I think the patient felt very supported that there were specialists from far away. I think she felt more important and appreciated that her assault was being taken seriously and that there was an extra layer of professionalism for the exam.*

**Non-SANE sites.** In order to examine whether the two non-SANE sites had a different experience compared to the other sites, we conducted independent sample t-tests to examine the ratings by clinicians for the impact of telenursing compared to the other sites. There was a statistically significant difference for one's ability to provide an effective exam at these sites compared to the other sites,  $t(82) = 3.636, p < .0001$ . The average rating at the two non-SANE sites was 2.80 out of 3 (.408) compared to 2.03 (1.017) at the other sites. There was also a statistically significant difference for one's ability to provide the patient with the best care at these sites compared to the other sites,  $t(82) = 2.345, p = .021$ . The average rating at the two non-SANE sites was 2.80 out of 3 (.408) compared to 2.39 (.831) at the other sites. There was no significant difference on one's confidence in providing an effective exam, sense of feeling supported through the experience, patient's level of comfort during the forensic exam, or on the overall quality of the consultation.

Given that two of the SANE sites received services for a longer period of time, (began November 2014 and June 2015) compared to the non-SANE sites (began April and July 2016) it could be that the length of time a site has been open might have some impact on the responses. The non-SANE sites could be in more of a honeymoon period than the other sites. We were unable to test this hypothesis with the data because there were too few responses to analyze whether responses changed over time. It is notable, however, that responses for many of the questions -- one's confidence in providing an effective exam, sense of feeling supported through the experience, patient's level of comfort during the forensic exam, and overall quality of the consultation -- were quite high for all respondents, indicating positive impact over time.

Below are some of the comments we heard from clinicians in non-SANE sites.

*Even though I have done quite a few exams, they (teleSANEs) really are just that good. It really makes a difference even though I have done a bunch of exams I am just so grateful that they are there. Each one is just a little different and it is so helpful to have them there.*

*I was very satisfied, can't think of anything that was bad. It was exhausting for me and intense. But it really helped me and made me and the patient feel comfortable. So we accomplished our goal.*

*When we get a sexual assault patient at the ER, no one wants these patients because it takes 3-4 hours. I was supposed to leave at 11 but I started the kit at 8 and didn't leave until 1:15. It takes so long, not only the kit but then closing it just takes a long time. There were definitely things I learned from her or things to improve in facility. Rape crisis needs to be called earlier.*

*It was a great experience.*

*I think she got a better exam. I don't know if I would have known to do the toxicology and that could end up being important for the patient. It is always a better exam.*

*It was something completely different than what I had experienced and she helped a lot with that.*

*I thought it was one of the better sane kits that I have done and I appreciated the support I received. I didn't enjoy doing it but it made it much easier to do when you have the extra support.*

## Summary

The evidence from these interviews supports the value of telenursing consultation in forensic medical examinations in sexual assault cases. Large majorities of site clinicians and corpsmen gave positive scores on the impact of telenursing, often the maximum possible, and nearly all praised the program.

The range of types of assistance provided was wide and encompassed a number of important objectives of the examination, including effectively collecting biological evidence and documenting injuries, supporting and educating patients, and providing quality medical care, and providing emotional and informational support to much less experienced clinicians. Key findings include:

- Nearly all interviewees reported that they felt comfortable working together and that they had an open and professional relationship during the consultation. Without the ability to have such positive relationships it would be difficult to have an effective telenursing experience.
- Interviewees reported few problems related to the technology that disrupted telenursing services. When problems were mentioned, they tended to be minor. Again, this is encouraging because without access to effectiveness technology, a telenursing consultation would not be possible.
- TeleSANEs provided a wide range of assistance. The degree to which the teleSANE intervened varied enormously, from intervening very little at one end to leading the examination and instructing the site clinician step-by-step at the other end. The experience of the site clinician and complexity of the case appeared to be factors in the degree of assistance provided.

Assistance included:

- *Evidence collection.* TeleSANEs assisted clinicians with many aspects of evidence collection, sample collection (use of swabs), labeling and packaging evidence, photographing injuries, and describing wounds.
- *Monitoring, review and leadership.* TeleSANEs monitored the examination at each point, reviewed the examination with the site clinician afterward, or actually led the clinician through the examination step by step.
- *Documentation.* TeleSANEs often assisted site clinicians with paperwork, to help insure that documents were complete and met standards for use in court if necessary; sometimes teleSANEs went through standardized forms with the site clinicians line-by-line.
- *Examination procedures and management.* TeleSANEs provided specific advice about a range of examination actions and decisions, such as positioning the patient, deciding

which dye to use, and deciding which procedures could be omitted to reduce the length of the examination for the patient.

- *Direct patient support and education.* TeleSANEs sometimes helped patients directly by providing them information, guidance or emotional support.
  - *Patient medical care.* TeleSANEs sometimes advised site clinicians on patient medical care issues; topics included sexually transmitted diseases, patient bleeding, follow-up diagnostic procedures, HIV-related management, and medication decisions.
  - *History-taking.* Occasionally teleSANEs asked the patient additional interview questions during history-taking, and sometimes advised site clinicians how best to document the history obtained.
  - *Emotional support.* Site clinicians' experienced teleSANEs assistance as supportive, and in some cases teleSANEs directly provided site clinicians emotional support.
- Site clinicians rated telenursing very positively on scales measuring its impact. On a scale from -3 to +3, telenursing averaged a score of 2 (medium to strong impact) or higher on impact on site clinicians' confidence in providing an effective exam, ability to provide their patient with the best care, sense of feeling supported, and the patient's level of comfort during the exam. Interviewees also gave an overall assessment of the quality of the consultation that approached the maximum positive score (5.4 out of 6). A statistical test revealed that site clinicians at the two non-SANE sites rated two impacts significantly higher compared to those at other sites – they were more likely to say the telenursing encounter positively impacted their ability to provide an effective exam and positively impacted their ability to provide the patient with the best care.
  - The assessment of the effect of telenursing on patients was limited because we were not able to collect data directly from patients. The majority of clinicians, corpsmen, and teleSANEs reported positive relationships between the patient and teleSANE, noting that the teleSANE was very comfortable, relaxed, and professional with the patient and provided reassurance.



