The American Telemedicine Association ATA18 Conference Abstracts

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Please note that abstract numbering is not consecutive.
There are no missing abstracts.

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Concurrent Session Abstracts

DIRECT TO CONSUMER STRATEGIES

SUNDAY, APRIL 29, 2018

3:30 PM–5:00 PM Sunday, April 29, 2018

Facilitated Roundtable Discussion

DTC-07

TITLE: MAKING THE RIGHT CHOICE - DTC: KEEPING UP WITH INNOVATION IN A FLUCTUATING MARKET

PRESENTERS: Michelle L. Hager

Abstract: A roundtable discussion focusing on the complexities of product innovation and market pressures within the Direct-To-Consumer market combined with an organization's internal challenge of loosely defined problems, differing perspectives, market demands and varied needs from stakeholders. Using the example of a California based IDN, the topic will propel a discussion on conquering challenges, methodology standards and collaboration techniques to drive multi-entity leadership support and decision making.

Learning Objectives:

- Upon completion, participant will be able to recognize the components needed to evaluate DTC solutions.
- Upon completion, participants will be able to explain the thought process needed to create and lead an effective collaborative group, support the organization's strategic DTC initiative, and drive leadership support.
- Upon completion, participants will be able to demonstrate the steps to take to clearly define the problem(s) and the requirements for the solution.

VALUE (BUSINESS STRATEGY AND FINANCIAL MANAGEMENT)

SUNDAY, APRIL 29, 2018

3:30 PM–5:00 PM Sunday, April 29, 2018

Facilitated Roundtable Discussion

V-06

TITLE: MEETING THE QUADRUPLE AIM: ASYNCHRONOUS ON-DEMAND URGENT CARE EVISITS PROVIDED BY NURSE PRACTITIONERS

PRESENTERS: Jeffrey Arnovitz, MSN, CNP; Kari Gali, DNP, CNP

Abstract: eVisits, an asynchronous technology based tool supports convenient, timely access to medical providers. In 2016, the Cleveland Clinic launched on-demand urgent care eVisits for 5 common medical complaints with Nurse Practitioners managing this innovative low cost alternative to traditional care. After completing over 2300 eVisits, cost, patient satisfaction, provider satisfaction and access to care were evaluated. In all areas eVisits provided an efficient, effective alternative to usual care.

Learning Objectives:

- Describe how certified nurse practitioners provide asynchronous on-demand urgent care.
- Identify how eVisits augment traditional urgent care.
- Discuss how eVisits have supported meeting the Quadruple Aim.

REFERENCES:

1. U.S. Department of Health & Human Services, 2015. Health Care. Retrieved from http://www.hhs.gov/healthcare/
2. Bodenheimer T, Sinsky C. 2014. From Triple to Quadruple Aim: Care of the Patient Requires Care of the Provider. *Annals of Family Medicine*. Retrieved from http://www.annfammed.org/content/12/6/573.long
3. Gidwani N, Fernandez L, Schlossman D. 2012. Connecting with Patients Online: eVisits Strategy, evaluation and technology recommendations for an e-visit system.

CLINICAL SERVICES

SUNDAY, APRIL 29, 2018

3:30 PM–5:00 PM Sunday, April 29, 2018

Facilitated Roundtable Discussion

CS2-05

TITLE: LINKHF-2 STUDY: USING CONTINUOUS BIOSENSOR DATA AND MACHINE LEARNING ANALYTICS TO PREDICT ACUTE CARE EVENTS

PRESENTERS: Matt Pipke; Josef Stehlik, MD, MPH

Abstract: Acute-on-chronic conditions like heart failure and COPD represent a disproportionate share of the costs associated with hospitalization and post-acute care. A majority of patients who deal with these diseases suffer from a complex set of co-morbidities that exacerbate the complexity of care and increase risk of unplanned acute care events. Recent advancements in wearable technology and advanced, machine learning-based analytics represent a potentially powerful new tool to manage ambulatory at-risk patient populations. The VA LINKHF-2 Study sought to validate how sophisticated, personalized, machine-learning, FDA-cleared analytics, when applied to continuous multivariate physiological data from wearable sensors, can detect vital sign anomalies that may be a precursor to an acute-care episode.

Within the LINKHF-2 study, 100 patients from across four different U.S. hospitals (Palo Alto, CA, Gainesville, FL, Houston, TX, and Salt Lake City, UT) were enrolled upon discharge related to heart failure decompensation. Patients were provided with a 90-day supply of wearable, disposable, bluetooth-enabled biosensors and a mobile phone with pre-paid data plan for data transmission. Data were collected via cloud-based IT platform across the 90 days and analyzed with multivariate, machine-learning analytics to detect changes from a personalized model of vital sign relationships.

The FDA-cleared analytics being evaluated build a personalized model of vital sign dynamics based on biosensor data captured the first 36 hours after hospital discharge. During that model training period, the system "learns" an individual

patient's unique vital sign relationships (HR, RR, and activity) across the full spectrum of activities one would expect in an ambulatory environment. With this, the system analytics develop a personalized baseline by which to measure changes that may be a precursor to an acute care event. After the 36-hour model training period, the system automatically transitions from "learning" mode into "monitoring" mode where it indicates subtle changes that may indicate compensatory behavior within the cardiopulmonary control loop. Personalized anomalies are indicated via time-series plotted index of change from baseline. The higher the index, across a longer period of time, the greater the change from baseline.

This was an observational study. Current standard of care was delivered while data were being collected in the background. A retrospective analysis compared results of the personalized analytics relative to the medical record. The intent of the study was to evaluate 1) how well the personalized, machine learning-based physiology analytics detected acute care events in an ambulatory environment and 2) how early the analytics indicated health deterioration relative to the acute care event. The ultimate goal of the solution is to provide clinicians with a scalable tool that will allow them to manage a post-acute population using passive data collection and sophisticated analytics. The intended benefit is that large, at-risk patient populations can be managed by exception, as indicated by each individual's changes in cardiopulmonary physiology. A simplified ROC analysis yielded an AUC $\sim$0.81, enabling very high specificity to alleviate false alert burden, while still delivering a potential cost-saving sensitivity.

Learning Objectives:

- understand extended (90-day) continuous ambulatory multivariate physiology data capture using clinical-grade, disposable, wearable biosensors. Will review solution deployment across a 100-patient post-discharge heart failure population, inclusive of biosensor wear compliance.
- understand how machine learning-based, FDA 510k-cleared, Personalized Physiology Analytics (PPA) leverage multivariate continuous data (HR, RR, Activity) to detect physiological anomalies that can be a precursor to disease exacerbation.
- statistical analysis of performance of PPA analytics within this observational study in the context of A) sensitivity/specificity of detection of acute care events and B) quantification of early warning.

CLINICAL SERVICES

SUNDAY, APRIL 29, 2018

3:30 PM–5:00 PM Sunday, April 29, 2018

Facilitated Roundtable Discussion

CS1-05

TITLE: TELEFOCUS: CARING FOR A MILITARY PATIENT POPULATION USING A FAMILY-CENTERED PREVENTION MODEL AND TELEHEALTH

PRESENTERS: Tom Babayan, MS, LMFT

Abstract: As a service originally initiated by the Bureau of Medicine and Surgery (BUMED), UCLA's FOCUS (Families Over Coming Under Stress) program addresses concerns related to parental combat operational stress injuries and combat-related physical injuries by providing state-of-the-start family resiliency services to military children and families at 28 military installations around the United States and Pacific Rim. The FOCUS Program is unique is that it is strength-based and is a relationship model - focusing on the "family" unit surrounding the patient/veteran. The program teaches key skills with emotional regulation, communication, problem-solving, goal-setting, in addition to managing traumatic reminders (e.g., managing deployment reminders) for the retired and active duty military members and their families.

It is notoriously difficult for military members to get much needed behavioral/mental health services, which is why TeleFOCUS was created. TeleFOCUS uses video conferencing so that the military member and their family can meet with a skilled therapist over a real-time audio and video conference, with the intention to learn core resilience skills. Tom Babayan - a licensed Marriage and Family Therapist - is a model supervisor and key therapist that has been practicing TeleFOCUS for over five years. Tom will describe the FOCUS model in more detail during his presentation.

TeleFOCUS has been adapted to treat the entire family at a distance, which is somewhat unique in the realm of telehealth. Tom will share how he engages and treats these military members and their families, as well as teaches them the necessary skills to live a resilience-based life across the states and even countries. Tom will also share his adoption/implementation processes, as well as his clinical observations and outcomes as it directly relates using TeleFOCUS. Additionally, Tom will describe how TeleFOCUS has become a manualized evidence-based practice (EBP).

Learning Objectives:

- Give a background of the FOCUS Program and how TeleFOCUS has helped with its goals in caring for large veteran/active duty military, using a family-centered approach.
- Describe how veteran/active duty military face shortages in receiving mental and behavioral healthcare.
- Describe the implementation/adoption process of TeleFOCUS, serving military members and their families where they live.

REFERENCES:

1. MacDermid SW, Lester P, Marini C, Cozza S, Sornborger J, Strouse T, Beardslee W. Approaching Family-Focused Systems of Care for Military and Veteran Families. *Military Behavioral Health*, 2013;1:31–40.
2. Beardslee WR, Klosinski LE, Saltzman W, Mogil C, Pangelinan S, McKnight CP, Lester P. Dissemination of Family-Centered Prevention for Military and Veteran Families: Adaptations and Adoption within Community and Military Systems of Care. *Clin Child Fam Psychol Rev.* 2013;16(4):394–409.
3. Paley B, Lester P, Mogil C. Family Systems and Ecological Perspectives on the Impact of Deployment on Military Families. *Clin Child Fam Psychol Rev.* 2013;16(3):245–265.

DIRECT TO CONSUMER STRATEGIES

SUNDAY, APRIL 29, 2018

1:15 PM–1:24 PM Sunday, April 29, 2018

Ignite Sessions

CS1-02

TITLE: HARNESSING THE POWER OF CROWDSOURCING: ELEVATING EFFICIENCY IN TELEHEALTH

PRESENTERS: Brian D'Anza, MD, MA

Abstract: Asynchronus medical care has traditionally been consigned to more subspecialty diagnostic services such as radiology and pathology, among others. The session will briefly review this history as subtext to new ways in which asynchronous medical care is being paired with medical crowdsourcing to revolutionize the field of acute and urgent care. Conversation will focus on the experience of SmartDocMD, a startup telehealth company that is utilizing artificial intelligence along with crowd-sourcing to provide on-demand acute care. Various points of enhanced care will be discussed including initial triage, efficient diagnosis, seamless treatment, and appropriate referrals. The speakers will

describe the process and methods used along with the benefits including evidence-based care, antibiotic stewardship, and increasing access to care. The talk will conclude with future directions on how this new type of care can be imparted to benefit physicians and patients alike in today's medical climate.

Learning Objectives:

- Explain medical crowd-sourcing and how it can improve urgent care medicine.
- Discuss how asynchronous healthcare helps patients and assists health professionals – saving time and improving care.
- Describe the benefits of Artificial Intelligence (AI) and algorithm-directed healthcare in ensuring evidence-based medical practice in acute care.

REFERENCES:

1. Ray KN, Amalavoyal VC, Engberg J, et al. Opportunity costs of ambulatory medical care in the United States. *Am J Manag Care*. Published online August 18, 2015. http://www.ajmc.com/journals/issue/2015/2015-vol21-n8/opportunity-costs-of-ambu
2. Christine Sinsky, MD; Lacey Colligan, MD; Ling Li, PhD, et al. Allocation of Physician Time in Ambulatory Practice: A Time and Motion Study in 4 Specialties. *Ann Int Med.* 2016;165(11):753–760.
3. Courneya PT, Palattao KJ, Gallagher JM. Episode And High Patient Approval HealthPartners' Online Clinic For Simple Conditions Delivers Savings Of $88 Per Episode and High Patient Approval. *Health Aff.* 2013;32(2):385–392.

CLINICAL SERVICES

SUNDAY, APRIL 29, 2018

1:25 PM–1:34 PM Sunday, April 29, 2018

Ignite Sessions

CS2-02

TITLE: EXPRESS CARE, A NOVEL ROLE FOR ED DOCTORS DEPLOYED TO TELEMEDICINE

PRESENTERS: Peter Greenwald, MD MS

Abstract: We have initiated a telemedicine program where Weill Cornell physicians dedicated to telehealth roles see direct to consumer patients, assist in triage, answer telemedicine calls from a local nursing home. These telehealth roles have been described in several different venues; we have consolidated them into one provider preforming a telehealth shift. In addition to these roles we also have patients care for low acuity patients who are physically in our two emergency departments; we call this novel service "Express Care".

Patients are eligible for an Express Care visit if they present to our ambulatory triage with low acuity Emergency Severity Index (ESI) scores and are deemed by the greeter RN unlikely to require significant ED resources. Patients are seen by a physician assistant or nurse practitioner. After this medical screening they are evaluated by the telehealth attending. The physicians who care for patients by telehealth are all part of our medical school faculty who do regular emergency department work. Each is board certified in Emergency Medicine and has greater than 5 years of post-residency clinical experience. The physician does a video exam and as needed may call in prescriptions, order ED medications or x-rays, and arrange for follow up care. The Express Care physician reviews discharge and follow up recommendations and directly discharges the patient, providing them with discharge instructions printed to the patient's room.

Since ECS was launched in July 2016, we have seen more than 3,000 patients with a typical length of stay of 35 to 40 minutes - as compared to an average of 2 to 2.5 hours' stay in the ED for patients seen in person via the traditional ED pathway. These improvements in operational metrics have occurred because the implementation of ECS has allowed us to streamline care by reducing workflow interruptions and delays. The diversion of lower-acuity patients to ECS enables providers and staff in the main ED to focus their attention on patients with more emergent medical conditions, thereby making the care of these patients more efficient. The involvement of the telemedicine doctor in these evaluations helps make the financial case for maintaining a dedicated telehealth position.

Patient satisfaction scores for ECS have been outstanding, ranking in the 99th percentile. Our physicians have also indicated that they enjoy providing this virtual care. As part of our ongoing quality assurance program, we monitor 72-hour ED revisit rates for our ECS patients. Currently, the number of ECS patients who revisit the ED within 72 hours of their virtual visit is less than 3%, which is lower than the 3.5% to 7.5% that has been reported for ED patients in traditional settings, When we account for revisits that were part of the initial treatment plan, the revisit rate is less than 2%. The majority of these unplanned returns do not result in any change in treatment. Even more impressively, to date none of these ECS 72-hour return visit patients have required an admission for inpatient hospitalization.

Learning Objectives:

- Describe how Telemedicine Emergency Department Physician can treat patients who are physically in the Emergency Department.
- Define the departmental and patient level advantages of using a dedicated Telemedicine physician to care for low acuity emergency department patients.
- Explain the role Express Care Service in streamlining Emergency Department efficiency for low acuity patients.

REFERENCES:

1. Ward MM, Jaana M, Natafgi N. Systematic review of telemedicine applications in emergency rooms. *Int J Med Inform.* 2015;84(9):601–16. Epub 2015/06/15.
2. https://www.wsj.com/articles/can-tech-speed-up-emergency-room-care-1490629118
3. http://newyork.cbslocal.com/2017/08/15/emergency-rooms-virtual-consultations/

DIRECT TO CONSUMER STRATEGIES

SUNDAY, APRIL 29, 2018

2:50 PM–2:59 PM Sunday, April 29, 2018

Ignite Sessions

DTC-05

TITLE: MYNURSEBOT - A VOICE APP TO ASSIST PATIENTS WITH CHRONIC DISEASES AND POST EPISODE RECOVERY

PRESENTERS: Hersh Bhargava

Abstract: myNursebot - A bot with a human touch. It is a voice application to engage patients in the post acute care period by asking them the right questions regarding their vitals, compliance to medication, diet and exercise and other health conditions that may affect their recovery. Using artificial intelligence, myNursebot will continuously ask pertinent questions to the patient. Based on the answers myNursebot establishes the pattern of patient's health over time. If it finds that the patients is not on a "normal recovery path" it may inform the nursing staff to intervene and take care of the patient.

In addition to the post acute care, myNursebot can also engage patients with chronic diseases like Diabetes and Hypertension. It can ask for their vitals,

glucose readings and blood pressure readings repeatedly to establish the pattern. myNursebot can engage the doctor's office if the patient's readings are above the target established by American Diabetes Association and JNC guidelines.

myNursebot is currently supported on Amazon's Alexa platform and will be supported on Google's Home, Microsoft Cortana and Apple's Siri as well.

myNursebot improves compliance and increases the patient satisfaction substantially. It also aims to reduce workload on nursing staff by asking questions timely and perhaps repeatedly for them. It may reduce healthcare cost because healthcare provider can do early interventions in a out-patient facility instead of hospitalization.

Learning Objectives:

- recognize that voice apps can provide better patient satisfaction by asking right questions at the right time to patients recovering after acute care or managing chronic conditions.
- see through that voice applications can reduce workload on the nursing staff.
- understand that voice applications can increase patient engagement and compliance in managing and monitoring their health.

REFERENCES:

1. Dr. Sandeep Bhargava, Emory Hospital (sandeep.bhargava@emory.edu)

Direct to Consumer Strategies

SUNDAY, APRIL 29, 2018

1:35 PM–1:44 PM Sunday, April 29, 2018

Ignite Sessions

DTC-03

TITLE: THE FUTURE IS NOW – TECHNOLOGY-ENABLED DELIVERY ALTERNATIVES TO TRADITIONAL HEALTHCARE

PRESENTERS: Marie D. Lee, PMP, MEd, ITIL Foundation

Abstract: The future has arrived, and much like the imagined doctor-on-the-screen in the cartoon The Jetsons, technology enables healthcare providers to reach patients in innovative and radically convenient ways. The Henry Ford Health System (HFHS) Virtual Care team has developed telehealth programs where patients and provider can interact synchronously, via video, or asynchronously, both accessible via a secure patient portal. Patients and providers alike are embracing these new healthcare delivery systems as demands for "anytime, anywhere" service increases. These care alternatives also enhance the HFHS slogan, "All For You."

Asynchronous visits are patient initiated eVisits where the patient answers online questionnaires that are provided based on the symptoms or condition identified. Answers are routed to the provider for assessment and allow flexibility in responding within one business day when there is open time in their schedule. Providers can diagnose and treat, request additional information, or request the patient make an in-person appointment. Average provider time spent is approximately three minutes. Patient time saved could be hours, especially when same day access with a specific provider is often scarce.

Synchronous visits use audio and video to connect patients and provider, real-time, but at a distance. Mobile video visits are conducted through a secure patient portal that can be accessed via an app on a smartphone or through a website on a video-enabled computer. In this case, the patient does not have to travel to the provider's office, yet has the ability to see the doctor for dedicated, one-on-one time to discuss their condition or concerns. Patient travel, as well as exposure to other patients in a doctor's office waiting room, is eliminated. Video brings the provider to the patient via a virtual house call, overcoming time and transportation barriers. Patients have indicated that they are very satisfied with the convenience, as well as the dedicated time and attention of their provider. Doctors indicate their satisfaction through their ability to easily reach patients who otherwise may have been unable to attend an appointment, as well as the ability to have focused time to discuss the patient's health, wellness, concerns, and treatment plan.

At HFHS, the Virtual Care team is delivering on its mission: to improve the healthcare experience by leveraging virtual care and technology to increase access, reduce costs, improve workflows, increase quality, improve customer convenience and enhance existing portals. Technology enabled asynchronous and synchronous encounters allow for radically convenient patient care which eliminates barriers while allowing doctors to provide high quality care, without added cost or time. House calls are again a reality and the future of interacting with your doctor on a video screen is here. And you don't need to have the last name of Jetson!

Learning Objectives:

- To identify strategies to employ technology-enabled delivery alternatives to provide radical convenience to patients (care anytime/anywhere) as well as providers (treating appropriately and via patient preference).
- Apply technology-enabled delivery alternatives to reach patients who otherwise may experience barriers to care (such as transportation, child care, working hours).
- To create in-person clinic access by providing efficient care in an appropriate technology-enabled delivery format to patients not requiring a physical exam by the provider.