## Chapter 6: Lessons Learned and Remaining Questions

Telenursing support of forensic medical examinations is a new intervention and the National TeleNursing Center and its partners are pioneers. The entire NTC project represents a substantial learning experience for the entire field of sexual assault response professionals. It is important therefore to learn as much as possible from this experience and communicate the learning to the field.

The National TeleNursing Center has had success in establishing sites, developing a professional practice model for teleSANE, developing the methodology of telenursing consultation, and providing encounters and consultations that remote site clinicians have found helpful. The remote site clinicians' positive experience of telenursing is perhaps the most important finding of this evaluation. The NTC has also achieved measurable success in its training and system change efforts. At the same time, the NTC encountered obstacles that required it to evolve as a program. The experience of this pilot project has much to teach the field, but questions about the future of telenursing remain.

### Establishment of Sites

Through a substantial effort, the NTC was able to recruit sites and establish stable telenursing operations that have been maintained smoothly throughout each site's tenure in the project. After spending months seeking licensing waivers without success, the NTC also had to spend several months getting its entire teleSANE staff licensed in California (the location of three sites), and teleSANEs spent many hours studying the forensic evidence kits. Setting site operations up with the Navy (for the naval hospitals) and the Indian Health Service (for the Hopi Health Care Center) required months of discussions and paperwork involving the Massachusetts Department of Public Health, the Department of the Navy, and the Indian Health Service. Establishment of the project at other hospitals required less time, though it was still time-consuming. The NTC persevered to overcome these systemic obstacles to establish telenursing in four hospitals and then expand to six hospitals. In successfully adapting to these challenges, the NTC learned a great deal about implementation that would be instructive to new telenursing programs, which may have an easier time with implementation by learning from the NTC's experience.

Despite the obstacles, the NTC established productive relationship with each site hospital and the delivery of telenursing services has proceeded smoothly for many months with few barriers. To the best of our understanding, the NTC was routinely called for almost every examination in which patients consented, the telenursing protocol regularly worked to the satisfaction of both the remote site clinicians and teleSANEs, and trainings continued regularly, though they were slightly less frequent and less well-attended than the NTC hoped. The NTC successfully implemented telenursing in a wide range of different hospitals, including a rural hospital, a tribal hospital, two military hospitals and a suburban and urban hospital. This demonstrated that the model has broad applicability and could improve care both in hospitals that are geographically remote and hospitals that are not geographically remote but lack the resources to implement SANE programs. These are substantial achievements, especially given the obstacles the NTC faced.

The process of establishing sites provided an important lesson informing the vision of developing a national capability for a telemedicine response to sexual assault. OVC's grant solicitation for the project communicated a vision of a national center able to provide services to underserved hospitals across the country. The NTC's experience revealed this strategy to be infeasible. Massachusetts teleSANEs needed to be licensed in each state they provided services in (their ability to practice in Arizona was limited to Indian Health Service facilities), and NTC was committed to each teleSANE becoming knowledgeable

about the evidence kit of each state they served. Moreover, the effort it took to establish and maintain each NTC site indicates that an effort to “go national” would have overwhelmed any single center. These factors make it impractical to pursue the vision in the solicitation for a center that provides services nationally, and suggest that developing multiple state-based or regionally-based models is more practical. The OVC recognized this by funding a state-based program in Pennsylvania (see, e.g., Penn State News, 2017). The NTC also evolved to become more of a state-based model, with the addition of two Massachusetts sites and its current plans to expand by adding more Massachusetts sites. Providing the experience that enabled the OVC to shift its strategy is an important benefit of the NTC project.

### The Delivery of Telenursing Services

The modest number of encounters – an average of about one per month per site – is not surprising given that sites joined the NTC in part because they saw few sexual assault patients a year and lacked experience with these cases. The flow of cases over time provides evidence that telenursing services was consistently available. The number of encounters increased over time with the addition of new sites, but we did not see significant increases in the number of encounters *within a site*. Thus, we do not see evidence that the development of telenursing services increased the number of sexual assault cases brought to the hospital over the time periods we measured. It would be imprudent to base projections of telenursing caseload on the idea that telenursing would attract new cases to a hospital, because there is no evidence for such an effect over two to three years’ experience in six sites.

One important finding was the reliability of the telemedicine equipment in the vast majority of encounters, despite the challenges of adapting to different equipment and networks in six sites. American Doctors Online deserves considerable credit for developing the telemedicine system for the project, trouble-shooting all problems, and patiently maintaining the system over many years of service delivery. Thus the project has convincingly demonstrated that effective technology for telenursing can successfully be implemented.

Another important finding is the high proportion of patients who consented to telenursing. This suggests that patients are comfortable with having expert clinicians in the room on a screen participating during the very sensitive forensic examination. This finding was a critical step in the development of telenursing; suggesting that patient acceptability is not an issue in its development. Patients’ acceptance of telenursing and the positive relationship with patients that teleSANEs report suggest that patients themselves may see the benefit of telenursing. Future research should collect data directly from patients on their experience of the telenursing encounter.

The decrease in the number of cases in late 2017 and 2018 needs to be understood better. One explanation for this overall decrease was the absence of any cases from Robert Bush Naval Hospital during the last nine months we measured. According to the site liaison at Bush Naval Hospital, this absence was not due to any problem with the project or telenursing services. Instead, she thought it reflected changes in the incidence or reporting of sexual assault due to a big increase in deployment that has substantially reduced the number of personnel stationed at the base. We recommend that the NTC track case flow carefully over the remaining six months of the project. The increased rate at which patients declined services in the naval hospitals needs to be explored further as well.

### The Value of Telenursing Encounters

Data on the telenursing experience were collected from remote site clinicians and teleSANEs for a substantial portion of the telenursing encounters in the project. Remote site clinicians consistently rated teleSANEs highly and valued their assistance. They identified a range of ways in which the teleSANEs were helpful. The teleSANEs identified more ways on average that they were helpful than the

remote site clinicians recognized; the teleSANEs' greater knowledge about the examination practice probably explains their ability to identify and describe actions during the telenursing encounter that were helpful. Both remote site clinicians and teleSANEs were able to describe concrete ways in which they helped remote site clinicians adhere to best practice.

The positive experience of the site clinicians with telenursing encounters is a significant achievement. The chief value of the telenursing project emanates from the central experience of help and support the remote site clinicians experienced with the teleSANEs. Demonstrating that recipients experience this new intervention as helpful is a critical first step in the development of telenursing as a viable component in the response to sexual assault nationally. Clinician acceptance is necessary to the success of a telemedicine programs, which are unsustainable without it (Alverson, et al., 2004).

The NTC has required sites to offer telenursing for every examination site clinicians perform, so it is difficult to assess the degree to which site clinicians would choose telenursing services on their own. It is worth noting nevertheless that site clinicians appear to be adhering to this requirement, though they could in theory find ways to circumvent it. To the best of our knowledge, site clinicians have chosen to conduct examination on their own in only four cases. Some clinicians have decided to start the examination without the teleSANE because of the time it was taking the teleSANE to reach the NTC; once teleSANEs arrived they joined the examination.

The impact of telenursing appeared to depend on the experience and training of the remote site clinician. Compared to SANE remote site clinicians, clinicians who lacked SANE training reported a greater impact of telenursing services on their ability to provide an effective exam, and on their ability to provide the patient with the best care. Our interviews suggest a qualitative difference between experienced and inexperienced remote site clinicians in their reaction to telenursing. TeleSANEs would often take the lead with inexperienced clinicians, guiding the examination step by step, whereas their role with more experienced clinicians often focused on monitoring and intervening only occasionally. It was almost always helpful to have the additional assistance of the experienced teleSANE, but in some cases, the remote site clinician was able to handle the examination well with little assistance, and it is not clear if examination quality would have decreased significantly without the teleSANE. One site professional we interviewed for our system impact study (Cross & Walsh, 2018) actually felt that their site clinicians no longer needed the teleSANEs to help with examinations and were helpful mainly by having teleSANEs recording information. However, we did not see this reported in any of the post-encounter data we collected from clinicians in this site, although it is possible that the clinicians who participated in interviews were different from those who did not.

The differential impact of telenursing services by site clinician experience raises important questions for telenursing practice. It is possible that the impact of the NTC was reduced somewhat by working primarily with clinicians with previous training in conducting forensic examinations, even if they were inexperienced (The NTC did not plan to work primarily with SANEs; this was simply a characteristic of hospitals that applied to be sites and were accepted). Not only was the impact on individual cases larger for non-SANE hospitals, the system impact of the NTC appeared to be larger as well. As we pointed out in our system impact report (Cross & Walsh, 2018), the NTC played an important role in non-SANE hospitals, by helping organize clinical teams, improve adherence to best practice, and connecting hospitals to advocacy services. Hospitals with SANEs in the project by and large already had functioning clinical teams and advocacy services. During the final year of the project, the NTC submitted an application for Victims of Crime Act (VOCA) funds to expand services to five additional non-SANE hospitals and a health care program for homeless patients, but the proposal was not funded. As of this writing, the NTC is also planning to advocate for state and hospital funding to support its services for

Massachusetts non-SANE hospitals. If the NTC is able to expand its services to non-SANE hospitals, it may increase its impact and thereby increase its marketability as it seeks to sustain itself. The greater impact with clinicians without previous training suggests that the telenursing impact may be greater when it is most needed. It also suggests that the impact of telenursing could be greater as new telenursing centers develop, if they work primarily with hospitals with little or no SANE presence.

### The Role of Training and System Change Efforts

NTC training has consistently been well-received and helped to develop skills in the sites, even though attendance has sometimes been a challenge. As it prepares to seek relationships with new sites, it will be important for the NTC to review its training program and consider carefully the impact on its program development and sustainability. As we have said in a previous report, the provision of discretionary training could potentially redirect resources needed for expanding telenursing and therefore impede telenursing program development, or it could be an attractive feature that would help in marketing the NTC. We recommend that the potential for training to work for or against telenursing program development be considered in strategic planning, informed by a thorough analysis of the market for training. One encouraging development is that the NTC has achieved some economy of scale by providing some joint training with the two Navy sites and two MA sites.

The NTC also had substantial success in having an impact on systems, above and beyond the individual cases. Clearly, telemedicine consultations by themselves have limits for insuring quality care. The NTC has helped increase its effect by helping hospitals improve their system of response to sexual assault, develop clinical teams, and engage advocacy services. Clinicians in two sites credit the NTC's involvement with helping them retain and recruit SANEs in their hospitals. The NTC sees system change as necessary in conjunction with telenursing to provide an environment that supports the care of sexual assault patients. System change efforts have similar advantages and disadvantages for program development as training efforts. Again, we recommend that the benefits and risks of system change efforts be thoroughly considered in strategic planning, including an analysis of receptivity of potential sites to system change efforts. There may be economies of scale that can be developed through program-wide system change efforts involving multiple sites.

### The Sustainability of Telenursing for Sexual Assault Patients

Sustainability is one of the most important issues concerning the future of telenursing to support forensic sexual assault medical examinations. Regardless of the quality of a telenursing encounter, a telenursing program has limited value if it cannot be sustained. In the original solicitation for the grant supporting the NTC, the Office of Victims of Crime stated that "The ultimate goal is to create a national center that serves all jurisdictions on a fee-for-service basis." (Office for Victims of Crime, 2012, p. 4). In this sentence, OVC stated the goal of sustainability and suggested a financial mechanism. The experience of the NTC later suggested that a fee-for-service model is not feasible; nevertheless this sentence speaks to the aim of developing an enduring model supported by workable financial mechanisms. The chief unanswered question of this project is whether the National Telenursing Center will be sustained when its federal funding ends December 2018. As of this writing, the NTC is seeking support from Massachusetts hospitals and from the state, but the success of these efforts is uncertain.