Operations and Implementation

SUNDAY, APRIL 29, 2018

1:45 PM–1:54 PM Sunday, April 29, 2018

Ignite Sessions

O-02

TITLE: INNOVATIONS IN REMOTE INTERPRETATION DELIVERY

PRESENTERS: Jeff Cordell

Abstract: By 2020, the United States Census Bureau projects that more than 67 million people residing in this country will speak a language other than English at home. That figure represents 20% of the American population - or one out of every five of our neighbors.

The English fluency of these individuals will vary, of course, but the expectation is that around 41% of this community - or 27.5 million people - will be considered "limited English proficient," meaning they speak the language less than very well.

Apart from LEPs, estimates are that 1 in 20 Americans are deaf or hard of hearing. In round numbers, studies say that nearly 10 million are hard of hearing, while another 1 million are functionally deaf.

How do LEPs, the deaf, and hard of hearing participate in telemedicine, a modality that generally assumes a patient's English fluency, as well as their ability to hear?

To put a finer point on it: Imagine being from one of these vulnerable populations when a natural disaster or other public-safety emergency strikes and healthcare access is even more essential. What do you do when you need help but language and cultural barriers seem insurmountable? To meet your needs, it is essential that healthcare providers and first responders have access to technology that enables fast and effective communication.

The presentation, "Innovations in Remote Interpretation Delivery," will offer a perspective on the ways in which organizations can incorporate remote interpretation into their telemedicine programs. It will help attendees comprehend how sig-

nificant advancements in technology are already improving communication between LEP, deaf, and hard-of-hearing patients and their providers, resulting in improved health outcomes, reduced readmissions, and improved patient satisfaction.

The presenter will review recent breakthrough innovations, including cloud-based, multi-channel-interpretation routing, which enables healthcare organizations, public safety, and first responders to swiftly meet the language needs of these populations regardless of location. He will then discuss innovations in on-demand translation that utilize real-time text and chat.

The session will also include a discussion on near-future advancements in improving language access and increasing efficiencies through artificial Intelligence, machine learning, and robot automation.

Learning Objectives:

- Understand the role of language access in telemedicine.
- Identify recent innovations enabling effective communication for limited English proficient and deaf and hard of hearing patient populations.
- Identify methods to integrate language access solutions into their telemedicine initiatives to improve patient safety and patient satisfaction while reducing readmissions.

REFERENCES:

1. Video Interpreting Testimonial: University of Cincinnati Medical Center is the nation's premier teaching hospital. Believing that the patient should own-their own-healthcare, we partner with the patient, and together we build a plan for their health.
2. Link to videos about language access innovations: https://www.languageline.com/resources/videos

Operations and Implementation

SUNDAY, APRIL 29, 2018

3:00 PM–3:09 PM Sunday, April 29, 2018

Ignite Sessions

O-04

TITLE: STANDARDIZING TELEMEDICINE TRAINING: DEVELOPMENT, IMPLEMENTATION AND EVALUATION OF A BLENDED CURRICULUM

PRESENTERS: Yuemi An-Grogan, MD; Dana Aronson. Schinasi, MD; Mark Adler, MD

Abstract:

Background: The implementation of telemedicine programs across the country is increasing due to healthcare needs and consumer demand. While there is literature on the benefits of telemedicine, there is little information on how to train providers in using telemedicine effectively and safely. As with any other skill, learning to integrate telemedicine into clinical workflows and patient care requires dedicated time, resources and training to create a standardized operation. Few programs have formal, standardized training in providing telemedicine. We have developed, implemented and evaluated a comprehensive simulation-based blended-learning training curriculum for emergency medicine physicians.

Methods: This study was a prospective, single-site, intervention at an academic children's hospital, which was preparing to implement an Emergency Department (ED) telemedicine program, Emergency Care Connect (ECC). The ECC program was implemented over the period of three months and consisted of three phases. The first two are mandatory to obtain privileges as a telemedicine provider: (a) round table session (b) individual session. A third optional step consisted of (c) open office hours with program leaders, as an opportunity to reinforce new skills learned. Prior to participation in the sessions, trainees were provided with an introductory video recording of a simulated ECC encounter.

30 faculty members were divided into groups of 5–8 participants for the round table sessions, which were designed to: provide a program overview, demonstrate simulated patient care encounters, and allow for hands-on practice. Topics covered included program standards, workflows, virtual presence training, technical equipment, and an introduction to the ECC Virtual Handbook, an easily accessible online resource developed for provider reference and decision support.

Individual sessions enabled the prospective ECC provider an opportunity for hands-on practice of the new skill and allowed for assessment of program readiness and proficiency. These sessions consisted of three simulated consultations, ranging from simple medical questions to sensitive subjects and complex situations (e.g., dealing with an angry parent, disclosure of sensitive information). Proficiency was assessed using a dichotomous checklist; employing the technique of deliberate practice to ensure that mastery was achieved on critical items. The checklists were developed according to a review of existing literature and expert feedback.

Data collection: To assess the effectiveness of this intervention, we distributed web-based, anonymous pre/post surveys. Data was analyzed using paired t-tests for the paired data and descriptive statistics for the additional, free-text, question on the post-survey.

Results: Response rate for the pre and post session surveys were 100% and 76% respectively. There was a significant difference in knowledge and attitudes after our intervention, specifically regarding technology and medico-legal/risk issues ($p < 0.05$). Additional qualitative comments were abstracted and will be reported.

Conclusions: We describe the development, implementation, and evaluation of a blended model curriculum for training ED providers in telemedicine. Our curriculum demonstrated evidence for knowledge improvement in our pilot study population. This intervention has been subsequently adopted hospital-wide, given its easy reproducibility as well as customizable nature. Future work includes continual improvements and evaluations to better assess generalizability and adaptability across the various healthcare specialties.

Learning Objectives:

- By the end of the presentation, the audience will be able to describe how to develop a comprehensive blended model training curriculum for a new telemedicine program.
- By the end of the presentation, the audience will be able to describe the implementation of the various modalities of a blended model training curriculum.
- By the end of the presentation, the audience will be able to evaluate the impact of a telemedicine training curriculum.

CLINICAL SERVICES

SUNDAY, APRIL 29, 2018

2:40 PM–2:49 PM Sunday, April 29, 2018

Ignite Sessions

CS2-04

TITLE: WHAT WILL THE TELEMEDICINE REGULATORY WORLD LOOK LIKE IN 2020?

PRESENTERS: Terrence Lewis, JD

Abstract: In a high-paced five (5) minute session participants will receive a brief glance into the future of the telehealth regulatory world and how upcoming regulatory changes will impact future planning of expansion of new and existing telehealth programs. Participants will gain specific knowledge of

the imminent convergence and consolidation of numerous laws and regulations applicable to telehealth that will impact all facets of telehealth programs. In five (5) short minutes participants will be transported to the telehealth regulatory environment that will exist in 2020.

Learning Objectives:

- Upon completion, participants will be able to better understand where the federal and state regulatory telehealth regulatory structure is headed by the year 2020.
- Upon completion, participants will be able to begin to prepare for upcoming changes in the telehealth regulatory structure.
- Upon completion, participants will be better prepared for deploying telehealth programs under forthcoming telehealth regulatory changes.

VALUE (BUSINESS STRATEGY AND FINANCIAL MANAGEMENT)

SUNDAY, APRIL 29, 2018

1:55 PM–2:04 PM Sunday, April 29, 2018

Ignite Sessions

V-02

TITLE: USING TELEHEALTH NETWORKS TO IMPROVE HEALTH OUTCOMES AND ACCESS TO CARE

PRESENTERS: William L. England, PhD, JD; Sarah Bryce, MS

Abstract: Explore how asynchronous telepsychiatry (in which medical information is collected and sent via email or Web applications for later expert review and advice) offers powerful and cost-effective behavioral health expertise to primary care and other settings. Furthermore, examine how artificial intelligence tools like word recognition and language translation extend the benefits of asynchronous telepsychiatry to people with limited English proficiency. Discover the power and potential of this form of stepped integrated behavioral healthcare in reaching and helping more patients than ever before.

Learning Objectives:

- Understand Telehealth Network Grants from the Office for the Advancement of Telehealth (OAT).
- Understand what OAT has learned from its grantees.
- Understand how telehealth can improve access to and quality of care for rural residents.

VALUE (BUSINESS STRATEGY AND FINANCIAL MANAGEMENT)

SUNDAY, APRIL 29, 2018

3:10 PM–3:19 PM Sunday, April 29, 2018

Ignite Sessions

V-04

TITLE: OFFICE FOR THE ADVANCEMENT OF TELEHEALTH GRANT PROGRAMS

PRESENTERS: William L. England, PhD, JD

Abstract: Since 2002, the Office for the Advancement of Telehealth (OAT) has funded hundreds of grantees building telehealth networks connecting thousand of sites for telehealth service, OAT has also supported Telehealth Resource Centers that provide a wide range of public information and services to help telehealth providers. OAT has funded telehealth research, work on license portability, and other programs to advance telehealth. This presentation will summarize OAT's programs and highlight how they may benefit clinicians and facilities starting, expanding, or considering telehealth services. The presentation will explain how to be aware of upcoming funding opportunities.

Learning Objectives:

- Understand grant programs of the Office for the Advancement of Telehealth (OAT) in the Federal Office of Rural Health Policy, HRSA.
- Understand how to benefit from OAT programs such as the Telehealth Resource Centers.
- Understand how to receive notice of new grant opportunities.

CLINICAL SERVICES

SUNDAY, APRIL 29, 2018

2:30 PM–2:39 PM Sunday, April 29, 2018

Ignite Sessions

CS1-04

TITLE: ADVANCING PRACTICE THROUGH CLINICAL QUALITY INITIATIVES IN A TELENEUROLOGY PROGRAM

PRESENTERS: Cynthia Whitney, BSN, RN

Abstract: The Massachusetts General Hospital TeleNeurology Network, in partnership with the Brigham and Women's TeleStroke program, has been in existence since 2000 and presently consists of 27 spoke hospitals throughout Massachusetts, New Hampshire and Maine that vary in size from <20 to >450 beds, and providing about 3,500 consults per year. At the forefront of the MGH TeleNeurology Program is a robust clinical quality initiative which includes efforts to help advance performance at the community hospital as well as internal efforts to guarantee continued performance of our program. These efforts are in full alignment with the latest set of guidelines and best practices from the American Heart, Stroke and Telemedicine Associations, as well as with the American Academy of Neurology. Our clinical quality initiatives include decreasing door to needle time (DTN) across the network, increased retention of tPA patients by the community hospitals, our TeleStroke large vessel occlusion to operating room (TS-LVO2OR) process, as well as internal and external data collection, quarterly programmatic review with our sites and education. We work closely with our community service recipients to ensure the timely and accurate administration of IV tPA to patients while looking for opportunities to decrease DTN times through internal and external processes. Timeliness comparisons with onsite care have led us to estimate a difference of two days for length of stay for local neurology patients.

Well rooted relationships within a hub and spoke model provides the community hospital access to exceptional systems of care through the TeleNeurology Program, where the infrastructure of the academic medical center is leveraged to the benefit of the patient with deep process and system integration. This is evident by our commitment to work with our spokes to increase retention of IV tPA patients at the community hospital. An extension of this initiative is our TS-LVO2OR process which involves timely acquisition

and transfer of specific CTA images, allowing our Neurologists and Neuroendovascular specialists the ability to triage patients for emergent endovascular therapy while also identifying those patients who can remain at the community hospital. Door to groin puncture as low as 17 minutes have been observed at our facility through this process. For those patients that receive IV tPA via the TeleNeurology Program and remain at the community hospital, a 90-day mRS is performed by the TeleNeurology Network Liaison and the results are made available to the community hospital.

Other aspects of our quality initiative include data collection from our TeleHealth Portal and from our sites to guarantee we are providing a comprehensive evaluation of our program. We also provide our sites with quarterly data for their review and as a means of providing constructive, actionable feedback.

In conclusion, a clinical quality initiative is a necessary component of any successful and sustainable TeleNeurology Program.

Learning Objectives:

- Describe how the hub and spoke relationship can effect the success of clinical quality initiatives.
- Describe how different clinical quality initiatives can be interwoven to gain greater leverage.
- Describe how a clinical quality initiative can contribute to the improvement of the overall success of a TeleNeurology program.

REFERENCES:

1. (November 3, 2016). Telemedicine Quality and Outcome in Stroke A Scientific Statement for Healthcare Professionals From the American Heart Association/American Stroke Association. Stroke. 2017;(E3):e25: 1-24. Retrieved September 13, 2017, from http://stroke.ahajournals.org/content/48/1/e3

OPERATIONS AND IMPLEMENTATION

SUNDAY, APRIL 29, 2018

2:30 PM–3:45 PM Sunday, April 29, 2018

Learning Labs

O-05

TITLE: OVERCOMING RESEARCH BARRIERS TO TELEHEALTH EXPANSION

PRESENTERS: S. David McSwain, MD MPH; John Chuo, MD, MS, IA; Brooke E. Yeager, MSc, RRT; Christina Olson, MD; Alison Curfman, MD; Jillian B. Harvey, MPH, PhD

Abstract: Discover how the shortfall in rigorous academic research hinders telehealth adoption. Examine how research supports all aspects of telehealth expansion, from adoption to reimbursement. Work with other participants to identify research metrics as well as targeted, effective research endeavors that could advance a national telehealth research agenda.

Learning Objectives:

- Describe the impact that telehealth research, or lack thereof, has on federal and state legislation, regulations, and on the acceptance and adoption of telehealth by multiple stakeholders.
- List the barriers to conducting rigorous telehealth research at both the institutional and multi-institutional level.
- Formulate an effective action plan to stimulate the development of telehealth research as a central focus of telehealth development across the country.

REFERENCES:

1. McSwain SD, Bernard J, Burke BL Jr, Cole SL, Dharmar M, Hall-Barrow J, Herendeen N, Herendeen P, Krupinski EA, Martin A, McCafferty D, Mulligan DA, North S, Ruschman J, Waller M, Webster K, Williams S, Yamamoto S, Yeager B. American Telemedicine Association.
2. Harvey JB, Yeager BE, Cramer C, and McSwain SD. Impact of Telemedicine on Pediatric Critical Care Triage. Pediatric Critical Care Medicine. September 2017. Publication pending.
3. National Quality Forum. Creating a Framework to Support Measure Development For Telehealth. August 2017. Download draft at http://www.qualityforum.org/Publications/2017/08/Creating_a_Framework_to_Support_Measure_Development_for_Telehealth.aspx

DIRECT TO CONSUMER STRATEGIES

SUNDAY, APRIL 29, 2018

1:15 PM–1:44 PM Sunday, April 29, 2018

Seminar

DTC-01

TITLE: CHANGING BEHAVIOR AND WINNING GREATER ENGAGEMENT WITH TELEHEALTH

PRESENTERS: Karen Horgan, MBA

Abstract: Learn the behavioral economics behind why patients and physicians resist adopting telemedicine despite its effectiveness. Examine ways to think differently about increasing telemedicine adoption. Consider scientific evidence and case studies, and explore specific consumer marketing strategies and detailed provider programs that successfully led to patient and physician engagement with telemedicine and telehealth tools.

Learning Objectives:

- Upon completion, participants will be able to identify and use behavioral economics based approaches to increase patient acceptance of telemedicine.
- Upon completion, participants will be able to identify opportunities and apply tailored direct-to-consumer communications to drive use of telemedicine.
- Upon completion, participants will be able to understand approaches to increase provider telemedicine adoption.

DIRECT TO CONSUMER STRATEGIES

SUNDAY, APRIL 29, 2018

1:45 PM–2:15 PM Sunday, April 29, 2018

Seminar

DTC-02

TITLE: THINK LIKE A DESIGNER TO BUILD A BETTER TELEMEDICINE PROGRAM

PRESENTERS: Chad Ellimoottil, MD, MS; Aalap Doshi, MS; Molly Dwyer-White, MPH

Abstract: Learn from an expert panel how to apply innovative design thinking (a human-centered approach to innovation) to telemedicine program development. Discover the basic principles of human-centered design and learn how to collect high-quality data and feedback from patients. Gain insights from real-world experiences in developing a direct-to-consumer specialty telemedicine program at a large academic medical center.

Learning Objectives:

- Describe the principles of human-centered design and how to directly apply design thinking to telemedicine program development.
- Understand how to solicit information from patients in a systematic fashion.
- Apply principles of human-centered design at their own health system by understanding how it was applied at the University of Michigan.

REFERENCES:

1. http://www.aalapdoshi.com/

OPERATIONS AND IMPLEMENTATION

SUNDAY, APRIL 29, 2018

2:30 PM–3:30 PM Sunday, April 29, 2018

Seminar

O-03

TITLE: IMPLEMENTING AN EHR SYSTEM IN ALASKA—OPPORTUNITIES, CHALLENGES AND RESULTS

PRESENTERS: Sarah Freeman, PharmD; Garret Spargo, MA

Abstract: Discover how electronic health records affected telemedicine visits and workflows when implemented across 10 Alaska tribal health organizations. Look at data and gain insights into lessons learned about the transition and the challenges as well as the benefits. Discover what to expect and how to evaluate and prepare for the workflow and technical changes with EHR implementation across multiple health organizations.

Learning Objectives:

- Upon completion, participant will be able to describe how electronic health record implementation has impacted telemedicine encounter volumes (store and forward and live video) across multiple organizations in Alaska.
- Upon completion, participant will understand the opportunities/challenges to telemedicine that a new EHR implementation brings (including perspectives from providers, support staff, revenue cycle, IT and telehealth application integration).
- Upon completion, participant will be able to describe the telemedicine workflow and technical changes that should be considered before and after implementing an EHR.

OPERATIONS AND IMPLEMENTATION

SUNDAY, APRIL 29, 2018

1:15 PM–2:15 PM Sunday, April 29, 2018

Seminar

O-01

TITLE: HARNESSING BLOCKCHAIN TO EXPAND TELEHEALTH

PRESENTERS: Jason C. Goldwater, MA, MPA

Abstract: Discover how blockchain technology"originally developed for bitcoin"can create a secure record of transactions to empower both telehealth providers and patients. Explore how this technology can capture data from a wide variety of sources including electronic medical records, self-tracking devices, smartphone applications and personal health records. The outcomes can prove game-changing in making the most of vast data and enabling providers to take a more proactive and focused approach and patients to become more engaged in their own care.

Learning Objectives:

- Upon completion, participants will be able to explain the relationship between blockchain and telehealth.
- Upon completion, participants will be able to appraise the use of blockchain within their telehealth program.
- Upon completion, participants will be able to plan a potential blockchain strategy for various telehealth modalities.

REFERENCES:

1. https://www.healthit.gov/sites/default/files/6-42-use_of_blockchain_to_develop_proms.pdf
2. http://histalk2.com/2017/04/03/the-blockchain-interview-with-jason-goldwater/

VALUE (BUSINESS STRATEGY AND FINANCIAL MANAGEMENT)

SUNDAY, APRIL 29, 2018

1:15 PM–2:15 PM Sunday, April 29, 2018

Seminar

V-01

TITLE: VIRTUAL VISITS: ADDED COST OR VALUE ADDED?

PRESENTERS: Tim G. Lovell, MBA; William Daines, MD; Joe Dalto, PhD

Abstract: Examine study results addressing how telehealth or virtual visits affect the overall cost of care. Understand the methods used and the results that found that most conditions cost considerably less in telehealth visits in terms of claim and patient costs. Come away with benchmark data and approaches to apply to when evaluating the cost of treatment across different healthcare venues.

Learning Objectives:

- Upon completion the participant will understand a method to evaluate the whole cost of treatment for certain low acuity conditions in various treatment venues.
- Upon completion the participant will understand the various quality and cost considerations that should be made in accessing the effectiveness of new telehealth programs.
- Upon completion of this session, the learner will have access to benchmark data in conducting their own analysis of direct-to-consumer programs.