The NTC is not alone, since the literature indicates that sustainability has been a challenge across an array of different telemedicine programs (see, e.g., Bashshur, Shannon, Krupinski, & Grigsby, 2013). Some telemedicine programs have been sustained post-development grant, and others have not (see, e.g., Alverson, et al., 2004; Brebner, Brebner, & Ruddick-Bracken, 2005). Both a review of the literature

and the experience of the NTC suggest several useful steps for developing a sustainable telenursing program for sexual assault patients.

One step is to **increase knowledge about the demand for telenursing services in sexual assault cases.** It is difficult to develop a sustainable model without more information on the number of hospitals that would be interested in receiving telenursing services, what service options they would find helpful, what factors increase and reduce interest, and what financial resources hospitals could contribute. The NTC's experience with hospitals' response to its solicitations for project sites provides some evidence of demand, but more detailed information is needed. As we discussed in the interim report on process and development of the National Telenursing Center, telenursing programs would benefit from market research to assess demand. Studies using standardized interview protocols or surveys could be developed to gather data from candidate hospitals. Market research could help determine whether a lean or enhanced model of telenursing (with training and/or system intervention) has greater potential to engage hospitals and garner financial support for the program.

A second step is to **develop more information on viable business models for telenursing for sexual assault patients.** Based on their review of programs, Bashshur et al. (2013) state that "At least for the foreseeable future, telemedicine in the United States can only sustain itself on the basis of long-term business models that rely on recurring revenue and diverse sources of financing" (p. 340). The Office for Victim of Crime's *SANE Program Development and Operation Guide* similarly recommends that SANE programs develop a business model (Office for Victims of Crime, n.d.); it seems sensible to extrapolate this to a SANE telenursing program. The telemedicine literature suggests that basing funding solely on payment per service provided (e.g., fee-for-service models and contracts with site hospitals) is seldom sufficient to sustain a telemedicine or program, and some dedicated extramural funding is often needed (Bashshur, et al., 2013). Extramural funding would be especially necessary for a telenursing program on sexual assault, since there is no insurance reimbursement mechanism. One example of a successful telemedicine model with diversified funding is the Arizona Telemedicine Model, which provides a range of medical services throughout the state. The Arizona Telemedicine Model had a business model in which it derived about 30% of its revenue annual membership fees (\$5400 from as many as 55 health care organizations), 45% from state support, 24% from grants, and 1% from the state university (Krupinski & Weinstein, 2013). Whitten, Holtz and Nguyen's (2010) survey of telemedicine programs similarly found that most programs reported funding telemedicine came from a variety of sources, including organizational funds, state grants, and service revenue and contracts. As we mentioned in our initial interim report, one option that should be considered for the future development of telenursing is imbedding telenursing services for sexual assault patients within a broader telemedicine system like the Arizona Telemedicine Model. It is likely that future telenursing programs related to sexual assault will need to seek funding from multiple sources. We recommend that any additional information on business models that is developed by the NTC and its partners and consultants during the remainder of the project be shared as part of the learning from this pilot.

A third step is to **examine further the costs of telenursing services for sexual assault patients.** The costs of program administration, training of teleSANEs and site clinicians, compensation for teleSANEs, and technology need to be understood better. The costs of recruiting, launching and maintaining a site need to be explored, since sustainability is likely to depend on the number of sites a telenursing program can serve (see below). It would be useful to compare the cost of developing a dedicated infrastructure for telenursing for sexual assault patients versus the cost of imbedding this telenursing within a larger telemedicine system. Any opportunities to reduce costs may increase the number of patients that can be seen and contribute to the program's sustainability. We recommend that future evaluations of telenursing services in response to sexual assault include a cost analysis.

A fourth step is **to explore further the volume of service provided and the return on investment.**

Alverson, et al. (2004) identified the volume of services as a critical factor in the success of a telemedicine services. Because the NTC was a pilot project that served a small set of hospitals with a limited number of sexual assault cases, the number of patients seen in telenursing encounters has been modest. Case volumes are likely to make a difference for potential funding sources. Volume of services could also be a factor in persuading state governments, foundations, and donors to support telenursing. These funding sources receive many worthy claims for limited funds. One simple measure of return on investment they are likely to consider is the cost per client served. A large cost per client served may be an obstacle to securing support; this was a major concern expressed by the business professionals surveyed by the Babson College team that conducted a business analysis for the NTC (Wilson, et al., 2018).

An alternative way to think about return on investment is to consider the potential for telenursing to enable a hospital to have the capacity to provide quality care that it would not otherwise have. That capacity has value regardless of the number of patients served. That perspective suggests a shift in focus from the number of patients served to the number of hospitals served—the more hospitals served, the greater the capacity to provide quality care to the population of survivors of sexual assault across a state or region. The number of hospitals also deserves attention because it affects potential revenue from hospital membership fees or contracts. Telenursing programs will need to develop a cost per patient or per hospital served that will be acceptable to potential investors, and develop a clear, written rationale for that cost.

Telenursing programs face a delicate balance. They need to start small to negotiate the challenges of start-up, insure they can maintain quality care and demonstrate a positive impact. Focusing on a small set of hospitals, the NTC was able to implement a well-functioning telenursing protocol, provide assistance that site clinicians valued, and provide training and system improvement efforts with some success. At some point, however, a telenursing program must expand the volume of services and/or the number of hospitals served to provide a return on investment that can justify continued funding. This is not easy given that prospective hospitals for telenursing programs are not likely to see many sexual assault patients yearly.

A fifth step is **to consider site attrition.** Some hospitals may decide that enhancing their on-site capacity to provide expert examination might be a better choice than investing telenursing services. Indeed, some sites might decide to “graduate” because they no longer perceive a need for telenursing services that justifies their investment in it. A telenursing program itself might decide over time that patients in a site hospital are better served by enhancing the on-site capability and letting go of telenursing. Possible attrition of sites needs to be considered in the business model. Reducing cost per site and maintaining readiness to add new sites expeditiously can help protect a telenursing program against this kind of attrition.

A sixth step is **to conduct more research on telenursing in sexual assault cases.** Studies are needed that assess the impact of telenursing on the quality of examinations, as has been done for telemedicine in child sexual abuse cases (MacLeod, et al., 2009; Miyamoto, et al., 2014). Research should also examine the relationship of telenursing to crime laboratory results and police and prosecutor actions. Such research results would strengthen the argument to prospective site hospitals and funders that telenursing enhances the quality of care and makes a difference in patients’ lives. Moreover, rigorous studies on sustainability are needed that would examine costs, market demand, and potential funding mechanisms. We recommend that any continued investment in telenursing for sexual assault patients

be coupled with a substantial investment in further study of its business model, costs, and funding mechanisms, and a systematic assessment of its sustainability.

## Conclusion

Telenursing services is a promising practice to provide care and seek justice for sexual assault patients who lack access to adequate forensic medical examinations. The National TeleNursing Center created an innovative, helpful intervention that had never been provided to adults and adolescents before. It recruited a skilled cadre of teleSANEs who adapted successfully to their new role as video consultants.

For more than three years, the National TeleNursing Center has successfully provided telenursing services that site clinicians consistently value and judge to be effective. TeleSANEs provided a wide range of assistance to site clinicians, providing specific advice consistent with best practice. The technology implemented by American Doctors Online has reliably supported the service, and patients appears to accept telenurses into their relationship with the clinician. The NTC has developed positive, productive relationships with six site hospitals, and demonstrated a positive impact on practice at these hospitals through its training and system change efforts. The NTC also facilitated consistent involvement of victim advocates in two hospitals that had rarely engaged with their rape crisis center.

These successes suggest that telenursing deserves further exploration as an intervention model for patients in underserved communities. Much needs to be learned to disseminate the model to new states and regions, bring telenursing to scale, and sustain the service financially. The Office of Victims of Crime has funded the Sexual Assault Forensic Examination Telehealth (SAFE-T) Center, which recently began providing telenursing assistance for sexual assault examinations in rural Pennsylvania. The SAFE-T Center will move telenursing forward, and could be a bridge toward more widespread implementation of telenursing services. The need is substantial. Underserved patients experiencing the trauma of sexual assault deserve access to high quality services. Telenursing offers the potential to significantly improve the response to them.

## Appendix A: References

- Alverson, D., Shannon, S., Sullivan, E., Prill, A., Effertz, G., Helitzer, D., Beffort, S., & Preston, A. (2004). Telehealth in the trenches: Reporting back from the frontlines in rural America. *Telemedicine Journal and e-HEALTH*, *10*, S-95-S109.
- Bashshur, R., Shannon, G., Krupinski, E., & Grigsby, J. (2013). Sustaining and realizing the promise of telemedicine. *Telemedicine and e-HEALTH*, *19*, 339-345.
- Brebner, J.A., Brebner, E.M. & Ruddick-Bracken, H. (2005). Experience-based guidelines for the implementation of telemedicine services. *Journal of telemedicine and telecare*, *11*, Supplement 1, S1, 3-5.
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.
- Cross, T.P., Cross, E.M., & Alderden, M.A. (2015). *Program evaluation of the National Sexual Assault TeleNursing Center: Interim report*. Urbana, IL: University of Illinois at Urbana-Champaign.
- Cross, T.P., Cross, E.M., & Walsh, W.A. (2016). *Evaluation of the training and education activities of the National Sexual Assault TeleNursing Center*. Urbana, IL: University of Illinois at Urbana-Champaign.
- Cross T.P., & Walsh, W.A. (2018). *Program evaluation report: The system impact of the National TeleNursing Center*. Urbana, IL: University of Illinois at Urbana-Champaign.
- Davalos, M., French, M., Burdick, A., & Simmons, S. (2009). Economic evaluation of telemedicine: Review of the literature and research guidelines for benefit-cost analysis. *Telemedicine and e-HEALTH*, *15*(10), 933-948.
- Duffy, J.R. (2013). *Quality caring in nursing and health systems*. New York: Springer Publishing Company.
- Federal Bureau of Investigation (n.d.). *Rapid DNA*. Webpage. Retrieved from <https://www.fbi.gov/services/laboratory/biometric-analysis/codis/rapid-dna>
- Jacobs, F. (1988). The five-tiered approach to evaluation: Context and implementation. In H. Weiss & F. Jacobs (Eds.) *Evaluating family programs* (pp. 37–68). Hawthorne, NY: Aldine de Gruyter.
- Jacobs, F.H. (2003). Child and family program evaluation: Learning to enjoy complexity. *Applied Developmental Science*, *7*, 62–75.
- Krupinski, E. A., & Weinstein, R. S. (2013). Telemedicine in an academic center--the Arizona Telemedicine Program. *Telemedicine Journal and E-Health*, *19*, 349-356.
- MacLeod K.J., Marcin J.P., Boyle C., Miyamoto S., Dimand R.J., & Rogers K.K. (2009). Using telemedicine to improve the care delivered to sexually abused children in rural, underserved hospitals. *Pediatrics*, *123*, 223-228.