REFERENCES:

1. Gordon E et al. Virtual Visits for Acute, Nonurgent Care: A Claims Analysis of Episode-Level Utilization. *JMIR*. 2017;19(2). https://www.jmir.org/2017/2/e35/
2. Ashwood JE et al. Direct-To-Consumer Telehealth May Increase Access To Care But Does Not Decrease Spending. *Health Aff*. 2017:36(3):485-291.

DIRECT TO CONSUMER STRATEGIES

SUNDAY, APRIL 29, 2018

2:30 PM–3:30 PM Sunday, April 29, 2018

CLINICAL SERVICES

SUNDAY, APRIL 29, 2018

2:30 PM–3:30 PM Sunday, April 29, 2018

Seminar

CS1-03

TITLE: DEVELOPING ROBUST TELEHEALTH SERVICES INTEGRATED WITHIN EMR

PRESENTERS: Steven Dean, MS; Theresa Marie Davis, PhD, RN, NE-BC; Edward Loo, MSECE

Abstract: Learn from an award-winning organization's experience in developing robust telehealth services in many specialty areas and integrating those capabilities inside an electronic medical records (EMR) system. Explore the lessons learned regarding coordinating programs, engaging stakeholders, maintaining clear communication, tailoring technological options to fit clinical needs and managing the many changes. See what the data says and come away with innovative ideas for future telemedicine solutions.

Learning Objectives:

- Demonstrate the migration and integration of telehealth services inside and alongside an EMR.
- Deliver outcomes and metrics highlighting program success.
- Identify barriers and outline effective leadership roles to ensure program success.

CLINICAL SERVICES

SUNDAY, APRIL 29, 2018

2:30 PM–3:30 PM Sunday, April 29, 2018

Seminar

CS2-03

TITLE: SETTING NATIONAL STANDARDS FOR SCHOOL TELEHEALTH

PRESENTERS: Steve North, MD, MPH; Stormee Williams, MD; Amanda K. Martin, MHA

Abstract: Consider the growing need for national standards for telehealth services in schools. Review and discuss a proposed set of performance standards and measures" developed from a variety of prestigious national guidelines and statements" intended to support implementation and quality. Learn about efforts to collaborate with and unify stakeholders on this important issue and refine best practices.

Learning Objectives:

- Recognize the need for common measures to evaluate the impact of telehealth in schools on clinical and process domains.
- Discuss the coordination of care between school-based programs and the medical home.
- Articulate five of the proposed basic standards for the use of telehealth in schools.

VALUE (BUSINESS STRATEGY AND FINANCIAL MANAGEMENT)

SUNDAY, APRIL 29, 2018

2:30 PM–3:30 PM Sunday, April 29, 2018

Seminar

V-03

TITLE: MAKING THE (BUSINESS) CASE: HOW TO ADDRESS SHORTFALLS IN THE MILITARY HEALTHCARE SYSTEM

PRESENTERS: Joseph Wood, MD, PhD; Daniel Yourk, MAJ, AN, MSN, MHA, FACHE

Abstract: Explore using business case analysis to address specialist shortages in the military health system, where such shortfalls can adversely affect not only costs but also military readiness. Review data from an analysis on how to expand tele-endocrine services. Learn how to identify demand and capacity and what metrics to consider in developing or expanding telehealth services to address specific needs.

Learning Objectives:

- Upon completion participant will understand methods to identify demand and capacity in developing telehealth services.
- Upon completion, participant will be able to describe elements of a business case analysis applied to telehealth services.
- Upon completion, participant will be able to list metrics to consider in a business case analysis for telehealth services.

CLINICAL SERVICES

SUNDAY, APRIL 29, 2018

1:15 PM–2:15 PM Sunday, April 29, 2018

Seminar

CS2-01

TITLE: COMPLEX MEDICAL CASE? TURN TO ANALYTICS AND COLLABORATION

PRESENTERS: Lewis Levy, MD, FACP

Abstract: In this panel discussion, explore tools and strategies for ensuring patients receive the right diagnoses and treatments, particularly for complex cases in which care is fragmented. Examine the importance of collaboration between providers, care managers and telehealth specialists, and learn how data and analytics can help identify cases vulnerable to errors and mitigate them. Understand the value of embedded second opinions and how telehealth can change the trajectory of complex cases.

Learning Objectives:

- Describe why collaboration between providers, care managers, and telehealth specialists is critical to ensuring the right diagnosis and the right treatment.
- Identify how data and analytics aid the identification of highly complex, high cost cases.
- Demonstrate how combining clinical intelligence with telehealth can change the trajectory of complex cases.

REFERENCES:

1. Zimmerman Young, E. (2017, Apr 4). Mayo Clinic researchers demonstrate value of second opinions. Retrieved from http://newsnetwork.mayoclinic.org/discussion/mayo-clinic-researchers-demonstrate-value-of-second-opinions/

CLINICAL SERVICES

SUNDAY, APRIL 29, 2018

1:15 PM–2:15 PM Sunday, April 29, 2018

Seminar

CS1-01

TITLE: BUILDING A SUCCESSFUL SCHOOL-BASED TELEHEALTH PROGRAM

PRESENTERS: Kathryn Cristaldi, MD, MHS; Elana Wells, MPH, CHES; Kelli Garber, MSN, APRN, PPCNP-BC; Regan Stewart, PhD

Abstract: Explore how school-based telehealth" when built well and collaboratively" efficiently offers access to physical and mental health services for underserved youth. Hear first-hand perspectives from a successful team of implementers and discover what you need to know about development, implementation, challenges and outcomes. Explore the crucial features for building a growing and sustainable program. Emerge with knowledge and strategies for engaging key partners and building your own successful program.

Learning Objectives:

- Identify key stakeholders in your state that must be "at the table" and involved in decision making for implementation of a successful school-based telehealth program.
- Recognize the policy implications and operational groundwork that must be in place to implement a successful school-based telehealth program.
- Understand the importance of multi-disciplinary care in school-based telehealth to include physicians, nurse practitioners, school-nurses, mental health professionals and administrators.

VALUE (BUSINESS STRATEGY AND FINANCIAL MANAGEMENT)

MONDAY, APRIL 30, 2018

2:30 PM–3:30 PM Monday, April 29, 2018

Seminar

V-05

TITLE: THE REAL STORY OF TELEHEALTH REIMBURSEMENT: EXACTLY HOW DO I GET PAID?

PRESENTERS: Nina M. Antoniotti, RN, MBA, PhD

Abstract: Medicare, Medicaid, and private health plan payment for Telehealth or virtual care is often misunderstood by TeleHealth providers. This presentation takes a simple, straight-forward approach to helping the participant understand how to determine whether or not services are covered via TeleHealth by CMS. The RUCA calculator for rurality is covered with specific

examples shown. CMS CPT codes and explanations of how these codes are used/modified/updated is explained to the session participants, as well as how to apply MSA and urban rules. Medicaid is often trickier as each state applies its own set of rulemaking to paying for services delivered via TeleHealth. The difference between CMS Medicare and state-based Medicaid payment is discussed. Specific state examples are covered to ensure that participants understand how to interpret 'good' and 'vague' Medicaid language. Parity laws are discussed as these rules apply to private payers, Medicaid and Medicare. Participants will have ample time to ask questions about specific examples. With so many new comers to Telehealth, understanding government payers is a topic that never grows old. With annual changes to Medicare reimbursement, and the growing number of states that are instituting or amending Medicaid rules, even experienced TeleHealth programs have a need to understand the new rules. The session will cover the new 2018 requirements for CMS, Medicaid (some state examples) and movement of state's Office of Insurance Commissioners and NCQA to using TeleHealth in calculations of network adequacy. The two new bundled payment systems that include the use of TeleHealth in the home will also be highlighted. Chronic care management codes and TeleHealth is still greatly misunderstood and examples of how to use and bill these codes will be reviewed. This session provides a comprehensive overview of government and private payer reimbursement and gives the participant additional resources to use after the session is complete.

Learning Objectives:

- Understand Medicare's carve-out for TeleHealth and the new codes for 2018 including fee-for-service professional component, facility fees, originating sites, definition of rural, and eligible providers and services.
- Explain state-based Medicaid regulatory language and how to ensure coverage by researching, identifying and understanding state regulatory and legislative language governing Medicaid payment for services delivered via TeleHealth.
- Identify the requirements for non-traditional CMS, Medicaid and Private Payer reimbursement for bundled and episode of care payment programs, value based purchasing, shared savings, and quality/cost payment models.

VALUE (BUSINESS STRATEGY AND FINANCIAL MANAGEMENT)

SUNDAY, APRIL 29, 2018

2:30 PM–3:45 PM Sunday, April 29, 2018

Learning Labs

V-19

TITLE: TELERADIOLOGY: LESSONS FOR TELEMEDICINE FROM AN ESTABLISHED SPECIALTY

PRESENTERS: Elizabeth Krupinski, PhD; Alan Pitt, MD PhD

Abstract: Radiology is one of the oldest and most established clinical specialties engaged in telemedicine and is integrally embedded in the majority of healthcare enterprises to the extent that the term teleradiology is often not even used. The evidence regarding teleradiology and related applications confirms its feasibility/acceptance, its positive effects on patient outcomes, and costs of interventions. However, teleradiology still faces many challenges as our healthcare system changes, payment structures change, and quality programs such as MACRA are implemented. The evolution, long history and current changes in the daily practice of teleradiology can provide many lessons for those in other clinical specialties. This panel will provide a brief overview of the history and current state of teleradiology, the challenges radiology departments and practicing radiologists are facing today with teleradiology internally and from the enterprise and industry perspective, and a discussion of some of the important payment and quality initiatives that are and will impact the practice and growth of teleradiology in today's healthcare environment.

Learning Objectives:

- Understand the factors that facilitated the early growth and current sustainability of teleradiology.
- Appreciate the challenges teleradiology is currently financial and organizational facing and how other specialties can learn from them.
- Apply lessons from teleradiology regarding payment and quality initiatives to other clinical specialties using telemedicine.

OPERATIONS AND IMPLEMENTATION

MONDAY, APRIL 30, 2018

4:00 PM–5:00 PM Monday, April 30, 2018

Facilitated Roundtable Discussion

O-10

TITLE: HENRY FORD "DRIVING" CARE REDESIGN THROUGH VIRTUAL CARE

PRESENTERS: Courtney B. Stevens, MsEM; Marie D. Lee, PMP, MEd, ITIL Foundation; John Deledda, MD; Douglas Ditri, MSA

Abstract: The future of healthcare delivery includes faster and bigger changes ahead. Telehealth and other emerging tools are being used by many organizations to foster service innovation. Henry Ford Health System (HFHS) has developed standards and operating procedures to make implementation of virtual care, or telehealth, programs seamless for stakeholders. By completing various care redesign virtual pilot programs, including both primary care and specialty virtual encounters, HFHS has been able to increase volume and participating specialties with positive patient and provider results. The experiences of HFHS will reaffirm both Abraham Lincoln's sentiment, "The best way to predict your future is to create it" and Henry Ford's profound assessment, "Whether you think you can, or think you can't, you're right."

In the beginning stages, HFHS worked with early clinical adopters to develop care redesign opportunities, standards and streamline implementation. As the program matured, the deployment and adoption of virtual care has fostered growth year over year in both synchronous virtual video visits/consults and asynchronous/store-and-forward encounters. Through July 2017, HFHS has conducted 1,500 virtual video visits/consults and over 1,100 asynchronous/store-and-forward encounters. In addition, Henry Ford also admitted more than 1,600 new patients to their e-Home Care program (remote tele-monitoring at home) with 200 patients active daily.

Through the use of project management tools, standardization, and operational strategy, HFHS the Virtual Care department has been able to

support the mission which includes improvement to the healthcare experience by leveraging virtual care to increase access, reduce costs, improve workflows, increase quality, improve customer convenience and enhance existing portals. Through successful pilot experiences, the team was able to use lessons learned and PDCA (Plan, Do, Check, Act) methodology to fine tune the virtual care implementation and structure to support adoption and scalability in program deployment. As we progressed through program deployments consistent themes presented as opportunities for improvement. These roadblocks and opportunities included reimbursement, EMR integration, compliance (i.e. security, licensure, and credentialing), and the patient's perception. The key roadblocks to the patient's perception included awareness of the value proposition for telehealth, confidence that telehealth was good medicine, and the evolution of telehealth as a more visible part of our healthcare system. In tandem, some of the keys to the successful infrastructure and programs have included executive leadership support, engaged stakeholders, communication, dedicated telehealth subject matter experts for the enterprise, and standard processes.

Henry Ford Health System's Virtual Care footprint continues to grow, and as it does the infrastructure and processes will evolve to ensure that we are creating a sustainable and innovative product. This pioneering product will "drive" the adoption and scale of Virtual Care throughout the organization, which has allowed us to not only predict, but create our future in telehealth.

Learning Objectives:

- Upon completion of the presentation, the participant will be able to understand key project management and process components to obtain adoption and scalability in virtual care program development.
- Upon completion of the presentation, the participant will be able to develop an operational strategy based on meaningful and demonstrated tactics.
- Upon completion of the presentation, the participant will be able to recognize obstacles, keys to success, learnings and opportunities in care redesign using virtual care.

CLINICAL SERVICES

MONDAY, APRIL 30, 2018

4:00 PM–5:00 PM Monday, April 30, 2018

Facilitated Roundtable Discussion

CS1-10

TITLE: WHERE DO WE GO NEXT? USING TELEHEALTH TECHNOLOGIES IN NURSING

PRESENTERS: Colleen A. Berding, MS RN-BC CRRN MSCN; Timothy Moore

Abstract: As noted in Taylor and Coates (2015) implementing telehealth solutions for nurses can be challenging. Overall, in practice, the majority of solutions are geared to nurses practicing in the outpatient setting. In the May 2014 survey (AAACN, 2014), nurses stated overwhelmingly that training and education "would best support telehealth practice" in their respective organizations. In addition, according to Hicks and Cimarolli (2016), nursing interventions via telehealth often provide opportunities for improving patient outcomes and care transitions. In our presentation, we will describe four ways nurses can understand their role in implementing telehealth/connected care solutions in a variety of settings. Next, we will define options available to nurses. Finally, we will provide two examples of ways to implement successful nurse-led projects.

Learning Objectives:

- Understand the role of nurses in implementing telehealth solutions.
- Define four options available to nurses in a variety of settings.
- Provide two examples of ways to implement successful projects.

REFERENCES:

1. American Academy of Ambulatory Care Nursing, (2014, May) Telehealth nurse practice survey, Retrieved from https://www.aaacn.org/sites/default/files/documents/THSurveyResults2014.pdf
2. Hicks SA, Cimarolli VR. The effects of telehealth use for post-acute rehabilitation patient outcomes. *J Telemed Telecare* 2016;(0,0) Retrieved from http://journals.sagepub.com/doi/pdf/10.1177/1357633X16686771
3. Taylor J, Coates L. Caring from a distance: the role of telehealth. Nursing Times. 2015;111(28/29):18-20, Retrieved from https://www.nursingtimes.net/roles/district-and-community-nurses/caring-from-a-distance-the-role-of-telehealth/5087446.article

VALUE (BUSINESS STRATEGY AND FINANCIAL MANAGEMENT)

MONDAY, APRIL 30, 2018

4:00 PM–5:00 PM Monday, April 30, 2018

Facilitated Roundtable Discussion

V-13

TITLE: A COMMERCIAL PAYER'S PERSPECTIVE ON PAYMENT MODELS FOR VIRTUAL CARE

PRESENTERS: Melinda L. Schriver, MHA, MBA; Julie Lamb

Abstract: The transformation from Fee-for-Service to Value-Based Care has both insurers and providers focusing attention on service and payment models expected to increase value by increasing access, improving quality, and enhancing the patient experience, while decreasing the cost of care. Both insurers and providers are driving the adoption of virtual visits as technology, consumerism, and budgetary pressures converge to reveal the value proposition of virtual visits. Realization of the value of virtual visits is dependent upon provider adoption of the service, yet reimbursement is reported as the most significant barrier to provider adoption. Learn how one commercial payer developed a reimbursement strategy designed to achieve both provider and insurer goals.

Learning Objectives:

- Identify virtual visit payment options typically considered by commercial insurers.
- Describe the importance of developing a virtual visit strategy that optimizes financial goals, as well as outcomes and patient experience.

- Identify insurer concerns regarding payment for virtual visits and describe successful approaches to collaborate with insurers to overcome these concerns.

DIRECT TO CONSUMER STRATEGIES

MONDAY, APRIL 30, 2018

9:30 AM–10:15 AM Monday, April 30, 2018

Facilitated Roundtable Discussion

DTC-08

TITLE: A USER-CENTERED APPROACH FOR DEVELOPING A TYPE 1 DIABETES APP FOR ADOLESCENTS AND THEIR PARENTS

PRESENTERS: Bree Holtz, PhD; Katharine M. Murray, MA; Denise Hershey, PhD, RN, FNP-BC; Joshua Richman, MD, PhD; Julie Dunneback, MSN, APRN, BC, CPNP, CDE; Arpita Vyas, MD; Michael Wood, MD

Abstract:

Introduction: Type 1 diabetes (T1D) impacts approximately 1.25 million Americans, many of them children. Diabetes management is extremely complex, as a result, approximately 75% of adolescents and teens going through the transition to self-management (from parent management) do not have adequate control of their blood sugars.

Mobile health (m-Health)-the use of mobile phones/tablets to help improve health-is a way to improve health outcomes in many different conditions, including T1D. Mobile technology is almost ubiquitous today in the USA. Nearly 75% of teens and 76% of parents have access to a smartphone.

The objective of this study was design, develop, and conduct a pilot test of a mobile app for adolescents with T1D and their parents to aid in this transition using a user-centered design.

Methods: The development process consisted of four key stages: 1) inductive focus groups and interviews with teens with T1D, parents of children with T1D, and certified diabetes educators; 2) development of a wire-frame and gaining feedback from users; 3) app development; and 4) app prototype testing.

Stage 1 - This qualitative study included 12 teens, 9 parents, and 5 pediatric diabetes educators who participated in a focus group or interview. Four themes emerged: 1) family communication characteristics, 2) denial, 3) provider communication characteristics, and 4) transition facilitators. Using this feedback, we worked with app developers to create a wire frame of the app.

Stage 2 - We presented the wireframe to two separate focus groups. The focus groups were conducted with 5 adolescents ages 10-13 and separately with 7 parents. Our app concept was well-received and participants thought it would help aid in the transition to adolescent self-management. Their feedback was used to refine the app in preparation of final development.

Stage 3 - Feedback from the focus groups was compiled to drive app development. Full design and development of the app took 10 months.

Stage 4 - We recruited 15 parent/teen groups to use the MyT1DHero app for four weeks. At posttest they asked questions regarding satisfaction and ease of use of the app. They also participated in short phone interviews regarding their experience using the app. Additionally, we used server data to examine actual app usage.

Ten family dyads completed the study. Three main themes emerged, 1) app crashing issues, 2) problems with notifications; and 3) positive feedback. These results were used to refine the app for future testing. The survey results indicated that all the participants were satisfied with the app and thought that it was easy to use.

Discussion: Through this user-centered process we were able to correct the technical issues and add requested user features. Smartphone applications have the potential to be a novel intervention for engaging teens and their parents in positive communication to support T1D management and the transition to teen self-care.

Learning Objectives:

- Demonstrate the importance of user-centered design.
- Identify lessons learned in an mHealth app prototype study.
- Identify key features of working with adolescents and parents in app development.

REFERENCES:

1. Holtz BE, Murray KM, Hershey DD, Dunneback JK, Cotten SR, Holmstrom AJ, et al. Developing a Patient-Centered mHealth App: A Tool for Adolescents With Type 1 Diabetes and Their Parents. *JMIR mHealth and uHealth*. 2017;5
2. http://www.pewinternet.org/fact-sheet/mobile/
3. van der Velden M, Sommervold MM, Culén A, Nakstad B. (2016). Designing interactive technologies with teenagers in a hospital setting. In Perspectives on HCI Research with Teenagers (pp. 103-131). Springer International Publishing.

DIRECT TO CONSUMER STRATEGIES

MONDAY, APRIL 30, 2018

4:00 PM–5:00 PM Monday, April 30, 2018

Facilitated Roundtable Discussion

DTC-13

TITLE: ASYNCHRONOUS VISITS: BALANCING PATIENT AND PROVIDER SATISFACTION

PRESENTERS: Ronald Dixon, MD, MA; John Schmucker, MBA

Abstract: Partners HealthCare (Massachusetts General Hospital) has developed an asynchronous virtual care platform for the evaluation and management of chronic conditions which has been enthusiastically embraced by clinicians and patients alike. Over 20,000 visits with 10,000 patients have been completed, not only aiding in the delivery of care, but motivating patients to engage in their own care and condition outside of the clinical setting. We will explore the common goals that patients and providers have in the use of virtual care, as well as where provider and institutional needs may conflict with those of patients. Grounded in visit data and patient and provider satisfaction measures, we will discuss how the consumer's need for a more modern and convenient approach to receiving care can be met, while providing enough value to the clinician for them to open the gates to widespread adoption of this telehealth modality.

Learning Objectives:

- Identify barriers to and drivers of clinician acceptance of direct to patient virtual care.
- Rank patients' perceived benefits in using asynchronous care.

- Understand the tradeoffs in meeting the needs of both patients and clinicians in delivering asynchronous care.

REFERENCES:

1. Dixon RF, Rao L. Asynchronous Virtual Visits for the Follow-up of Chronic Conditions. *Telemed J E Health.* 2014;20(7).
2. Ganguli I, Wasfy JH, Ferris T. What Is the Right Number of Clinic Appointments? Visit Frequency and the Accountable Care Organization. *JAMA.* 2015;313(19):1905-1906.
3. Patient and Provider Satisfaction Research within Massachusetts General Hospital.

VALUE (BUSINESS STRATEGY AND FINANCIAL MANAGEMENT)

MONDAY, APRIL 30, 2018

9:30 AM–10:15 AM Monday, April 30, 2018

Facilitated Roundtable Discussion

V-07

TITLE: TELEWOUND VALUE ACROSS THE CARE CONTINUUM

PRESENTERS: Amy Roberts, MHA

Abstract: Connecting wound care nurse and physician specialists through telehealth with outlying rural hospitals, nursing homes, home health, and other post-acute sites can improve the delivery of specialized wound, ostomy and continence care while reducing costs.

Lack of services and resources for expert wound care during hospital stay can lead to increased wound chronicity and acuity, contributing to increased emergency department (ED) visits, unplanned hospital admission and readmission rates, increased length of stay (LOS), lost hospital revenue, and decreased patient/family satisfaction. Additionally, creating a model for wound care services to extend beyond the inpatient setting provides continuity of care to further improve patient outcomes and reduce additional healthcare utilization.

Opportunities will be highlighted to connect wound care specialists during hospital stay, at nursing homes, and during home health visits. The value proposition and business case will be presented for each opportunity, summarized as follows:

Direct Impact (Patients, Providers)

- Early detection and rapid treatment
- Greater access to specialty care/increase referrals
- Reduces incidents of long-term disability
- Reduced hospital length of stay
- Patient and provider satisfaction
- Patient remains at appropriate level of care
- Reduces costs of unnecessary transfers

Indirect Impact (Broader community)

- Reduces costly inpatient rehab and nursing home care
- Keeps patients in their community
- Improves bottom line of community hospitals

Learning Objectives:

- Identify opportunities for telewound care across the continuum in acute and post-acute care.
- Understand the value proposition and business case for telewound care across the continuum.
- Apply the value proposition for telewound care within the attendee's own healthcare organization.

DIRECT TO CONSUMER STRATEGIES

MONDAY, APRIL 30, 2018

10:35 AM–10:44 AM Monday, April 30, 2018

Ignite Sessions

DTC-10

WITHDRAWN

VALUE (BUSINESS STRATEGY AND FINANCIAL MANAGEMENT)

MONDAY, APRIL 30, 2018

10:55 AM–11:04 AM Monday, April 30, 2018

Ignite Sessions

V-09

TITLE: ACCESS TO BETTER HEALTH AND CLEAR SKIES

PRESENTERS: Andrew L. Hollander, PhD, MBS, PMP

Abstract:

Background: Telemedicine has significate benefits to society beyond direct improvements to health and access to care. One of these many benefits if the reduction of greenhouse gas emissions. Transportation is the second largest contributor to greenhouse gas emissions 27%, just below electricity production at 29%. Telemedicine greatly reduces the need for patients and physicians to travel to see each other. One area that telemedicine can greatly reduce greenhouse gases is in the reduction of emergent patient flight transfers. Greenhouse gases produced by aviation has a larger effect on climate change because of it being released higher up in the atmosphere. Telemedicine can reduce the number of unnecessary flights by giving rural patients access to a medical specialist that don't exist in smaller hospitals.

Methods: Twelve hospitals in New Mexico took part in the Accessibility to Critical Cerebral Emergency Support Services (ACCESS) program, which allows rural doctors to consult with stroke specialists to provide better care. One of the results of these consultations is a reduction in patient transfer rates. Fewer transfers mean less greenhouse gas emissions from emergent patient transfer flights. We calculated total carbon dioxide equivalent (CO_2) emissions using Environmental Protection Agency, Energy Information Administration, and locality-specific emission conversion factors. We also calculate what the potential reductions in emissions would look like if the program was expanded to cover all hospitals in New Mexico and similar areas across the U.S.

Results: Participation in ACCESS from May 2015 to July 2017 resulted in 2,020 consultations. Of these consultations, there was a 70% (1414) reduction in patient transfers. Emission reduction totaled 243,575 kg of CO_2 (469.5 metric tons). Expanding the program across New Mexico and similar U.S. areas resulted in potential reductions of 3,235 (IQR 2,569 - 3999) and 110,016 (IQR 88,294 - 135,979) metric tons of CO_2.

Conclusion: Transport accounts for 26% of global CO_2 emissions and is one of the few industrial sectors where emissions are still growing. What makes this more impactful is that aviation's emissions are not part of the Kyoto Protocol and little is being done in this sector. Greenhouse gas reduction was not the main intention of the ACCESS program but it has shown to be a significant by-product.

Learning Objectives:

- Evaluate the current and potential reduction in greenhouse gas emissions from a Neuro-Emergent telemedicine consultation program.
- Identify potential reductions in Greenhouse gases for other Telemedicine programs.
- Conduct comparison of the size of greenhouse gases reductions to other models and CO2 emissions.

REFERENCES:

1. EPA, US. Sources of Greenhouse Gas Emissions. Retrieved December 16 (2013):2013.
2. U.S. Energy Information Administration (2016). Electricity Explained - Basics.
3. Dullet, NW, et al. Impact of a University-Based Outpatient Telemedicine Program on Time Savings, Travel Costs, and Environmental Pollutants. *Value in Health* 2017;20(4):542-46.

OPERATIONS AND IMPLEMENTATION

MONDAY, APRIL 30, 2018

10:45 AM–10:54 AM Monday, April 30, 2018

Ignite Sessions

O-07

TITLE: BUILDING RELATIONSHIPS THROUGH ASYNCHRONOUS COMMUNICATION: THE PATIENT PORTAL

PRESENTERS: Carol R. Berteotti, MA

Abstract: With more than one million accounts, Mayo Clinic's Patient Online Services is well used and valued by patients. For the patients, it's a communication tool, a medical record, a calendar, a source of healthcare information. For the healthcare team, it's an efficient way to share information with patients and build relationships. Our portal is used by 65% to 70% of our patients or patient caregivers-roughly three times the industry standard for academic medical centers. In the past year, more than 1.5 million secure messages have been sent via the portal. From the patients' point of view, the portal is a success as evidenced by its use and high marks on user satisfaction surveys. This presentation will discuss, through portal stories, the contributing factors to this success including open access to clinical notes and lab results, access to the portal through both web and app, and a dedicated customer service team.

Learning Objectives:

- Explain how a patient portal helps to create relationships between patient and healthcare teams.
- Discuss the unique characteristics of Mayo Clinic's patient portal that contribute to its success.
- Identify ways to use patient portals as part of relationship building.

CLINICAL SERVICES

MONDAY, APRIL 30, 2018

10:25 AM–10:34 AM Monday, April 30, 2018

Ignite Sessions

CS2-07

TITLE: BRINGING TELEMEDICINE TO THE EMERGENCY ROOM: A NEW WAY TO SEE PATIENTS

PRESENTERS: Peter Greenwald, MD MS

Abstract: We have initiated a telemedicine program at New York-Presbyterian/ Weill Cornell that provides a dedicated physician to provide Emergency Department (ED) telemedicine services 16 hours a day, 7 days a week. While preforming a telemedicine shift, our physicians provide a number of distinct services including caring for direct to consumer patients, assisting in triage, and answering telemedicine calls from a local nursing home. In addition to consolidating these roles so that they are performed by one provider during a telehealth shift, we have also begun a program where this same doctor will provide care for low acuity patients who are physically in our two emergency departments; we call this novel service "Express Care."

Patients are eligible for an Express Care visit if they present to our ambulatory triage with low acuity Emergency Severity Index (ESI) scores. After receiving a medical screening by a Physician Assistant or Nurse Practitioner, patients are evaluated by the telehealth attending. The physicians who care for patients are all part of our medical school faculty who do regular ED work. The physician does a video exam and as needed can call in prescriptions, order ED medications or x-rays, and arrange for follow-up care. The Express Care physician reviews discharge and follow-up recommendations and discharges the patient, providing them with discharge instructions directly to the patient's room.

Since Express Care was launched in July 2016, we have seen more than 5,000 patients with a typical length of stay of 35 to 40 minutes - as compared to the average stay of 2 to 2.5 hours. The implementation of this program has allowed us to streamline care by reducing workflow interruptions and delays, and allows providers and staff in the main ED to focus their attention on patients with more emergent medical conditions. Patient satisfaction scores have been outstanding, ranking in the 99th percentile. Our physicians have also indicated that they enjoy providing this virtual care. As part of our ongoing quality assurance program, we monitor 72-hour ED revisit rates for our ECS patients. Currently, the number of ECS patients who revisit the ED within 72 hours of their virtual visit is less than 3%, which is lower than the 3.5% to 7.5% that has been reported for ED patients in traditional settings.

Learning Objectives:

- Describe how Telemedicine Emergency Department Physician can treat patients who are physically in the Emergency Department.
- Define the departmental and patient level advantages of using a dedicated Telemedicine physician to care for low acuity emergency department patients.
- Understand the role of Express Care Service in streamlining Emergency Department efficiency for low acuity patients.

REFERENCES:

1. Virtual Consultations With Doctors Speed Up Non-Emergency ER Visits At Area Hospital. CBS New York Video Link: http://newyork.cbslocal.com/2017/08/15/emergency-rooms-virtual-consultations/
2. Can tech speed up emergency room care? Wall Street Journal Article Link: https://www.wsj.com/articles/can-tech-speed-up-emergency-room-care-1490629118

VALUE (BUSINESS STRATEGY AND FINANCIAL MANAGEMENT)

MONDAY, APRIL 30, 2018

11:30 AM–12:45 PM Monday, April 30, 2018

Learning Labs

V-11

TITLE: CHOOSING THE RIGHT TECHNOLOGY FOR YOUR TELEHEALTH PROGRAM

PRESENTERS: Alexis Silver, MBA; Kathy Duckett, MSN, RN

Abstract: Discover how to evaluate your telehealth technology needs and choose the computers, devices and software that best support your particular program within your budget. Learn techniques for analyzing your clinical and program needs, target population, financial resources and desired outcomes. Come away with a weight analysis tool to help you identify the technological resources for building a competitive and successful telehealth program.

Learning Objectives:

- Clearly identify and understand the relative value of their technology needs based upon their program design, financial resources and patient population.
- Understand the purpose, value and process of completing a telehealth technology environmental scan.
- Select the most appropriate technology or technologies for their program using a weighted comparison analysis tool.

CLINICAL SERVICES

MONDAY, APRIL 30, 2018

11:30 AM–12:45 PM Monday, April 30, 2018

Learning Labs

CS2-09

TITLE: THE POWER AND POTENTIAL OF ASYNCHRONOUS TELEPSYCHIATRY

PRESENTERS: Peter Yellowlees, MD, MBBS, FRANZCP; Alvaro D. Gonzalez, MA, MFTI; Steven Chan, MD, MBA; Michelle Parish, MS

Abstract: Explore how asynchronous telepsychiatry (in which medical information is collected and sent via email or Web applications for later expert review and advice) offers powerful and cost-effective behavioral health expertise to primary care and other settings. Furthermore, examine how

artificial intelligence tools like word recognition and language translation extend the benefits of asynchronous telepsychiatry to people with limited English proficiency. Discover the power and potential of this form of stepped integrated behavioral healthcare in reaching and helping more patients than ever before.

Learning Objectives:

- Describe how video sharing, speech recognition, and machine translation technologies can create a new asynchronous model of mental healthcare.
- Learn how to implement novel informatics and telehealth technologies for research and quality improvement within a large health system.
- Compare and contrast machine translation versus in-person human interpretation services.

REFERENCES:

1. Katon W, Von Korff M, Lin E, et al. Stepped collaborative care for primary care patients with persistent symptoms of depression: a randomized trial. *Arch Gen Psychiatry.* 1999;56(12):1109-15.
2. Ryan C. Language Use in the United States: 2011: American Community Survey Reports. U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau. 2013.
3. Yellowlees P, Odor A, Burke Parish M, Iosif AM, Haught K, Hilty D. A Feasibility Study of the Use of Asynchronous Telepsychiatry for Psychiatric Consultations. *Psychiatr Serv.* 2010;61(8):838-40.

DIRECT TO CONSUMER STRATEGIES

MONDAY, APRIL 30, 2018

10:15 AM–11:15 AM Monday, April 30, 2018

Seminar

DTC-09

TITLE: LESSONS LEARNED FROM BRAZIL'S FIRST REAL-TIME TELEHEALTH URGENT CARE SYSTEM

PRESENTERS: Eduardo Cordioli, MD; Carlos Pedrotti, MD, MBA

Abstract: Delivering healthcare to Brazil's large and vast population remains one of the nation's big problems. Examine how Brazil's first urgent care real-time telemedicine program attempts to overcome the country's unique hurdles. Examine data and results, and consider the challenges to telemedicine use as well as its potential to solve a wide array of healthcare delivery problems.

Learning Objectives:

- Understand the Brazilian market for direct-to-consumer urgent care services delivered by telemedicine and its potential to grow exponentially.
- Recognize regulatory issues and biggest challenges to scalability and implementation of synchronous telemedicine programs in Brazil.
- Detail how ongoing synchronous videoconference-based telemedicine programs at Hospital Israelita Albert Einstein were developed, specifically the Virtual Emergency Room, a direct-to-patient urgent care delivery system, and its preliminary results.

DIRECT TO CONSUMER STRATEGIES

MONDAY, APRIL 30, 2018

1:45 PM–2:45 PM Monday, April 30, 2018

Seminar

DTC-12

TITLE: LEGAL ISSUES FOR DIRECT-TO-CONSUMER TELEMEDICINE ENTREPRENEURS

PRESENTERS: Nathaniel Lacktman, JD, CCEP

Abstract: Building a direct-to-consumer telemedicine service that serves customers across state and even national boundaries? Learn what you need to know about legal requirements for selling health services and items. Explore corporate structure, prescribing, investors and physician owners, state and federal fraud laws, contracting with pharmacies and labs, and online privacy and e-commerce rules essential to compliant direct-to-consumer services. Understand how to conduct your own due diligence and come away with sound compliance strategies.

Learning Objectives:

- Understand and appreciate the key legal and regulatory rules for direct-to-patient telemedicine services across the United States.
- Conduct their own due diligence and identify legal requirements for their telemedicine company, as well as effective compliance strategies to address them.
- Engage in meaningful discussion of legal and regulatory issues specifically tailored to direct-to-patient entrepreneurs.

VALUE (BUSINESS STRATEGY AND FINANCIAL MANAGEMENT)

MONDAY, APRIL 30, 2018

11:30 AM–12:30 PM Monday, April 30, 2018

Seminar

V-10

TITLE: MEASURING TELEHEALTH QUALITY: A NEW NATIONAL QUALITY FORUM FRAMEWORK

PRESENTERS: Jason C. Goldwater, MA, MPA; Kathryn Goodwin, MS

Abstract: Join us for a look at the National Quality Forum's new telehealth measure framework developed by multiple key stakeholders and designed to ensure quality of care and industry growth. Explore the framework's high-level guidance on measurement priorities and its potential to serve future efforts of researchers and others to improve systems and practices. Come away with measure concepts and existing quality measures to use in assessing your own telehealth program.

Learning Objectives:

- Upon completion, participants will be able to explain the concept of a measurement framework and its application to assessing and evaluating telehealth services.
- Upon completion, participants will be able to appraise the effectiveness of measure concepts in assessing specific modalities of telehealth and their use across various clinical areas.
- Upon completion, participants will be able to identify those measure concepts and existing quality measures they can use to assess and evaluate telehealth services within their own program.

REFERENCES:

1. http://www.qualityforum.org/Publications/2017/08/Creating_a_Framework_to_Support_Measure_Development_for_Telehealth.aspx
2. https://effectivehealthcare.ahrq.gov/topics/telehealth/technical-brief/

CLINICAL SERVICES

MONDAY, APRIL 30, 2018

10:15 AM–11:15 AM Monday, April 30, 2018

Seminar

CS1-06

TITLE: TELEPSYCHIATRY BEST PRACTICES: JOINT AMERICAN PSYCHIATRIC ASSOCIATION AND ATA RECOMMENDATIONS

PRESENTERS: Jay Shore, MD, MPH; Carolyn Turvey, Ph.D.; Robert L. Caudill, MD; Peter Yellowlees, MD, MBBS, FRANZCP; Matt Mishkind, PhD; Donald M. Hilty, MD; Elizabeth Krupinski, PhD; Edward Kaftarian, MD

Abstract: Learn about the research behind and key areas covered in the telepsychiatry best practice recommendations developed jointly by APA and ATA. Explore recommendations regarding prescriptions, privacy and security, optimal room and equipment, high-risk patients and care across state boundaries. Discuss concerns and ask questions of the expert telepsychiatry panel.

Learning Objectives:

- Upon completion, participants will be able to identify key areas of concern when initiating telepsychiatry practice.
- Upon completion, participants will be able to understand interjurisdictional practice issues when practicing telepsychiatry.
- Upon completion, participants will be able to understand prescribing and patient safety practice when practicing telepsychiatry.

REFERENCES:

1. Greene J, Yellowlees PM. Electronic and remote prescribing: administrative, regulatory, technical, and clinical standards and guidelines, April 2013. *Telemed J E Health.* 2014;20(1):63-74.
2. Shore J. The evolution and history of telepsychiatry and its impact on psychiatric care: Current implications for psychiatrists and psychiatric organizations. *Int Rev Psychiatry.* 2015;27(6):469-75.
3. Shore JH. Telepsychiatry: videoconferencing in the delivery of psychiatric care. *Am J Psychiatry.* 2013;170(3):256-62.

OPERATIONS AND IMPLEMENTATION

MONDAY, APRIL 30, 2018

11:30 AM–12:30 PM Monday, April 30, 2018

Seminar

O-08

TITLE: E CONSULTATIONS WITHIN COOK COUNTY JAIL

PRESENTERS: Mary C. Sajdak, RN, MS; Sana Syal, MPH

Abstract: Understand the many unique challenges to offering specialized care to detainees in jail through the experience of Cook County Jail. Explore how implementing a Web-based tool for e-consultations between on-site primary care providers and off-site specialists achieved positive results with reduced costs, including fewer needs for office visits and lengthy off-site travel, improved response time and streamlined care. Learn best practices for coordinating specialty care with virtual care for incarcerated patients.