- Miyamoto, S., Dharmar, M., Boyle, C., Yang, N. H., MacLeod, K., Rogers, K., & ... Marcin, J. P. (2014). Impact of telemedicine on the quality of forensic sexual abuse examinations in rural communities. *Child Abuse & Neglect*, 38, 1533-1539.
- National TeleNursing Center (2018, May). *Building a Sustainable TeleSANE Program*. Newton, MA: National TeleNursing Center.
- Penn State News (August 25, 2017). Health care's response to sexual assault in underserved and rural communities. Retrieved from <https://news.psu.edu/story/479277/2017/08/25/impact/health-care%E2%80%99s-response-sexual-assault-underserved-and-rural>
- Office for Victims of Crime (2012). *OVC FY 2012 Sexual Assault Forensic Medical Examination Telemedicine Center: An Innovative Pilot Project*. Solicitation. Washington, DC: OVC.
- Office for Victims of Crime (n.d.) *SANE Program Development and Operation Guide: Business Plan*. Retrieved from <https://www.ovcttac.gov/saneguide/building-a-sustainable-sane-program/business-plan/>
- United States Census Bureau (n.d.). *Quick facts Middlesex County, Massachusetts*. Retrieved from <https://www.census.gov/quickfacts/fact/table/middlesexcountymassachusetts/PST045217>
- United States Census Bureau (n.d.). *Quick facts Lake County, CA*. Retrieved from <https://www.census.gov/quickfacts/fact/table/lakecountycalifornia/PST045216>
- Walsh, W.A., Cross, T.P., & Cross, E.M. (2017). *National TeleNursing Center: Initial program evaluation findings on the telenursing experience*. Urbana, IL: University of Illinois at Urbana-Champaign.
- Whitten, P., Holtz, B., & Nguyen, L. (2010). Keys to a successful and sustainable telemedicine program. *International Journal of Technology Assessment in Health Care*, 26, 211-216.
- Wilson, C., Cabernite, V., Guirao, E., Cohen, A., Sander, S., & Kluge, J. (2016). *Business model canvas for the National TeleNursing Center*. F.W. Olin Graduate School of Business. Weston, MA: Babson College

## Appendix B: National TeleNursing Center Logic Model

Goals	Activity	Outcomes	Indicators	Measurement
<p><b><u>Hub-centered goal</u></b></p> <p>A high quality &amp; replicable patient-centered, trauma-informed, culturally competent model for providing telenursing services to victims of sexual assault.</p> <p><b><u>Remote Site Goals – Site &amp; Clinician</u></b></p> <ul style="list-style-type: none"> <li>▪ Remote sites are able to maximize the resources &amp; expertise provided by the National TeleNursing Center.</li> <li>▪ RSCs are capable of:               <ul style="list-style-type: none"> <li>○ Implementing trauma-informed, patient-centered best practices for forensic medical examinations.</li> <li>○ Managing &amp; minimizing the impact of secondary trauma.</li> </ul> </li> </ul> <p><b><u>Encounter Goals - Patients receive:</u></b></p> <ul style="list-style-type: none"> <li>▪ Quality medical care</li> <li>▪ Effective forensic evaluation,</li> <li>▪ Psychosocial support</li> <li>▪ Support for self-agency &amp; choice</li> <li>▪ Advocacy when warranted.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Telenurse staffing, scheduling and supervision.</li> <li>▪ Quality assurance methodology</li> <li>▪ Remote site collaboration/ training model.</li> <li>▪ Telenursing standard operating policy &amp; procedure manual.</li> <li>▪ Telenurse training</li> <li>▪ Telenurse training curriculum.               <ul style="list-style-type: none"> <li>○ Mock drills</li> <li>○ Coordinated trainings with sites.                   <ul style="list-style-type: none"> <li>▪ Establishing &amp; sustaining collaborative relationships with site &amp; content experts.</li> <li>▪ Creating learning portal website</li> </ul> </li> </ul> </li> <li>▪ IT equipment training.</li> <li>▪ Remote site liaison training.               <ul style="list-style-type: none"> <li>○ Center-facilitated learning &amp; collaborative processes (e.g. remote-site clinician training)</li> <li>○ Remote site collaborative learning &amp; mutual support.</li> <li>○ Remote site training materials.</li> </ul> </li> <li>▪ Peer support/debriefing</li> <li>▪ Victim advocacy               <ul style="list-style-type: none"> <li>○ Access to local services</li> <li>○ Consultation from PMT experts</li> </ul> </li> <li>▪ Telenursing encounters and consultations</li> <li>▪ System change efforts at site hospitals</li> </ul>	<ul style="list-style-type: none"> <li>▪ Sustainable &amp; replicable service delivery model &amp; quality assurance process.</li> <li>▪ Strong, enduring collaborative relationships among the Center, local &amp; national partners &amp; advisors.</li> <li>▪ Skilled cadre of SANE telenursing service providers &amp; managers.</li> <li>▪ Greater remote site clinician access to clinical, forensic &amp; advocacy expertise.</li> <li>▪ Enhanced local system for responding to sexual assault.</li> <li>▪ Enhanced clinical &amp; forensic skills among remote site clinicians.               <ul style="list-style-type: none"> <li>○ Positive impact on experience of conducting examinations</li> <li>○ Prevention or reduction of secondary trauma</li> </ul> </li> <li>▪ Patient receives quality medical care</li> <li>▪ Effective forensic evaluation conducted</li> <li>▪ Patient feels respected &amp; understood</li> <li>▪ Patient experiences support</li> </ul>	<ul style="list-style-type: none"> <li>▪ # Telenurses hired, credentialed; competency assessed &amp; trained.</li> <li>▪ Telenurse retention rates.</li> <li>▪ #, length &amp; type of telenurse trainings.</li> <li>▪ Training attendance/completion.</li> <li>▪ # requests for assistance.</li> <li>▪ # completed TeleNursing encounters.</li> <li>▪ Positive response of remote site liaison &amp; other key administrators to TeleNursing Center including:               <ul style="list-style-type: none"> <li>○ Responsiveness</li> <li>○ Quality of training.</li> <li>○ Positive observable effects on clinician preparedness</li> <li>○ Quality of clinical forensic support.</li> <li>○ Greater access to clinical forensic &amp; advocacy expertise.</li> <li>○ Effective collaboration with Hub</li> </ul> </li> <li>▪ Remote site clinicians report:               <ul style="list-style-type: none"> <li>○ Reports of teleSANE helpfulness</li> <li>○ Reports of types of teleSANE assistance</li> </ul> </li> <li>▪ Patient demographics</li> <li>▪ # of telenursing encounters and consultations</li> <li>▪ Changes in practice in site hospitals and communities</li> </ul>	<ul style="list-style-type: none"> <li>▪ Content analysis of:               <ul style="list-style-type: none"> <li>○ Program Management Team minutes</li> <li>○ weekly reviews</li> <li>○ reports.</li> <li>○ Policies &amp; procedures</li> <li>○ Training curriculum</li> <li>○ Correspondence &amp; other documents as recommended/needed.</li> </ul> </li> <li>▪ Records of PMT membership and participation</li> <li>▪ Core team interviews</li> <li>▪ Site liaison and stakeholder interviews.</li> <li>▪ Interviews with PMT members.</li> <li>▪ Encounter-specific interviews with RSCs and Telenurses</li> <li>▪ Surveys of RSCs and key stakeholders.</li> <li>▪ Secondary analysis of encounter data collected at Hub</li> </ul>