Learning Objectives:

- Demonstrate the clinical, operational, financial value achieved through the integration and adoption of a cloud-based telehealth/virtual specialty care tool within a large county jail (public health System, community-oriented not-for-profit perspectives).
- Highlight the benefits an eConsult/eReferral tool can have on average response time, no-show rates, avoidable visits, cost savings (e.g., transportation and security), patient safety and health outcomes in correctional health.
- Identify best-practices for care coordination around specialty care, through the use of a virtual specialty care solution to identify and prioritize patients in need of timely access to specialty resources.

DIRECT TO CONSUMER STRATEGIES

MONDAY, APRIL 30, 2018

11:30 AM–12:30 PM Monday, April 30, 2018

Seminar

DTC-11

TITLE: IMPROVING THE PATIENT EXPERIENCE THROUGH DIGITAL MARKETING AND EDUCATION

PRESENTERS: Emily Samms; Robert Bernstein, MD, MPH; Erin Aas, MSN, ARNP

Abstract: Explore the roles of virtual care program providers, administrators and marketing teams in improving the patient's experience while maintaining high-quality healthcare. Examine the importance of marketing and explaining your virtual care program so that patients have reasonable expectations. Identify various marketing and program development strategies as well as measurements of virtual care program success and ways these can educate patients and improve the care experience.

Learning Objectives:

- Measure success in a virtual clinic by identifying key metrics and understanding how to interpret their trends.

- Set proper patient expectations for virtual care through positive digital marketing messaging.
- Understand why it is critical for collaboration between marketing and providers to improve patient experience and maintain high quality outcomes.

VALUE (BUSINESS STRATEGY AND FINANCIAL MANAGEMENT)

MONDAY, APRIL 30, 2018

10:15 AM–11:15 AM Monday, April 30, 2018

Seminar

V-08

TITLE: ESTABLISHING EVIDENCE-BASED STRATEGIES FOR ASSESSING TELE-EMERGENCY PROGRAMS

PRESENTERS: William L. England, PhD, JD; Amanda Bell, MHA; Stephanie L. Laws, MSN, RN; Jamie Kissee, MA

Abstract: What works in tele-emergency care and creates a sustainable program? Learn the answers and the evidence from three health systems completing a multiyear analysis and evaluation of their programs. Explore findings on efficiency, effectiveness and patient outcomes. Gain tools and tactics for evaluating the effectiveness of tele-emergency care and implementing a successful emergency care model harnessing the power of telemedicine.

Learning Objectives:

- Compare and contrast three different approaches to successfully offering sustainable tele-emergency services.
- Analyze the benefits and effectiveness of tele-emergency services through a review of research findings.
- Demonstrate knowledge of methods for evaluating and building the evidence base for telemedicine.

REFERENCES:

1. Fairchild RM, Kuo SF, Laws S, O'Brien A, Rahmouni H. Perceptions of Rural Emergency Department Providers regarding Telehealth-Based Care: Perceived Competency, Satisfaction with Care and Tele-ED Patient Disposition. *Open Journal of Nursing.* 2017;7:721-33.
2. Mohr NM, Vakkalanka JP, Harland KK, Bell A, Skow B, Shane DM, Ward MM. Telemedicine Use Decreases Rural Emergency Department Length of Stay for Transferred North Dakota Trauma Patients. *Telemed J E Health.* July 2017, ahead of print. https://doi.org/10.1089/tmj.2017.0083
3. Van Oeveren L, Donner J, Fantegrossi A, Mohr NM, Brown CA 3rd. Telemedicine-Assisted Intubation in Rural Emergency Departments: A National Emergency Airway Registry Study. *Telemed J E Health.* 2017;23(4):290-97.

OPERATIONS AND IMPLEMENTATION

MONDAY, APRIL 30, 2018

1:45 PM–2:45 PM Monday, April 30, 2018

Seminar

O-09

TITLE: TRENDS AND TRAJECTORIES IN TELEHEALTH – USING BENCHMARKING AND DATA TO GUIDE OUR PATH

PRESENTERS: David Thompson, MD FACEP

Abstract: Discuss data about telehealth use and growth to gauge its future potential. Understand who uses telemedicine and why, and what outcomes arise from different sources of telehealth care. Consider ways to use evidenced-based practice, benchmarking, process and outcomes data, best practices and commonsense to develop sound clinical guidelines. Discuss how to ensure telemedicine reaches its full potential for improving the quality, equity and affordability of healthcare worldwide.

Learning Objectives:

- Identify, analyze, and visualize data. What are the trends and trajectories?
- Compare reason for visit, demographic, and clinical data across different sources of care: nurse advice lines, telemedicine, and emergency department. Why do patients seek care and where do they go?
- Outline an approach to defining evidenced-base practice. How can we use benchmarking results, process and outcome data, best practice, and commonsense in clinical care and guideline development?

CLINICAL SERVICES

MONDAY, APRIL 30, 2018

11:30 AM–12:30 PM Monday, April 30, 2018

Seminar

CS1-08

TITLE: IDENTIFYING LEGAL ISSUES WITH TELEHEALTH ARRANGEMENTS

PRESENTERS: Cybil Roehrenbeck, JD; Terrence Lewis, JD; Kristin Schleiter

Abstract: Discover how to analyze your telehealth arrangement for legal issues through an expert panel's case study of a mobile stroke unit. Learn to recognize federal and state regulatory issues that might need further legal review. Come away with a legal issue checklist for reviewing your own program.

Learning Objectives:

- Upon completion, participant will be able to demonstrate how to issue spot a telehealth arrangement.
- Upon completion, participant will be able to recognize issues that may need legal review.
- Upon completion, participant will be able to use a checklist of legal issues to review that will serve as a practical takeaway for participants.

OPERATIONS AND IMPLEMENTATION

MONDAY, APRIL 30, 2018

10:15 AM–11:15 AM Monday, April 30, 2018

Seminar

O-06

TITLE: WHEN DISASTER STRIKES—HOW TELEMEDICINE IS TRANSFORMING HURRICANE RELIEF

PRESENTERS: Deborah Mulligan, MD FAAP FACEP; Randy Parker; Bethany Parker; Thad Allen

Abstract: Hear from a South Florida telehealth provider about responding to historic hurricanes. Discover the keys to successfully deploying telehealth services to meet the surge of demand in crisis zones. Discuss preparedness (including social media strategies) and ways to mobilize national networks. Explore lessons learned and how partnerships among telehealth companies, government agencies and other stakeholders can improve responses to future disasters.

Learning Objectives:

- Describe the unification of public and private partnerships when faced with historic complex, fast-moving crisis to adapt existing models by incorporating telemedicine as a hub in hurricane disaster management.
- Describe the essential relationship between the routine utilization of telemedicine in pre-disaster healthcare and effective employment in disaster situations.
- Describe the use and implementation of traditional media outlets and different Social Media Platforms for Disaster Management.

REFERENCES:

1. We are just now clearing debris post-Hurricane Irma in South FL. The data we are collecting is brand new from experience of Hurricanes Matthew, Harvey and Irma; all of which will be presented should our proposal be accepted.

CLINICAL SERVICES

MONDAY, APRIL 30, 2018

10:15 AM–11:15 AM Monday, April 30, 2018

Seminar

CS2-06

TITLE: A GUIDE TO DEBRIEFING DIFFICULT TELEHEALTH CASES

PRESENTERS: David M. Wheeler, MEd, RRT-NPS, FAARC

Abstract: Discuss a structure for post-consultation reviews" the Collegial Multisite Difficult Case/Sentient Event Review protocol" that offers learning opportunities as well as a way to prevent or resolve conflicts within a telehealth network. Learn steps for facilitating constructive conversations and systematically reviewing what went well and what to do differently in the future. See the protocol in action as it is applied to specific cases.

Learning Objectives:

- Upon completion of this session the participant will be aware of the Collegial Multisite Difficult Case / Sentient Event Review protocol.
- Upon completion of this session the participant will be able to use a protocolized review to amplify performance improvement, knowledge dissemination and teambuilding.
- Upon completion of this session the participant will be able to utilize the protocol for the debriefing process from introduction through collaborative examination of the essential components of the case.

REFERENCES:

1. Cannon-Bowers JA. Individual and team decision making under strPs.＼' Theoretical underpinnings. In: Cannon-Bowers J.A., Salas E. (eels.): lvfaki11g Decisions Under Stress: Implications for Individual and Team Training. Washington, DC: American Psychology
2. Sc1las E, et al.: Special section commentary: Opportunities and challenges for human factors and ergonomics in enhancing patient safety. *Hum Factors* 2006;48:1-4.
3. Mathieu JE, et al. The influence of shared mental models on team process and performance. J Appl Psychol 2000;85(2):273-83.

CLINICAL SERVICES

MONDAY, APRIL 30, 2018

10:15 AM–10:24 AM Monday, April 30, 2018

Ignite Sessions

CS1-07

TITLE: TELEHEALTH IN FEDERALLY QUALIFIED HEALTH CENTERS

PRESENTERS: William L. England, PhD, JD; Stephanie Begley

Abstract: HRSA's Bureau of Primary Health Care recently added telehealth-related questions to the Uniform Data Set that Federally Qualified Health Centers (FQHCs) annually report. Each of 1,400 FQHCs were asked:

- Are you using telehealth?
- If yes, how are you using telehealth?
- If not, why not?

The results showed that almost 40% of FQHCs use telehealth and 20% more are either planning to implement or are researching the use of telehealth. Mental health is the most common service. A few FQHCs reported they had stopped using telehealth. This presentation will examine the results for users and non-users in the context of rurality, state, service types or other characteristics. Reasons for non-use such as technology, reimbursement, regulations or other issues will be addressed.

Learning Objectives:

- Know the extent of telehealth usage by Federally Qualified Health Centers.
- Understand what clinical services are being addressed by telehealth in FQHCs.
- Understand the impediments to increased use of telehealth in FQHCs.

CLINICAL SERVICES

MONDAY, APRIL 30, 2018

1:45 PM–2:45 PM Monday, April 30, 2018

Seminar

CS2-10

TITLE: SINGLE-PATIENT TRIALS AND TELEHEALTH: A GUIDE TO INDIVIDUALIZED CARE

PRESENTERS: David M. Wheeler, M.Ed, RRT-NPS, FAARC

Abstract: Learn about the N-of-1 single-patient construct, which considers only the individual patient for observation, and explore its robust clinical

applicability for telemedicine. Examine the N-of-1 approach as the prototype of patient-centric care and see how telemedicine fosters real-time, assessment-based, evidence-driven and context-specific patient care plans. Consider how this approach can enhance patient outcomes and improve both clinical and patient engagement and satisfaction.

Learning Objectives:

- Upon completion of this session the participant will be familiar with the emergent innovation and opportunity for evolved practice in the N of 1 patient care construct.
- Upon completion of this session the participant will have a guide for the creation of assessment based, evidence driven, context specific, patient care plans.
- Upon completion of this session the participant will have a guide to N = 1 care and the use of Telehealth as a model for the N = 1 single patient trial.

REFERENCES:

1. Guyatt G, Sackett D, Adachi J, Roberts R, Chong J, et al. A clinician's guide for conducting randomized trials in individual patients. *CMAJ* 1988; 139: 497-503.
2. Buchman TG. Nonlinear Dynamics, Complex Systems, and the Pathobiology of Critical Illness. *Curr Opin Crit Carer*2004;10:378–382.
3. Suki B, Alencar AM, Sujeer MK, et al. Life-support system benefits from noise. **Nature** 1998, 393:127–128.
4. Mutch WA, Harms S, Ruth Graham M, et al.: Biologically variable or naturally noisy mechanical ventilation recruits atelectatic lung. Am J Respir Crit.

CLINICAL SERVICES

MONDAY, APRIL 30, 2018

1:45 PM–2:45 PM Monday, April 30, 2018

Seminar

CS1-09

TITLE: INCREASING THE REACH OF EVIDENCE-BASED PSYCHOTHERAPY WITH VIDEO-TO-HOME TELEHEALTH

PRESENTERS: Julianna Hogan, PhD; Jan Lindsay, PhD; Terri Barrera, PhD; Lindsey Martin, PhD

Abstract: Learn how video-to-home (VTH) technology can be a powerful vehicle for delivering evidence-based psychotherapy to patients in rural areas or patients who would otherwise avoid in-person treatment. Examine three case studies on how evidence-based treatments for anxiety, substance use and trauma-related disorders were adapted and tailored for delivery via VTH. Hear from experts on how unique applications of technology in psychotherapy can increase program access, adherence and retention.

Learning Objectives:

- Upon completion, participant will be able to identify technology innovations to increase fidelity to evidence-based mental health practices.
- Upon completion, participant will be able to generalize how adaptations in existing technology may impact patient care.
- Upon completion, participant will be able to consider which types of technologies may be leveraged in order to augment telemental health treatment.

CLINICAL SERVICES

MONDAY, APRIL 30, 2018

11:30 AM–12:30 PM Monday, April 30, 2018

Seminar

CS2-08

TITLE: IMPROVING CANCER CARE THROUGH TELEMEDICINE

PRESENTERS: Christian Otto, MD, MMSc; Robert Williams, MD; Pete Stetson, MD, MA; Michelle Aspden, RN;

Abstract: Explore how two large cancer care organizations implemented digital care to improve clinical outcomes, patient satisfaction, provider satisfaction and care coordination" all while effectively managing financial concerns. Discover the challenges faced and lessons learned on the path to extending patient survival and providing more responsive treatment. Discuss the future of cancer care and potential benefits and advances that could be achieved in further expanding and integrating teleoncology services.

Learning Objectives:

- Outline key steps to implement virtual programs supporting: multidisciplinary tumor boards, discharge planning, and pre/post chemo visits; that are designed to improve care coordination, clinical outcomes, and patient/provider satisfaction.
- Explain the implementation challenges, service costs, and the effective management of financial impacts to tertiary healthcare institutions arising from cancer care digital platforms and virtual care programs.
- Describe upcoming virtual care programs in development, such as integrated dashboards linked to data analytics and data trending, that will create new care opportunities and transform cancer treatment.

REFERENCES:

1. Basch E, Deal AM, Dueck AC, Scher HI, Kris MG, Hudis C, Schrag D. Overall Survival Results of a Trial Assessing Patient-Reported Outcomes for Symptom Monitoring During Routine Cancer Treatment. *JAMA.* 2017
2. Fitzmaurice C, Allen C, Barber RM, Barregard L, Bhutta ZA, Brenner H, et al. Global, regional, and national cancer incidence, mortality, years of life lost, years lived with disability, and disability-adjusted life-years for 32 cancer groups, 1990 to 2015: a systematic analysis for the global burden of disease study. *JAMA Oncology,* 2017;3(4):524-48.
3. Singleterry J. (2017). The Cost of Cancer: Addressing Patient Costs. The American Cancer Society Cancer Action Network.

VALUE (BUSINESS STRATEGY AND FINANCIAL MANAGEMENT)

MONDAY, APRIL 30, 2018

1:45 PM–2:45 PM Monday, April 30, 2018

Seminar

V-12

TITLE: TELEHEALTH STRATEGIES FOR GROWING YOUR LTPAC BUSINESS

PRESENTERS: Alan Scott, BSN; Kelly Spiers; Sherrie Peterson, MBA

Abstract: Although regulatory and reimbursement limitations have made implementing telehealth difficult in long-term/post-acute (LTPAC) settings, avenues for success exist. Learn strategies for incorporating telehealth into your business that will not only pay for themselves but also generate new revenues. Discover how to use telehealth in skilled nursing or assisted living facilities to improve patient outcomes and achieve competitive advantage in your markets.

Learning Objectives:

- List concrete benefits that telehealth programs provide long-term/post-acute care (LTPAC) providers.
- Identify revenue models that enable LTPAC operators to pay for telehealth solutions.
- Describe ways to leverage telehealth for competitive advantage with referral sources and client retention.

DIRECT TO CONSUMER STRATEGIES

TUESDAY, MAY 1, 2018

11:30 AM–12:45 PM Tuesday, May 1, 2018

Facilitated Roundtable Discussion

DTC-16

TITLE: PREVENTING READMISSION OF POST-PROCEDURAL HEART VALVE PATIENTS BY UTILIZING REMOTE MONITORING IN THE HOME

PRESENTERS: Tasia Walsh; Sshune Rhodes, MHA

Abstract: In this session, participants will learn how we developed a telehealth program to prevent readmission for post trans catheter valve procedure patients. This scalable infrastructure is used to monitor chronic health conditions and engages patient participation in self-care at home. The patient performs a daily assessment by taking their vital signs, inclusive of weight, blood pressure, heart rate, oxygen saturation as well as a symptom evaluation questionnaire. Using a customized Heart Valve application, data is transmitted to our EMR. This allows an asynchronous exchange of data which enables clinicians to remotely monitor the patient.

The clinician who requests this remote monitoring is prompted to set parameters in which to be notified if the patient falls outside of "normal" range. These breaches generate an alert to the monitoring clinician, indicating intervention is needed. The clinician contacts the patient and first attempts to make adjustment, keeping patient in the home, however, if necessary, patient is instructed to return to hospital.

Learning Objectives:

- Gain an understanding of how to develop a direct to consumer telehealth program utilizing with scalable infrastructure to monitor patients in the home with chronic health conditions post procedure.
- Define how to illicit patient participation in self-care and integrate with an EMR patient portal.
- Define and take advantage of our "Lessons Learned" to streamline setting up this process in their facility.

CLINICAL SERVICES

TUESDAY, MAY 1, 2018

9:30 AM–10:15 AM Tuesday, May 1, 2018

Facilitated Roundtable Discussion

CS1-11

TITLE: USING TELEHEALTH TO REDUCE VULNERABLILITY OF COMPLEX PATIENTS FROM HOSPITAL TO HOME

PRESENTERS: John Chuo, MD, MS, IA; April Willard, MSN, CRNP, NNP-BC; Kathleen Webster, MD MBA

Abstract: A particularly vulnerable period in a medically complex patient's health journey is the transition from hospital to home. Patients and their families must immediately become "experts" not only in performing the routine care of the patient, but also coordinating a multitude of specialists and support staff involved with ongoing medical management. Close in-person follow up is expensive, and limited by personnel and resource availability. Telemedicine offers a potentially more efficient way of achieve similar goals with comparable outcomes and lower cost, thereby increase value of the healthcare being delivered. Implementation Science offers a structured framework for implementing telemedicine in a measured, iterative manner with a higher success probability. This round table discussion begins with presentation data from a neonatal transition of care telemedicine pilot, as a catalyst to a broader discussion on 1) identifying other patient population that would benefit from a transition of care telemedicine program, and 2) how improvement models can facilitate successful implementations of such programs.

Learning Objectives:

- Use an Implementation Checklist to Develop a Telehealth Transition of Care Program.
- Apply Quality Improvement Tools in Telehealth Implementation.
- Systematically Identify Medically Complex Patient Cohorts that would Benefit from Telehealth.

REFERENCES:

1. Forster AJ, Murff HJ, Peterson JF, Gandhi TK, Bates DW. The incidence and severity of adverse events affecting patients after discharge from the hospital. *Ann Intern Med.* 2003;138:161-67.
2. Skolarus TA, Lehmann T, Tabak RG, Harris J, Lecy J, Sales AE. Assessing citation networks for dissemination and implementation research frameworks. *Implementation Science* 2017;12:97.
3. Cady RG, Erickson M, Lunos S, et al. Meeting the Needs of Children with Medical Complexity Using a Telehealth Advanced Practice Registered Nurse Care Coordination Model. *Matern Child Health J* 2015;19:1497-1506.

CLINICAL SERVICES

TUESDAY, MAY 1, 2018

11:30 AM–12:45 PM Tuesday, May 1, 2018

Facilitated Roundtable Discussion

CS1-14

TITLE: BEHAVIORAL HEALTH - VIRTUAL PATIENT NAVIGATION, RESULTS FROM A PRAGMATIC RESEARCH TRIAL

PRESENTERS: Jason Roberge, PhD, MPH; Wayne Sparks, MD; Christine Zazzaro, LPC, MEd; Elisabeth Hardin, MA, LPC

Abstract: The number of patients presenting to emergency departments (ED) in the need of psychiatric care, continues to increase. With outpatient behavioral health resources and funding on the decline, oftentimes the attending ED physician must decide to admit a patient in lieu of discharge due to the lack of outpatient resources or the perceived inability of a patient to navigate a complex system. As a part of usual care, Carolinas HealthCare System currently offers 21 of its EDs 24-7 virtual access to licensed clinicians and psychiatrists who provide psychiatric evaluations and recommend dispositions (telepsychiatry). From a partnership with the Center for Medicaid and Medicare we developed and are evaluating a Behavioral Health - Virtual Patient Navigation program (BH-VPN), which provides short-term follow up navigation to patients receiving usual care. A patient navigator connects with the patient virtually prior to leaving the ED and then communicates during regularly scheduled calls and assists as needed in obtaining services or overcoming any barriers to treatment, for up to 45 days post ED discharge.

We designed a pragmatic, randomized research evaluation among patients in behavioral health crisis who present to an ED and receive a telepsychiatric consult. We describe team composition, design of the BH-VPN service, and enrollment status. The results herein focus on the effect this initiative has on the conversion from ED discharge to hospital admission.

Available evidence suggests that adoption and utilization of virtual care in tandem with wrap-around services may reduce utilization and improve health outcomes. However, variations in study designs limit our ability to draw definitive conclusions. By integrating virtual patient navigation into the existing telepsychiatry program, we expect to decrease the number of patients admitted for inpatient psychiatric treatment from the ED. The methods and results described here provide a template for conducting research to improve outcomes among behavioral health patients that present to an emergency department.

Learning Objectives:

- Participants will possess a template for conducting research to improve outcomes among behavioral health patients that present to an emergency department.
- Participants will walk away with an understanding of lessons learned to implementing and managing a randomized research evaluation among patients in behavioral health crisis.
- Participants will be able to interpret the results of a virtual patient navigation program aimed at reducing conversion from ED discharge to hospital admission.

CLINICAL SERVICES

TUESDAY, MAY 1, 2018

11:30 AM–12:45 PM Tuesday, May 1, 2018

Facilitated Roundtable Discussion

CS2-13

TITLE: SYMPTOMATIC INTRACEREBRAL HEMORRHAGE RELATED TO TPA ADMINISTERED OVER TELE STROKE WITHIN 4.5-HOUR WINDOW

PRESENTERS: Sami Al Kasab, MD; Jillian B. Harvey, MPH, PhD; Mohamad Orabi, MD; Patricia E. Aysse, MSN, RN; Ellen Debenham, BSHA, RN, CCRC; Christine Holmstedt, DO

Abstract:

Introduction: Intravenous alteplase (tPA) remains the cornerstone medical treatment for acute ischemic stroke. Standard of care guidelines have expanded, from the prior guideline of 3 hours, to allow tPA administration within 4.5 hours of stroke onset. Symptomatic intracerebral hemorrhage (sICH) is one of the most serious complications of stroke treatment. The establishment of telestroke technology has allowed patients presenting to hospitals that lack expert stroke care to be evaluated and receive tPA. The safety of tPA administered through telestroke has been evaluated only when tPA is given within the 3-hour window of last known normal.

Methods: A retrospective analysis on the prospectively collected database for all patients that received tPA at the Medical University of South Carolina Comprehensive Stroke Center (MUSC) (hub), as well as the MUSC telestroke network partner hospitals (spokes) was performed. Collected data included demographics, baseline characteristics, time from last known well to tPA administration, door-to-needle times, and symptomatic intracerebral hemorrhage rates. Logistic regression was used to examine the odds of a symptomatic intracerebral hemorrhage (sICH) in patients at spoke sites compared to the hub controlling for patient demographics and stroke severity.

Results: A total of 816 patients were identified. The sample includes 564 patients administered tPA via telestroke services at the spoke sites and 252 at the hub. Median NIHSS was significantly higher among patients treated at the hub (9 vs 8, $P=0.022$), otherwise baseline characteristics were similar in both treatment groups. The door to needle times improved overtime in both groups. By 2016 both the spoke and the hub averaged door-to-needle (DTN) times within the 60-minute guideline. However, DTN times remain lower in the hub site (42 minutes) compared to the spokes (59 minutes). Symptomatic intracerebral hemorrhage (sICH) occurred in 26 (4.61%) in the spoke group and 10 (3.97%) in the hub group ($P=0.68$). Logistic regression results found no significant difference in the odds of sICH if tPA is given in a spoke site and no differences in adverse outcomes with tPA administration 0-179 minutes versus 180-270 minutes from last known normal time ($p=0.308$).

Conclusion: Our study shows that intravenous tPA when administered at spoke hospitals through telestroke consultations within the 4.5-hour window does not increase the odds of sICH compared to administration at hub hospitals.

Learning Objectives:

- Describe the statewide telestroke network.
- Compare patient process measures and outcomes in those treated via the telestroke network and those receiving traditional care accessed through the hub emergency department.
- Evaluate the safety of tPA when administered thorough telestroke within a 4.5-hour window.

REFERENCES:

1. Goyal M, Menon BK, van Zwam WH, et al. Endovascular thrombectomy after large-vessel ischaemic stroke: A meta-analysis of individual patient data from five randomised trials. *Lancet.* 2016;387:1723-1731.
2. Al Kasab S, Adams RJ, Debenham E, et al. Medical university of South Carolina telestroke: A telemedicine facilitated network for stroke treatment in south carolina-a progress report. *Telemed J E Health.* 2017;23(8):674-77.

VALUE (BUSINESS STRATEGY AND FINANCIAL MANAGEMENT)

TUESDAY, MAY 1, 2018

11:30 AM–12:45 PM Tuesday, May 1, 2018

Facilitated Roundtable Discussion

V-16

TITLE: ARE HOSPITALS AND HEALTHCARE SYSTEMS ABOUT TO BE AMAZONED? LESSONS FROM THE INTERNET

PRESENTERS: Bruce D. Judson, Bestselling Author, Former Senior Faculty Fellow, Yale Management School;

Abstract: As telemedicine platforms evolve, they will often offer a superior and lower cost means of managing chronic illnesses or recovery from procedures. In part, this will reflect the confluence of several aspects of digital health including monitoring, feedback, and data-driven analyses based on the treatment of large numbers of patients. However, these platforms will threaten the status quo; both local doctors, including specialists and physical facilities (such as hospitals). Amazon did not replace retail. But, it did shift the balance between physical shipping and online shopping–often with painful results for existing retailers. This same transition is now happening in healthcare.

Learning Objectives:

- Understand how growing digital platforms, as demonstrated over the last 20 years, displaces local providers, with clear analogies to the development of each phase of new Internet services.
- Describe the competitive dynamics that will evolve as telemedicine platforms threaten the practices of established local providers and detail strategies for success.
- Describe the critical role building trust and a superb consumer experience will play in the growth of telemedicine and detail several clear methods of realizing these objectives.

REFERENCES:

1. Are Healthcare Systems About to be Amazoned? Telemedicine and Lessons from Internet Services, The Huffington Post http://bit.ly/TelemdPlatforms
2. https://en.wikipedia.org/wiki/Bruce_Judson
3. https://www.amazon.com/Bruce-Judson/e/B000AP7GB6

DIRECT TO CONSUMER STRATEGIES

TUESDAY, MAY 1, 2018

9:30 AM–10:15 AM Tuesday, May 1, 2018

Facilitated Roundtable Discussion

DTC-14

TITLE: EFFICACY OF SCHOOL-BASED TELE-EDUCATION FOR PEDIATRIC ASTHMA

PRESENTERS: Nathan Culmer, PhD; Karen Burgess, MD; Elizabeth Smith, CRNP; Madison Desch

Abstract: School age children with asthma face physical and academic challenges that their non-asthmatic peers do not. Proper management of asthma demands additional time and consideration from the student, parent, and often the school healthcare worker. When children do not have properly managed asthma, their school work often suffers even when they are present, because their ability to concentrate on content suffers as a result of the challenge to breathe. In the case of parents, proper management requires additional time away from work. For school healthcare workers, assisting children with acute treatments can demand a significant amount of time in an already busy schedule.

When children are trained on the proper administration of their preventative and rescue medication and the reasons for each, they are better able to manage their condition themselves. This empowers them to take care of themselves, enables them to focus more on their academic pursuits, and frees up parents and school healthcare professionals.

In order to best meet students' needs, we developed a curriculum, delivered remotely, designed to give elementary school children the information they need to better understand and manage their asthma. We also established a system of evaluations to determine comprehension and iteratively made improvements to better understand students learning. Furthermore, we added behavioral measures (from students, parents, and the school) to determine if the implementation was having a tangible, practical effect on students' ability to focus on school.

In this session, participants and discussants will collaboratively consider key components of a successful school-based model including brainstorming additional ways these partnerships can be strengthened, contribute to the ongoing development of the evaluative material, explore the strengths and weaknesses of the existing results and methodologies. Takeaways include practical tips for building a successful model that can include both educational and clinical components as well as suggestions on developing an effective evaluation.

Learning Objectives:

- Develop a school-based curriculum that trains students how to manage their chronic asthma.
- Design and implement an assessment that evaluates students' comprehension of the principles of asthma management and gives behavioral evidence of successful management.
- Analyze results to allow for ongoing intervention as needed and ensure continued viability of solution.

DIRECT TO CONSUMER STRATEGIES

TUESDAY, MAY 1, 2018

2:00 PM–3:15 PM Tuesday, May 1, 2018

Learning Labs

DTC-18

TITLE: THINK LIKE A TECH COMPANY AND USE PATIENT-CENTRIC DESIGN TO IMPROVE ENROLLMENTS

PRESENTERS: Nicolas Schmidt, MBA, MS

Abstract: Learn how to increase access and enrollment in your telehealth program with customer service techniques straight out of leading tech com-

panies' playbooks. Explore principles of user-centric design and leave with actionable ideas for rethinking and restructuring your own program while maintaining high clinical standards and credibility.

Learning Objectives:

- Identify strategies and tactics that maximize conversion rates for patient enrollment in a healthcare program.
- Design an effective patient onboarding process that helps activate patients in managing their own care.
- Demonstrate competency with consumer-focused outreach and communication.

REFERENCES:

1. Groeneveld IF, et al. Factors associated with non-participation and drop-out in a lifestyle intervention for workers with an elevated risk of cardiovascular disease. *Int J Behav Nutr Phys Activity* 2009;6:80.

CLINICAL SERVICES

TUESDAY, MAY 1, 2018

10:15 AM–11:30 AM Tuesday, May 1, 2018

Learning Labs

CS1-13

TITLE: TELENEONATOLOGY CONSULTING: A HANDS-ON EXPERIENCE

PRESENTERS: Jennifer Fang, MD, MS; Chris Colby, MD; William Carey, MD; Beth Kreofsky, MBA; Gary Douville, MS; Kelton Temby; Kelsey Cleary

Abstract: Review the practice of teleneonatology" and then dive right in. Observe a demonstration of a simulated consult, including the use of technology to support clinical decision making as well as documentation. Practice providing teleneonatology consults at one of several workstations and gain experience with the process, devices, software and clinical application. Evaluate how teleneonatology could benefit your regional practice.

Learning Objectives:

- Identify the value of a teleneonatology program.
- Successfully perform and document a simulated teleneonatology consult.
- Determine how teleneonatology can be included in your current practice.

REFERENCES:

1. Fang JL, Carey WA, Lang TR, Lohse CM, Colby CE. Real-time video communication improves provider performance in a simulated neonatal resuscitation. *Resuscitation.* 2014;85(11):1518-22. Epub 2014 Aug 15.
2. Fang JL, Collura CA, Johnson RV, Asay GF, Carey WA, Derleth DP, Lang TR, Kreofsky BL, Colby CE. Emergency Video Telemedicine Consultation for Newborn Resuscitations: The Mayo Clinic Experience. *Mayo Clin Proc.* 2016;91(12):1735-43 Epub 2016 Nov 22.
3. https://www.youtube.com/watch?v=aD-uqsxxKaY&list=PLSWR1ylG_6JZp8brwvraCLJ3cWjEdG2Kn&#x0A

CLINICAL SERVICES

TUESDAY, MAY 1, 2018

10:15 AM–11:30 AM Tuesday, May 1, 2018

Learning Labs

CS2-12

TITLE: STRENGTHENING PATIENT COMMUNICATIONS THROUGH SCREEN CAPTURE TECHNOLOGY

PRESENTERS: Jessie S. Lamprecht, BS; Ken Court; David Langer, MD

Abstract: Learn how screen capture tools (allowing you to take photos of what appears on a computer screen) can personalize your communication with patients and give them a clear and comprehensive reference that can be especially helpful during care transitions. Receive hands-on training on the software and create your own video for a hypothetical patient. Discuss research and analysis of this software program, including effects on patient satisfaction.

Learning Objectives:

- Demonstrate how to utilize screen capture software to create custom diagnostic imaging review videos for patients.
- Understand how to utilize the program in their clinical workflow.
- Describe how personalized multimedia can be used in a multitude of clinical settings and care transitions.

REFERENCES:

1. https://www.wsj.com/articles/what-patients-need-to-remember-after-leaving-the-hospital-1448908354

OPERATIONS AND IMPLEMENTATION

TUESDAY, MAY 1, 2018

2:00 PM–3:15 PM Tuesday, May 1, 2018

Learning Labs

O-13

TITLE: ADDRESSING HEALTHCARE DISPARITIES THROUGH THE PETAL FRAMEWORK

PRESENTERS: Danielle J. Brooks, JD; Megan Douglas, JD

Abstract: Examine the costs of healthcare inequities and explore one novel multipronged approach for confronting the problem" PETAL (prioritize health equity, engage the community, target health disparities, act on the data and learn and improve). Work collaboratively to practice these steps and see their effectiveness when applied to a fictional problem scenario. Develop practical strategies, tips and techniques to address health disparities in your own system and community.

Learning Objectives:

- Upon completion, participants will be able to leverage the PETAL Framework to engage communities and advance health equity.
- Upon completion, participants will learn how to leverage existing technologies, data standards and analytics to address health disparities.
- Upon completion, participants will learn practical strategies, tips and techniques to address health disparities in their individual systems and communities.

REFERENCES:

1. http://onlinelibrary.wiley.com/doi/10.1002/lrh2.10029/full

OPERATIONS AND IMPLEMENTATION

TUESDAY, MAY 1, 2018

2:00 PM–3:30 PM Tuesday, May 1, 2018

Workshops

O-15

TITLE: GETTING YOUR WORK PUBLISHED

PRESENTERS: Terry Rabinowitz, MD, DDS, FATA, FAPM, FAPA; Elizabeth Brooks, PhD; Charles R. Doarn, MBA, FATA; Elizabeth A. Krupinski, PhD, FATA; Donald M. Hilty, MD; Ronald C. Merrell, MD, FATA; Sophie Mohin; Kathleen M. Myers, MD, MPH, MS, FAACAP, FATA; Carolyn Turvey, PhD, FATA

Abstract: Many involved in telemedicine want to share ideas or the results of research with others but do not "get the word out" for one or more reasons including:

- Nobody else is really interested in the work I do
- I don't have the time to put my findings into words, especially words that others would understand
- My manuscript was rejected; why resubmit?
- I don't know how to say what I think, what I've done, or what I've discovered in a way that would make sense to others
- These are really interesting findings, but statistical analysis will kill me; or my results
- This work isn't good enough for that journal
- I don't think there's anyone who'd be interested in collaborating on this project
- This will cost too much money
- This was such a small sample; the results are probably meaningless. I do not understand the statistics necessary to do this work.
- This work was already done

The principal aim of this workshop is to facilitate and stimulate scholarly publication in telemedicine.

Planned topics and (presenters) follow:

Introduction; Why Publish?

Getting started; setting up; work environment; staying focused; following through

Open Access journals (including blogs); publishing a book; submission process

Statistics

Making the editors happy: Following author instructions; responding to revision suggestions; contacting editors; etc.

Learning Objectives:

- Describe the key elements of a well-written telemedicine research or white paper.
- Compare and contrast the characteristics of a "good" paper with those of a "bad" one.
- Show how an unsatisfactory paper can be converted into one that is acceptable for publication.

DIRECT TO CONSUMER STRATEGIES

TUESDAY, MAY 1, 2018

3:15 PM–4:15 PM Tuesday, May 1, 2018

Seminar

DTC-19

TITLE: THE CHANGING TELEPHARMACY LANDSCAPE

PRESENTERS: Adam Chesler, PharmD

Abstract: Learn about different telepharmacy programs and how they are expanding pharmacist care to both rural and urban communities and allowing around-the-clock critical access to medication. Explore the ever-changing regulatory and legal environment. Discuss measures for patient and staff safety, fill accuracy and preventing drug diversion. Discover what a safe and secure telepharmacy workflow looks like.

Learning Objectives:

- Define the different types of telepharmacy and how they are expanding the reach of the pharmacist.
- Explain community or outpatient telepharmacy, how it started, and how it is helping the pharmacist to better deliver care to patients.
- Describe the regulatory environment around the U.S. and what states are doing with rules.

REFERENCES:

1. Source: Update: Independently Owned Pharmacy Closures in Rural America, 2003-2013; RUPRI Center for Rural Health Policy Analysis, Rural Policy Brief June 2014; Fred Ullrich, BA; Keith J. Mueller, PhD Source: Source: 'Pharmacy Deserts' Are Prevalent In.
2. Source: Quarles & Brady LLP analysis & report, July 2016;Source: North Dakota Telepharmacy Project https://www.ndsu.edu/telepharmacy/; Rural Economic Technical Assistance Center (RETAC) in Macomb, IL; Economic impacts of a pharmacy for Deiterich, Illinois, June 2015.
3. Source: Pharmacists as Influencers of Patient Adherence, August 21, 2014, Joseph Moose, PharmD, and Ashley Branham, PharmD, BCACP. Source: Lack of pharmacy access sends some patients back to the hospital; Oregon State University and Oregon Health & Science.

OPERATIONS AND IMPLEMENTATION

TUESDAY, MAY 1, 2018

10:15 AM–11:15 AM Tuesday, May 1, 2018

Seminar

O-11

TITLE: INSIGHTS ON CREATING AN AWARD-WINNING RURAL-URBAN TELEHEALTH NETWORK

PRESENTERS: Gurpreet S. Mander, MD, MBA; Julie Edwards, MBA; David P. Mortimer, MDiv; E. David Harrison, RN

Abstract: Learn from the design and planning of the award-winning Illinois Telehealth Network, which uses a collaborative "consortium model" to deliver acute care telemedicine to underserved rural emergency rooms. Discover how they developed a successful multi-stakeholder network that supports the business models of all members and creates economies of scale to reduce costs. Take away strategies for conducting a self-designed needs assessment to guide network planning.

Learning Objectives:

- Gain insights into the planning and development of an innovative consortium network model to create a multi-stakeholder telehealth network to save lives and improve patient outcomes.
- Acquire an understanding of care integration planning that brings rural and urban telemedicine and telehealth remote monitoring stakeholders together to create economies of scale and reduce costs.
- Understand the planning and operational deployment of a telestroke, telehealth remote monitoring, and virtual urgent care and other programs in a rural setting with diverse stakeholders.