## Appendix C: Number of Encounters per Site per Month

Figure 11. Number of Telenursing Encounters Robert Bush Naval Hospital November 2014 through March 2018

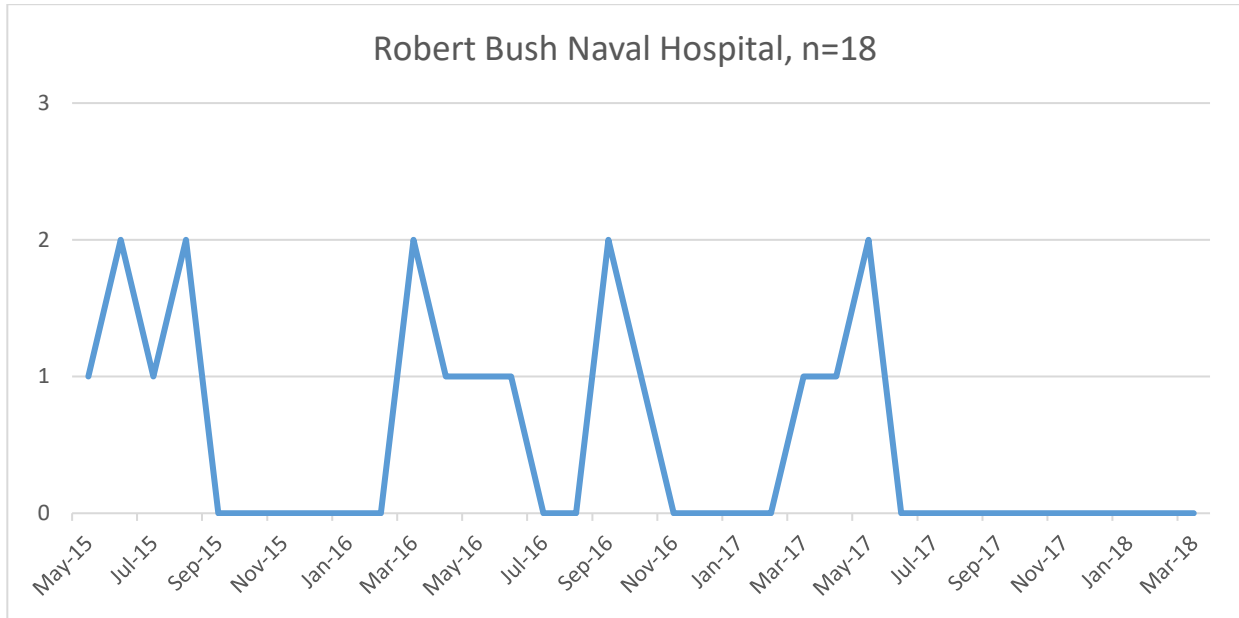


Figure 12. Number of Telenursing Encounters Sutter Lakeside Hospital June 2015 through March 2018