REFERENCES:

1. Ostrom E. (2008). Governing the Commons. Cambridge, NY: Cambridge University Press.
2. Komaramy J.K., et. al. Partnering Urban Academic Medical Centers And Rural Primary Care Clinicians To Provide Complex Chronic Disease Care. *Health Aff*, 2011;30(6):1176-1184. Available at: http://content.healthaffairs.org/content/30/6/1176.full.html
3. HRSA. "The Network Guide: A technical assistance resource developed by the Health Resources and Services Administration (HRSA) and the National Association of Community Health Centers (NACHC). Available at: http://www.hrsa.gov/healthit/networkguide/network

DIRECT TO CONSUMER STRATEGIES

TUESDAY, MAY 1, 2018

10:15 AM–11:15 AM Tuesday, May 1, 2018

Seminar

DTC-15

TITLE: BEST PRACTICES FOR ONLINE GROUP COUNSELING

PRESENTERS: Barbara J. Veder, MSW, RSW

Abstract: Understand the structure and effectiveness of online group counseling (OCG) programs built on cognitive behavior therapy. Discover the potential to reach difficult-to-engage users and improve patient engagement while maintaining patient privacy. Examine best practice models for applying group counseling techniques to online formats, and find out how to learn more about digital counseling solutions that can meet the rising demand for behavioral telehealth.

Learning Objectives:

- Articulate the methodologies related to Online Group Counselling (OGC) programs and identify the practical applications for this service modality.
- Summarize the benefits of using innovative digital solutions like OGC to reach new and historically difficult to engage users, improve user engagement, and enhance service delivery options.
- Report on best practices, client satisfaction, and outcomes related to Online Group Counselling services.

REFERENCES:

1. Mark Attridge, PhD, MA, President Attridge Consulting, Inc., mark@attridgeconsulting.com, (612) 889-2398 mobile, (612) 333-2441 office
2. Jan Price, LCSW, CEAP, Director, Education and Credentialing, Employee Assistance Professionals Association, www.eapassn.org, (703) 387-1000×340
3. Bob McLean, CAE, President, REM Association Services, PO Box 3146, Norfolk, VA 23514-3146, P 703-416-0010, F 703-416-0014, bmclean@remservices.biz, www.remservices.biz

CLINICAL SERVICES

TUESDAY, MAY 1, 2018

3:15 PM–4:15 PM Tuesday, May 1, 2018

Seminar

CS1-16

TITLE: A SAFER TRANSITION FROM THE ER WITH VIRTUAL CARE

PRESENTERS: Matt Muller, MD

Abstract: How can emergency departments reduce patient risk and return visits after ED discharge? Get an in-depth look at one solution, the Safe Transitions virtual care program in Dallas-Fort Worth, which provides text messaging to physicians for questions about ongoing treatment. Learn about the enrollment and physician staffing processes and discuss patient safety and satisfaction benefits. Explore service adoption and care metrics as well as future service development plans.

Learning Objectives:

- Describe patient safety benefits of a post-ED discharge virtual care program;
- Quantify adoption rates in this unique post-acute ED application of telehealth; and
- Contrast patient satisfaction data before and after implementation of the Safe Transitions program.

CLINICAL SERVICES

TUESDAY, MAY 1, 2018

2:00 PM–3:00 PM Tuesday, May 1, 2018

Seminar

CS1-15

TITLE: EMERGENCIES SPEAK EVERY LANGUAGE: HOW TO PROVIDE CRISIS CARE TO PERSONS WITH LIMITED ENGLISH PROFICIENCY (LEP)

PRESENTERS: Preston J. Taylor

Abstract: Learn to assess your organization's emergency and disaster preparedness, especially with regard to aiding people with limited English proficiency. Discover how telehealth organizations can prepare for multilingual needs in a crisis situation, and understand the legal rules and requirements you must comply with. Through case studies of actual disasters like Hurricane Harvey, examine effective emergency responses and come away with measurable steps and scalable, comprehensive processes for replicating success.

Learning Objectives:

- Assess their organization's emergency and disaster preparedness.
- Gain a new understanding of the needs of foreign language and Limited English Proficiency speakers in a crisis situation, as well as what provisions are required by law.
- Design a scalable and effective crisis management plan and procedure that offers customers the resources and help they need in every language.

VALUE (BUSINESS STRATEGY AND FINANCIAL MANAGEMENT)

TUESDAY, MAY 1, 2018

2:00 PM–3:00 PM Tuesday, May 1, 2018

Seminar

V-17

TITLE: MAKING TELE-ICU WORK IN DIVERSE HOSPITAL SETTINGS

PRESENTERS: Rachel Sackrowitz, MD, MBA; Daniel Lewis, MD, CPE, CAQSM, FAAFP; Gerald Goldstein, MD; Jean C. Turcotte, MBA, BSN, RN, CCRN

Abstract: Join us as an expert panel of clinical leaders discusses how different types of hospitals benefit from tele-ICU. Learn the varied needs that prompted hospitals to consider tele-ICU solutions, what unique challenges each faced, how programs benefited and how staff evaluated program choices. Gain strategies for assessing your own program needs and expanding programs successfully.

Learning Objectives:

- Identify the diverse factors that compel investigation of tele-ICU adoption – and how they differ by hospital type or setting.
- Understand how various hospitals participate in, and benefit from, the resources of a tele-ICU program differently.
- Recognize what influenced – and continues to influence – hospital and system leaders' valuation of tele-ICU at their particular organization.

REFERENCES:

1. Tele-ICU Clinical,Operational, and Financial Results for Takoma Regional Hospital.
2. Tele-ICU Clinical,Operational, and Financial Results for Western Maryland Health System.
3. Tele-ICU Clinical,Operational, and Financial Results for St. Elizabeth Healthcare.

CLINICAL SERVICES

TUESDAY, MAY 1, 2018

10:15 AM–11:15 AM Tuesday, May 1, 2018

Seminar

CS2-11

TITLE: DEPLOYING PEDIATRIC EMERGENCY TELEMEDICINE AFTER HURRICANE HARVEY

PRESENTERS: Laura L. Link, MSN, RN, NCSN; Yollanda I. Hilliman, MHA, RRT-NPS; Eric McKenney; Brian Robertson, PhD, MPH

Abstract: In the aftermath of Hurricane Harvey in 2017, Dallas established a mega-shelter that within 12 hours had a highly functioning pediatric emergency telemedicine system. Hear from the people behind this endeavor and learn about the necessary components and strategies for rapidly establishing and deploying an emergency telehealth system during a crisis. Discover the barriers they encountered and the lessons learned.

Learning Objectives:

- Upon completion, participants will be able to identify key components necessary to plan for rapid deployment of Telemedicine in preparation for response to a disaster.
- Upon completion, participants will be able to define key barriers to success and potential solutions in relation to establishing connectivity in times of natural disasters.
- Upon completion, participants will be able to utilize knowledge gained from this seminar to plan for a similar response within their respective Telemedicine programs.

REFERENCES:

1. https://www.washingtonpost.com/news/capital-weather-gang/wp/2017/08/30/harvey-has-unloaded-24-5-trillion-gallons-of-water-on-texas-and-louisiana/?utm_term=.b3aa66e40a86/
2. https://www.cnbc.com/2017/09/01/texas-crews-search-for-survivors-in-wake-of-harveys-floods.html

CLINICAL SERVICES

TUESDAY, MAY 1, 2018

10:15 AM–11:15 AM Tuesday, May 1, 2018

Seminar

CS1-12

TITLE: A CLOSER LOOK AT VIRTUAL REALITY, AUGMENTED REALITY AND TELEPRESENCE

PRESENTERS: Donald M. Hilty, MD; Marlene Maheu, PhD; Richard Pantera, MD; Karan Randhawa, MBBS

Abstract: Explore how technologies such as augmented reality (AR), virtual reality (VR) and telepresence (TPr) are being applied to medicine, psychiatry and social neuroscience. Gain an understanding of what these technologies offer telehealth through this review of their common denominators, differences and defining qualities. Explore applications and methods and how VR, AR and TPr can facilitate learning, engagement and communication.

Learning Objectives:

- Define virtual reality, augmented reality, and telepresence and illustrate common applications in life, science, medicine and healthcare.
- Describe types of VR, AR and TPr and suggest a spectrum of levels on a continuum for the participants involved.
- Discuss the role of VR, AR and TPr in individual learning and in engagement and communication with others.

REFERENCES:

1. Parsons TD, Gaggioli A, Riva G. Virtual reality for research in social neuroscience. *Brain Sci.* 2017 Apr 16;7(4):pii:E42.
2. Boninger ML, Wechsler LR, Stein J. Robotics, stem cells, and brain-computer interfaces in rehabilitation and recovery from stroke: updates and advances. *Am J Phys Med Rehabil.* 2014;93(11 Suppl 3):S145-54.
3. Hilty DM, Randhawa K, Maheu M, Pantera R. A concise review of virtual reality, augmented reality and telepresence: definitions, approaches and applications. *J Technology in Behav Sci*, Submitted.

VALUE (BUSINESS STRATEGY AND FINANCIAL MANAGEMENT)

TUESDAY, MAY 1, 2018

3:15 PM–4:15 PM Tuesday, May 1, 2018

Seminar

V-18

TITLE: SURVIVING AND THRIVING IN THE TELEHEALTH BUSINESS—INSIDER TIPS FROM CHICAGO'S HEALTH TECH SUPERSTARS

PRESENTERS: Lisa Schmitz. Mazur, JD; Steven Lee, OD; David Cohn, MBA; Mindi S. Knebel, CEO; Patrick Spain, Co-Founder & CEO, Hoovers; Founder & CEO, Highbeam Research

Abstract: Chicago is known as a hub of healthcare technology innovation and in this session, learn from the founders of some of the city's best companies how they achieved success and how you can, too. Explore the region's growing healthcare technology industry; what it takes to grow a successful start-up company (including specific regional geographic advantages and barriers); the principles, guideposts and strategies that helped these companies thrive; and when it is appropriate to move on.

Learning Objectives:

- Understand the healthcare technology innovation "scene" in Chicago and the Midwest more broadly, and the role of geography in managing a successful company.
- Identify why 90% of start-ups fail to survive, and learn the principles, guideposts and strategies of successful companies to thrive (and to not fall within the 10% that do not).
- Understand when to keep forging ahead with the creation and operation of a promising digital health company and when to "close up shop" to explore other opportunities.

REFERENCES:

1. https://medcitynews.com/2017/09/chicago-healthcare/
2. https://www.regrouptherapy.com/
3. https://www.fshealth.com/
4. http://kaizenhealth.org/
5. https://www.opternative.com/

VALUE (BUSINESS STRATEGY AND FINANCIAL MANAGEMENT)

TUESDAY, MAY 1, 2018

10:15 AM–10:44 AM Tuesday, May 1, 2018

Seminar

V-14

TITLE: EXPANDING SPECIALTY CARE THROUGH TELEHEALTH: A CASE IN PROGRESS

PRESENTERS: Juan J. Estrada, MBA, MSc; Denise Curran, MHA

Abstract: Look into a hospital system's effort to replicate telestroke program success in other specialty fields facing shortages, such as telepulmonary medicine. Explore keys to success, including attending to details of operations and financial structure, assessing clinical value and limitations of new programs, and managing expectations. Examine ongoing efforts to assess value across multiple measures such as patient retention and clinical quality, and gain strategies for improved collaboration between originating and distant sites.

Learning Objectives:

- Incorporate previous successes and challenges into the design process (tested framework, workflows, mitigation of regulatory, licensing, credentialing, and reimbursement hurdles).
- Identify tangible indicators of TeleHealth opportunities and success.
- Learn of improved collaboration/collegiality strategies between originating and distant site, measured by increases in TH consults/utilization.

REFERENCES:

1. Wechsler LR, Demaerschalk BM, Schwamm LH, et al. Telemedicine Quality and Outcomes in Stroke. *Stroke* (2017): 48:e3-e25.
2. Kirch DG, Petelle K. Addressing the Physician ShortageThe Peril of Ignoring Demography. *JAMA*. 2017;317(19):1947–48.

OPERATIONS AND IMPLEMENTATION

TUESDAY, MAY 1, 2018

3:15 PM–4:15 PM Tuesday, May 1, 2018

Seminar

O-14

TITLE: ARTIFICIAL INTELLIGENCE IN HEALTHCARE: CUTTING THROUGH THE HYPE

PRESENTERS: Dale C. Van Demark, JD; Carlos Rodarte; Rene Quashie

Abstract: Artificial intelligence (AI) and machine learning are being used more widely in healthcare" but what really leads to improved clinical outcomes? Gain a better understanding of where AI is being used effectively and implications for the future in this panel discussion. Explore AI applications and the healthcare programs and functions most likely to benefit from them. Learn about related legal, regulatory, privacy, safety and security issues.

Learning Objectives:

- Identify the existing and evolving use cases for artificial intelligence in healthcare operations.
- Identify the legal, regulatory and operational challenges associated with use cases.
- Explore new challenges presented by the application of artificial intelligence in healthcare.

DIRECT TO CONSUMER STRATEGIES

TUESDAY, MAY 1, 2018

2:00 PM–3:00 PM Tuesday, May 1, 2018

Seminar

DTC-17

TITLE: USING SOCIAL MEDIA EFFECTIVELY FOR PATIENT CARE

PRESENTERS: Shimul Shah, MD, MHCM; Jim Nilson, MS

Abstract: Discover how using social media offered real benefits, including reducing social isolation, to liver transplant patients. Examine data on patient participation and satisfaction. Discover the keys to establishing a social media community that fosters patient engagement and protects providers and the system from privacy violations. Learn about other opportunities to study patients' experience on social media and its effect on clinical outcomes.

Learning Objectives:

- Identify how a social media community can benefit patients, patient family caregivers, and clinical staff while staying compliant with privacy laws.
- Empower patients to reduce isolation that results from chronic disease.
- Enhance patient-centered delivery of surgical care by providing asynchronous answers to questions and concerns that often go ignored causing isolation and a perceived disconnect with their provider.

VALUE (BUSINESS STRATEGY AND FINANCIAL MANAGEMENT)

TUESDAY, MAY 1, 2018

10:45 AM–11:15 AM Tuesday, May 1, 2018

Seminar

V-15

TITLE: CANADA'S ECONSULT—A MODEL FOR INCREASING SPECIALIST ACCESS

PRESENTERS: Gilad Epstein, MBA; Robert Williams, MD; Erin Keely, MD, FRCPC; Clare Liddy, MD, MSc, CCFP, FCFP; Elizabeth Keller

Abstract: In this panel presentation, look in-depth at the success of Ontario's eConsult initiative, which went from a pilot to a scaled program that enables faster and improved access to specialist care. Examine the many facets of the project, including clinical modeling, business process design, technology implementation and the establishment of a program governance framework. Learn about methodologies, research, user experiences and the creation of a service model.

Learning Objectives:

- Learn about the methodologies used to develop and deliver a complex, multi-faceted Provincial eConsult Initiative.
- Gain insights from research from clinical champions and user experiences representing the perspective of primary care providers and specialists.
- Understand the value drivers resulting in better access to specialist care and shorter wait times.

REFERENCES:

1. http://www.champlainbaseeconsult.com/publications
2. https://youtu.be/Efc7SXPwaIc
3. http://www.champlainbaseeconsult.com/videos

OPERATIONS AND IMPLEMENTATION

TUESDAY, MAY 1, 2018

2:00 PM–3:00 PM Tuesday, May 1, 2018

Seminar

O-12

TITLE: APPLYING EVIDENCE FROM SUCCESSFUL PROGRAMS TO EXPAND TELEMEDICINE

PRESENTERS: Deb Dominianni, MBA; Chris Schabowsky, PhD

Abstract: Learn how to translate evidence-based telehealth practices into operational guidelines that are timely, relevant and actionable. Examine evidence from programs using remote patient monitoring to reduce hospital readmissions to determine the factors and operational drivers for success for health systems, payers and vendors. Come away with strategies for analysis and using evidence to accelerate the adoption and expansion of telemedicine.

Learning Objectives:

- Understand the clinical and economic evidence for telemedicine's impact on reducing hospital readmissions.
- Differentiate the clinically-relevant features of commercially available systems.
- Reference case studies of successful implementations & the key financial and operational drivers of success.

REFERENCES:

1. MATRC - Telehealth Efficacy, Efficiency and Evidence Base. www.matrc.org/telehealth-efficacy-efficiency-and-evidence-base. The aim of this new statement is to provide a comprehensive and evidence-based review of the scientific data evaluating the use of t.
2. ECRI Research and Health System Client case studies.
3. VA research.

CLINICAL SERVICES

TUESDAY, MAY 1, 2018

2:00 PM–3:00 PM Tuesday, May 1, 2018

Seminar

CS2-14

TITLE: THE HITS AND MISSES OF IMPLEMENTING TELEHEALTH IN A REGIONAL HEALTH SYSTEM

PRESENTERS: Steve North, MD, MPH; Amy Roberts, MHA; Karen Roby, BS, MSHR/PM; Jonathan Bailey, MHA

Abstract: What happens when you implement telehealth in a large hospital system that includes critical access hospitals as well as regional and federally qualified health centers? Gain insights from the valuable lessons learned in Mission Health's recent efforts in North Carolina. Explore key elements such as integration, administrative support, provider engagement and stakeholder partnerships. Examine challenges related to staffing, technology and funding as well as regional variations in care.

Learning Objectives:

- Describe solutions to address technological, administrative and clinical challenges.
- Explain the challenges delivering telehealth services in a primary care network that includes FQHCs and RHCs.
- Discuss techniques for improving physician engagement in providing and using telehealth services at both distant and receiving sites.

ePoster Presentations Abstracts

Clinical Services

APRIL 29, 2018

3:45 PM–4:00 PM **April 29, 2018**

EPOSTER PRESENTATIONS

EP-100

TITLE: IMPROVING ACCESS TO PROSTHETICS AND ORTHOTICS THROUGH TELEMEDICINE AT MIDWESTERN VA MEDICAL CENTERS

PRESENTERS: Stephanie Deaner, PhD

Abstract: VA Medical Centers (VAMCs) in the Midwest are striving to provide a full range of specialty telehealth services to Veterans. One of these specialty areas is Prosthetics and Orthotics. TeleProsthetics and Orthotics is the evaluation, fabrication, and custom fitting of artificial limbs and orthopedic braces in situations where the Veteran and provider are separated by distance. Veterans who served in Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn have a high portion of amputations and joint pain. The ability to provide medical care to these Veterans at their preferred location is paramount given their ambulation challenges.

Growth of TeleProsthetics and Orthotics has been hindered by the "hands-on" approach in which clinicians believe that it is not possible to evaluate or treat patients without being able to touch them. However, this way of thinking and treatment approach is being challenged and slowly being extinguished using new technologies. TeleProsthetics and Orthotics is now being considered as an exciting alternative model of care that can assist patients in gaining their ultimate functional outcome.

Veterans residing in rural areas can greatly benefit from the growth of TeleProsthetics and Orthotics. In addition to mobility issues, many have socioeconomic factors that affect their ability to receive needed care. Moreover, many live in areas that are void of Prosthetic providers. The results are that this population often have decreased access to care and possibly decreased quality of care.

The Midwestern VAMCs are a pioneer of TeleProsthetics and Orthotics. For over half a decade, the Midwestern VAMCs have been a national leader in the VA for the number of Veterans served by TeleProsthetics and Orthotics. In the Midwest, TeleProsthetics and Orthotics program was initiated in 2012, and a handful of patients was seen at the VAMCs in Wisconsin. The Teleaudiology program has expanded and is conducted at VAMCs in Madison, Tomah, and Milwaukee, WI as well as the VAMC in Danville, IL. The TeleProsthetics and Orthotics program has exponentially grown from 16 patients in 2012 to over 650 patients in 2017.

This poster presentation will focus on the necessary tools for a successful TeleProsthetics and Orthotics program. It will discuss equipment, staff training, quality management, and data driven outcomes, including rurality and patient satisfaction, with a focus on practical applications and lessons learned.

Learning Objectives:

- Implement a successful Prosthetics and Orthotics program through Telemedicine.
- Describe the benefits of TeleProsthetics and Orthotics as it relates to patient satisfaction and reaching rural Veterans.
- Demonstrate relevance of lessons learned through Prosthetics and Orthotics Telemedicine program.