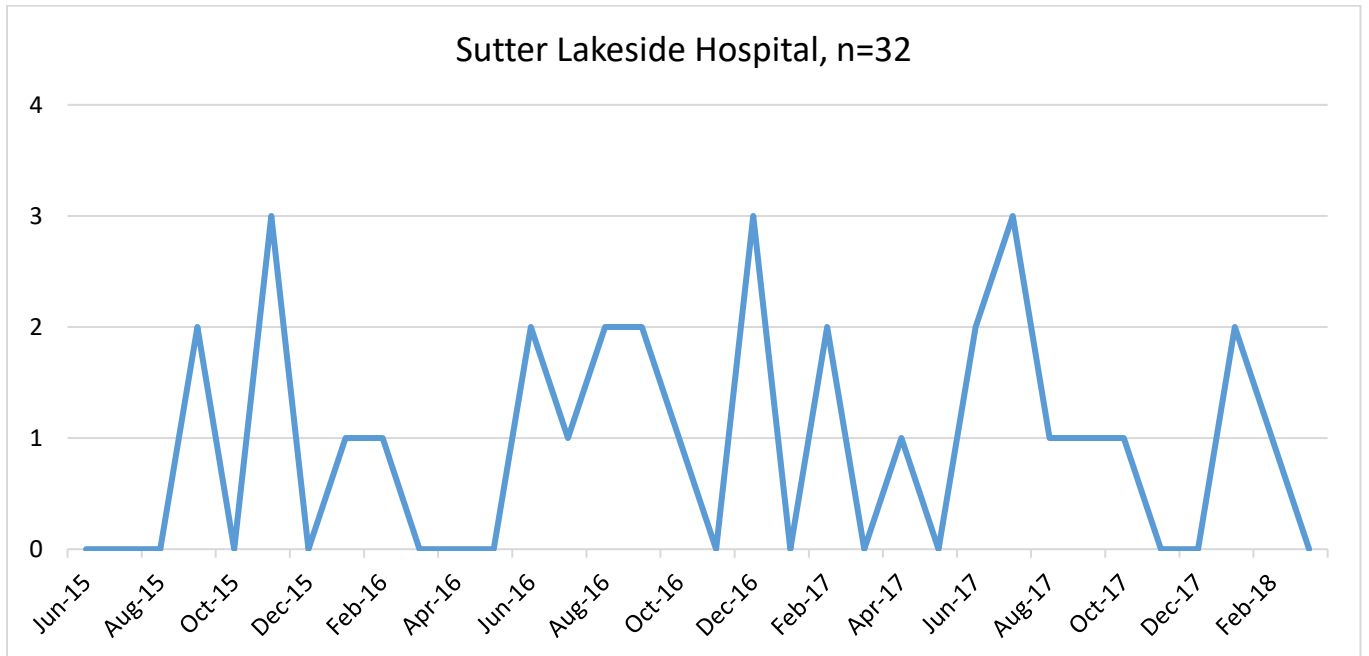


Figure 13. Number of Telenursing Encounters Naval Hospital Camp Pendleton January 2016 through March 2018

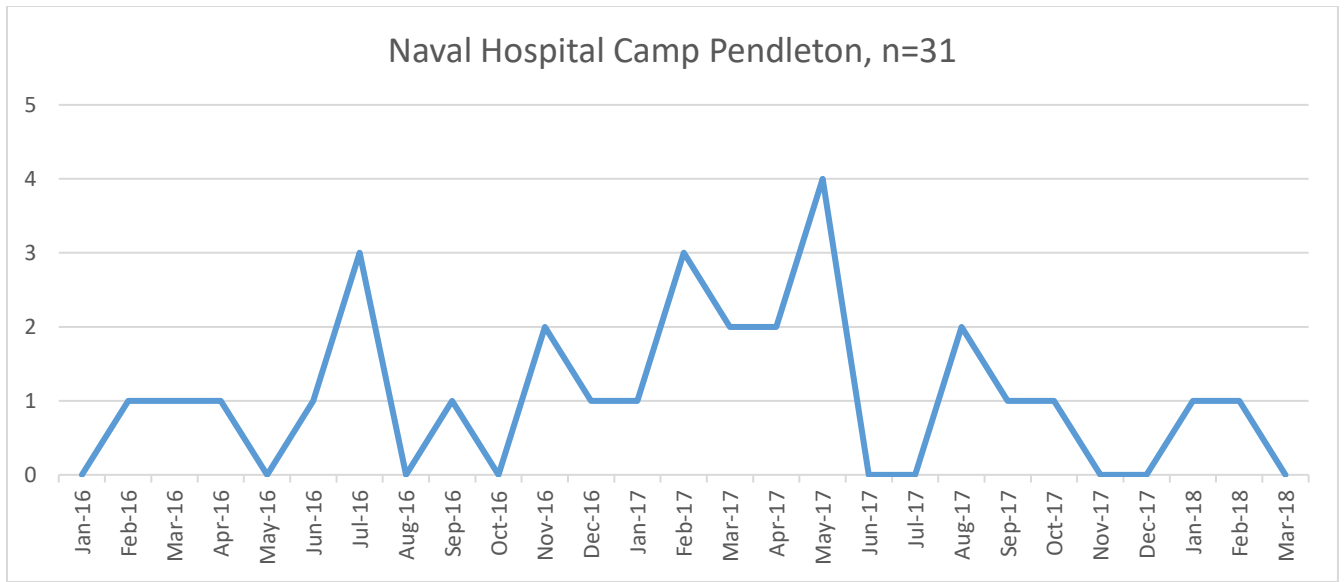


Figure 14. Number of Telenursing Encounters MetroWest Medical Center April 2016 through March 2018

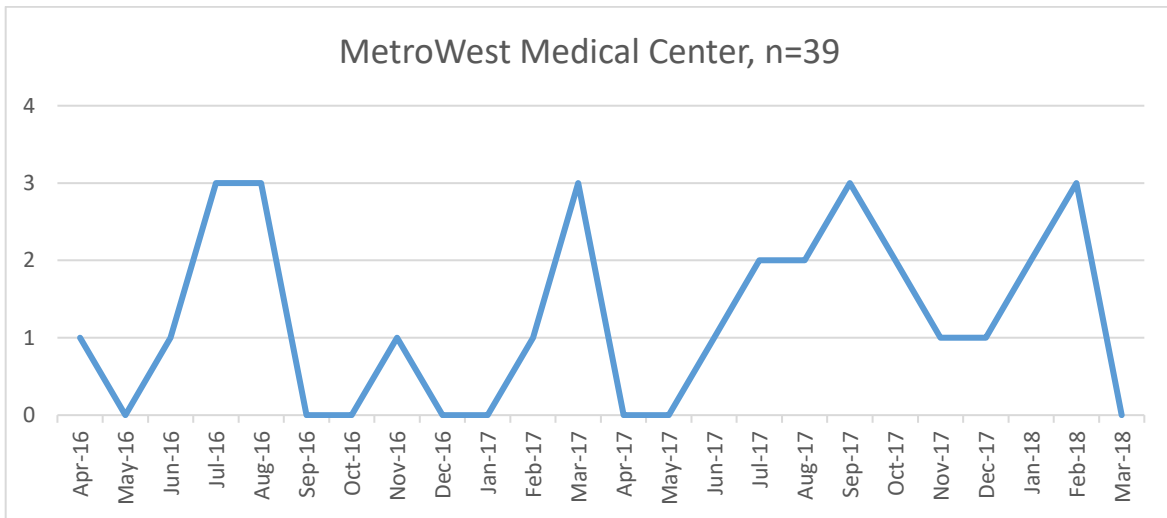


Figure 15. Number of Telenursing Encounters Saint Anne's Hospital July 2016 through March 2018