Clinical Services

APRIL 29, 2018

4:05 PM–4:20 PM **April 29, 2018**

EPOSTER PRESENTATIONS

EP-101

TITLE: TELESTORK: DELIVERING TELEMEDICINE TO LABOR AND DELIVERY UNITS

PRESENTERS: Toni Wood, MSN, RN; Mary Kay Ford, RNC-OB, BSN; Robin Winebar, MSN, RN, CNL; Jennifer Ducoing, RNC-OB; Karin Lookingbill, RNC-OB, BSN; Erin Moran, RN; Amanda Hedrick, BSN, RN

Abstract: The Telestork program was conceived by a collaboration of nurses and physicians who recognized a need for additional observation of fetal monitoring in Labor and Delivery (L&D) units. The Telestork bunker originated at our tertiary center, Ochsner Baptist Medical Center in 2016. The bunker is stationed in a remote location and houses state of the art fetal/maternal monitoring system, as well as a registered nurse who possesses extensive fetal strip interpretation experience. The Telestork nurse continually reviews real-time patient data, utilizing state of the art technology which incorporates streaming of all fetal monitoring patients, 24 hours a day, seven days a week. The Telestork nurse communicates via phone with bedside nursing to assist with fetal strip interpretation, recognizing potential problems, recommending patient care interventions and calling physician to bedside. At any time throughout continuous monitoring or at the request of the bedside team, interactions can be initiated via video to address emergent patient situations. Using the highest level of data security to exceed federal government HIPAA requirements, clinicians utilize 2-way audio and video communication to interact with patients, providers and family members. The Telestork program assists bedside team in earlier recognition of labor distress and alarming fetal trends thus allowing rapid intervention for improved birth outcomes. Over a year after implementation, we have observed a decrease in unexpected term NICU admissions. The initial success of Telestork prompted its launch into Ochsner's other four local community and rural hospitals in 2016. L&D bedside team has expressed appreciation of the additional support, enhanced communication, and validation of fetal strip interpretation and improved patient care.

Learning Objectives:

- Upon completion of this session, participants should be able to explain how telehealth has been successfully used for remote patient monitoring beyond eICU, home, and chronic care settings.
- Upon completion of this session, participants should be able to demonstrate how virtual specialty care benefits rural patients.
- Upon completion of this session, participants should be able to distinguish clinical outcomes measuring benefits of remote patient monitoring.

REFERENCES:

1. Kleinpell R, Barden C, Rincon T, McCarthy M, Zapatochny RJ. Assessing the Impact of Telemedicine on Nursing Care in Intensive Care Units. *Am J Crit Care.* 2016;25(1):14–20.
2. Williams LM, Hubbard KE, Daye O, Barden C. Telenursing in the intensive care unit: transforming nursing practice. *Crit Care Nurses* 2012;32(6):62–69.
3. Goran SF. Measuring tele-ICU impact: does it optimize quality outcomes for the critically ill patient? *J Nurs Manage.* 2012;20(3):414–28.

Clinical Services

APRIL 29, 2018

4:25 PM–4:40 PM April 29, 2018

EPOSTER PRESENTATIONS

EP-102

TITLE: TELEMEDICINE-GUIDED STRATEGY FOR DENGUE FEVER OUTBREAKS IN BRAZIL: AN EFFECTIVE SOLUTION

PRESENTERS: Marcus Burato Gaz, Cardiologist and Telemedicine physician; Carlos Pedrotti, MD, MBA; Eduardo Cordioli, MD

Abstract: Dengue fever is a major public health concern in Brazil and in other tropical developing countries. Summertime dengue outbreaks carry a major burden for emergency health services. In 2015, a major outbreak took place, with more than 746.000 confirmed cases and 229 deaths between January and May, marking a 234% increase in Dengue cases and a 45% increase in deaths comparing with previous year. Therefore, Brazil endured one of the biggest dengue fever epidemics of its history in 2015, with public and private health services struggling, overloaded with record number of cases.

In order to deal with a great number of patients seeking emergency care for suspected dengue fever, many hospitals, especially public ones, set up especial tents for dealing with massive patient overflow. Patients were referred to those "Dengue tents" mostly from primary care units. The routine procedure consisted of an initial screening performed by registered nurses, including vital signs (temperature, blood pressure, heart rate, and respiratory rate), and blood sampling for platelet count, hematocrit and a point-of-care dengue-specific diagnostic test (NS1 antigen testing).

There is no specific treatment for dengue fever. Intravenous or intensive oral hydration and clinical support therapies are the mainstream of treatment. Brazilian Ministry of Health defined specific guidelines for risk classification and treatment, which were precisely followed. After initial screening and blood testing, patients were classified by potential risk of complications, oral or intravenous hydration were prescribed and patients were then referred for a live video visit or traditional consultation with a medical doctor, following a simple queue. The physician was responsible for deciding between discharge, outpatient treatment or hospitalization.

Between April and May 2015, over 2900 patients attended our Telemedicine-assisted "Dengue tent", located at the parking lot of a primary-care health facility in a remote area of São Paulo. During working hours, there were ten doctors available onsite and one at a distance, available through real-time videoconference. More than 2000 patients (67%) received the diagnosis of Dengue fever, 272 (13,6%) of which evaluated by a real-time video consultation. 256 (94,1%) were immediately discharged and only 16 cases (5,9%) were referred to traditional care, additional intravenous hydration or hospital admission.

In conclusion, our experience shows that in a resource poor environment facing an overflow of patients due to a dengue fever outbreak, a telemedicine-guided strategy within a "Dengue Tent" can be an effective solution to optimize patient flow and staff allocation. There is a potential cost reduction and an achievable 94,1% resolution rate without compromising quality of care.

Learning Objectives:

- Understand and define use of telemedicine in a crisis situation, such as a dengue fever outbreak.
- Conduct a telemedicine-guided strategy for optimal risk classification and treatment decision in high demand for emergency service situations.
- Assess the results of a telemedicine-guided strategy designed to deal with a major infectious disease outbreak in a resource-poor environment.

Clinical Services

APRIL 29, 2018

3:45 PM–4:00 PM April 29, 2018

EPOSTER PRESENTATIONS

EP-112

TITLE: UTILIZATION PATTERNS IN A RURAL SCHOOL-BASED TELEMEDICINE PROGRAM: A FOUR-YEAR ANALYSIS

PRESENTERS: Amanda K. Martin, MHA; Steve North, MD, MPH

Abstract:

Learning Objectives:

- Identify trends in the growth of a school-based telehealth program.
- Recognize the limitations of data collection from an EHR and the need for additional tools to analyze impact of a school-based telehealth program.
- Describe the factors impacting year over year utilization of a school-based telehealth program.

Clinical Services

APRIL 29, 2018

4:05 PM–4:20 PM April 29, 2018

EPOSTER PRESENTATIONS

EP-113

TITLE: EYE ON VALUE - TELEOPHTHALMOLOGY IN THE EMERGENCY DEPARTMENT

PRESENTERS: Ingrid Zimmer-Galler, MD; Rebecca Canino; Fasika Woreta, MD, MPH

Abstract: Currently, in the United States, most community hospital emergency departments (EDs) do not have an ophthalmologist on call. Personnel without specific training in ophthalmic emergencies evaluate most patients who present to their community ED for an eye problem. Management frequently requires referral or transfer, often by ambulance, for expert evaluation to an ED at an academic or tertiary care hospital. Additionally, in emergency settings when specialized providers are available, patients may be examined on site, but wait times may be several hours. Major drawbacks of the current standard of care include limited access to ophthalmology evaluation in community hospital EDs, long wait times, increased costs if transfer is deemed necessary, delay to diagnosis with risk of disease progression over the wait period which may lead to irreversible vision loss and loss to follow-up.

Until recently, the practice of transferring patients with ocular conditions was standard of care at a local community hospital emergency department. Of

all transfers from the community hospital ED to the ED at the nearest academic tertiary care institution, 40% are for eye conditions, and many are ultimately deemed unnecessary transfers. Most patients who present to an emergency room with an eye complaint will have a minor condition that likely can be safely diagnosed and managed remotely with a high-resolution camera. Tele-ophthalmology with video visits is not common in ophthalmology as specialized equipment, such as a slit lamp, is often necessary and requires skilled users. However, most patients who present to the ED with an eye problem have minor anterior segment conditions which can be evaluated with a simple high-resolution camera, which does not require a highly trained operator.

In hopes of improved outcomes, a pilot initiative to evaluate ocular emergencies using remote technology for a video visit combined with a high-resolution hand-held camera was implemented at the community hospital ED. Through the telemedicine program, when patients are triaged and noted to have an eye problem, they are given the option to connect with an ophthalmologist by video for remote evaluation rather than wait for an in-person examination by a provider not trained in eye care.

Since implementation of this technology three months ago, 8 patients have been remotely evaluated and 7 were deemed to not require transfer to a second ED. All patients were seen in person for a follow-up evaluation, which confirmed the telemedicine diagnosis in each case. Each avoided transfer saved the patient significant waiting time, up to 100 miles travel if traveling by car and the health system between $4,000 and $6,000 if an ambulance transfer was avoided.

Ophthalmology tele-consultation in the ED allows accurate diagnosis and demonstrates considerable savings incurred by the healthcare system by reducing patient transfers and a second emergency admission. Patient time and transportation savings are also realized. Tele-ophthalmology in the community hospital ED is a viable alternative to transfer to a tertiary care center for in person evaluation by an eye care provider.

Learning Objectives:

- Understand the nature of eye emergencies and the frequent lack of on-call ophthalmic providers in community hospital emergency departments.
- Recognize how tele-ophthalmology can be utilized in the emergency department.
- Appreciate potential benefits to patients and reduction in healthcare costs realized with tele-ophthalmology visits in the emergency department.

REFERENCES:

1. Channa R, Zafar SN, Canner JK, Haring RS, Schneider EB, Friedman DS. Epidemiology of Eye-Related Emergency Department Visits. *JAMA Ophthalmol.* 2016;134(3):312–19.

Clinical Services

APRIL 29, 2018

4:25 PM–4:40 PM **April 29, 2018**

EPOSTER PRESENTATIONS

EP-114

TITLE: EXPERT OUTPATIENT BURN CARE IN THE HOME THROUGH MOBILE HEALTH TECHNOLOGY

PRESENTERS: Aaron Lesher, MD, MSCR

Abstract: In the United States, approximately 450,000-500,000 patients sustain burns requiring medical treatment every year, with nearly 10 million world-wide. Ninety percent of burns are treated primarily in the outpatient setting. Burns are uniquely suited to the use of telemedicine because burn wound assessment is primarily a visual skill. Evaluation of key burn characteristics, such as percent total body surface area (%TBSA) and burn depth, using both store-and-forward digital imaging and videoconferencing, is comparable to standard wound examination. Unfortunately, despite adequate feasibility data, clinical studies demonstrating a benefit of telemedicine in clinical burn care outcomes are lacking. Higher quality research is desired.

At the Medical University of South Carolina Children's Hospital Pediatric Burn Program, we have designed, developed, deployed and trialed a novel smartphone application (TeleBurn app) to treat partial thickness burns in the outpatient setting. The app allows the provision of tertiary clinical burn care directly in the patient's home through store-and-forward pictures, text messaging, video conferencing, educational videos, and frequently asked questions (FAQs). After IRB approval, we retrospectively reviewed clinical outcomes and feasibility data in pediatric burn patients with partial thickness burns. A comparative study was performed between a cohort of patients offered the TeleBurn app with standard therapy (APP) compared to a similar cohort of patients burns treated with standard therapy alone (ST). Clinical burn care was provided to 32 patients via the APP and 25 patients with ST in patients with partial thickness burns treated with advanced burn dressings on an outpatient basis, such as Mepital AG and Biobrane. In the APP cohort, feasibility data demonstrated that 74% of patients and families used the app, with 26% refusing, in 14 counties in South Carolina, with more than 50% usage across all major ethnic groups. There were no burn wound infections or unexpected return to clinic or the emergent department. For the APP group, a total of 239 burn store-and-forward pictures (mean, range: 6, 0-34) were sent. 529 messages were sent between burn expert provider and the patient/family, with a range of 0-162. Four patients utilized the video calls (11%). The burn dressing change tutorial videos were accessed by the 32 patients a total of 155 times (4.2, 0–10). The FAQ page was accessed by the 32 patients a total of 120 times, range: 0–14. In comparing APP to ST groups, the populations had similar burn characteristics, with the mean %TBSA in the APP cohort of 4% (range: 1–16%) vs 6% (range:1–15%) in the ST group ($p = 0.75$). The time to burn healing in days was similar between groups (APP vs ST, (meanÂ±SD, range) 12.6Â±5.7, 6-25 vs 11.6Â±4.7, 5-22, ($p = 0.9$). The mean number of in-person clinical encounters was 3.3 versus 0.93 ($p = 0.03$).

This project describes a functional, tested, scalable TeleBurn app in clinical use in a pediatric burn program in South Carolina. Further prospective, randomized study may validate home-based clinical burn care via mobile technologies, improving access to expert burn care to a vulnerable population.

Learning Objectives:

- Define the role of telemedicine in the outpatient treatment of acute burn injury.
- Describe the rationale for using telemedicine for the outpatient treatment of burn injury.
- Understand the benefits of using a smartphone application for the direct provision of care to burn injured patients at home.

REFERENCES:

1. Wallace DL, Hussain A, Khan N, Wilson YT. A systematic review of the evidence for telemedicine in burn care: with a UK perspective. *Burns.* 2012;38(4):465–80.
2. Wallis L, Fleming AJ, Hasselberg M, Laflamme ML, Lundin J. A Smartphone App and Cloud-Based Consultation System for Burn Injury Emergency Care. *PLoS One.* 2016;11(2):e0147253.
3. Theurer L, Bashshur R, Bernard J, Brewer T, Busch J, Caruso D, Coccaro-Word B, Kemalyan N, Leenknecht C, McMillan LR, Pham T, Saffle JR, Krupinski A. American Telemedicine Association Guidelines for Teleburn. *Telemed J E Health.* 2017;23(5):365–75.

Direct to Consumer Strategies

APRIL 29, 2018

3:45 PM–4:00 PM April 29, 2018

EPOSTER PRESENTATIONS

EP-124

TITLE: WORKIN' IT - HOW AN EMPLOYED PHYSICIAN WORKFORCE PROMOTES QUALITY THROUGH PHYSICIAN ENGAGEMENT

PRESENTERS: Ian L. Tong, MD; Glen Xiong, MD

Abstract: Direct To Patient telemedicine companies represent a spectrum of innovation, performance and practice model. An employed workforce enables physician engagement and standardization of clinical quality that can rival if not surpass the status quo. Learn how an innovative California-based company has addressed industry quality by building a national medical practice.

Learning Objectives:

- Grasp the opportunities and challenges of an employed provider group.
- List 3 examples of the clinical quality benefits of an employed provider workforce including antibiotic stewardship, primary care based mental health and peer review.
- Describe the quality performance of a leading national medical practice.

REFERENCES:

1. JAMA. 2016;315(17):1864–1873. doi:10.1001/jama.2016.4151
2. JAMA Intern Med. doi:10.1001/jamainternmed.2015.8248 Published online April 4, 2016.
3. http://www.rand.org/news/press/2017/03/06.html

Direct to Consumer Strategies

APRIL 29, 2018

4:05 PM–4:20 PM April 29, 2018

EPOSTER PRESENTATIONS

EP-125

TITLE: WHAT MAKES AN EFFECTIVE USER INTERFACE FOR VIRTUAL CARE SOLUTIONS

PRESENTERS: Kevin L. Smith, DNP, FNP, FAANP; Scott Brown

Abstract: Virtual care holds enormous transformative potential for the healthcare industry. However, the benefits to health systems, providers, and patients are locked behind the barrier of adoption. Unleashing the full potential of virtual care will require focusing on user experience (UX) to ensure ease of use and improve perceived utility of virtual care solutions. This poster will help attendees become familiar with the principles of UX and how they influence patient-centric user interface (UI) design. Through a case study that outlines a UI redesign project, attendees will learn how the confluence of UX and UI impact key metrics, including visit completion rate and patient satisfaction.

Learning Objectives:

- Understand how redesigning a virtual care user interface based on user experience data can impact key metrics.
- Name the key components of user experience and how each relates to virtual care.
- Characterize the impact of user experience on patient satisfaction and successful visit completion.

REFERENCES:

1. Gold WR, Manning TR, Street RL. (1997). Health promotion and interactive technology: theoretical applications and future directions. Mahwah, NJ: Lawrence Erlbaum Associates.
2. Irizarry T, Dabbs AD, Curran CR. Patient Portals and Patient Engagement: A State of the Science Review. *J Med Internet Research*. 2015;17(6). doi:10.2196/jmir.4255&#x0A
3. Bate P, Robert G. (2007). Bringing user experience to healthcare improvement: the concepts, methods and practices of experience-based design. Oxford: Radcliffe Pub.

Direct to Consumer Strategies

APRIL 29, 2018

4:25 PM–4:40 PM April 29, 2018

EPOSTER PRESENTATIONS

EP-126

TITLE: IMPLEMENTATION OF ON DEMAND RAPID FLU TESTING AT MISSION VIRTUAL CLINIC

PRESENTERS: Karen Roby, BS, MSHR/PM; Amy Roberts, MHA; Steve North, MD, MPH; Jonathan Bailey, MHA

Abstract: In 2014, Mission Health determined it was time to add a consumer-facing virtual care service to their care offerings. Mission Virtual Clinic is an asynchronous, direct to consumer offering by Mission Health System. Mission's aim was to provide patients with an additional, convenient access point while increasing access to care. After significant research and planning, Mission Health System launched its Virtual Clinic in October, 2016. Since that time, Mission Virtual Clinic has implemented on demand rapid strep testing and is the first of its vendor's clinics to offer on demand rapid flu testing. This offering provides a rapid, in and out, flu test at any one of Mission's 7 regionally based My Care Now and WorkWell Clinics.

This ePoster presentation will explore the factors that have contributed to the successes and struggles of the on demand rapid flu testing implementation and discussion of Mission Virtual Clinic's motivation for implementation.

Learning Objectives:

- Discuss the need, the implementation, and successes and challenges of on demand rapid flu testing.
- Review guidelines including treatment options for diagnosis of flu through the Virtual Clinic.
- Review of on demand rapid flu testing data to include utilization, protocol adherence, and customer satisfaction.

Operations and Implementation

APRIL 29, 2018

3:45 PM–4:00 PM **April 29, 2018**

EPOSTER PRESENTATIONS

EP-135

TITLE: IMPROVING PATIENT ADHERENCE CARE PLAN

PRESENTERS: Robert Kaul

Abstract: Cloud DX is an award-winning digital healthcare provider based in New York City. Our Founder & CEO, Robert Kaul has been a speaker & panelist at SXSW, HIMSS, the American Telemedicine Association Conference, TEDx Toronto, Health 2.0, Qualcomm Connect, the Telehealth Failures & Success Stories Conference, the Medical Device Manufacturer's Conference (MDM East) and several other venues. In April 2017, Cloud DX was awarded the first ever Bold Epic Innovator award as one of 3 winners of the Qualcomm Tricorder XPRIZE Competition.

We offer a comprehensive Patient Recruitment, Engagement & Loyalty program for reimbursable Chronic Care Management. The Cloud DX platform delivers remote patient monitoring, vital signs integrated directly into the EMR, time tracking for reimbursement billing, and a full suite of patient engagement and education tools that includes a personalized kit of medical devices the patient gets to keep at home.

Cloud DX Connected Health Kits include an Android tablet computer, Pulsewave® wrist-cuff blood pressure monitor and any combination of wireless scale, oximeter, thermometer & glucometer, delivered directly to patients / users. Our pre-installed mobile software app offers cloud-based services that generate unique metrics including cardiac anomaly score, care plan adherence score and mobile dashboards accessible from any browser.

Cloud DX clinical workflow optimization software includes smart scheduling & medication reminders, smart notifications of changes to remote vital signs, secure 2-way text messaging & 2-way video conferencing with the patient, a mobile Health News Feed that delivers curated videos, articles, questionnaires and surveys plus the ability to add patient 'friends & family' to the circle of care.

Our customers use the integrated Cloud DX platform to streamline clinic workflows, recruit eligible patients for chronic care management programs, educate patients regarding their conditions, connect patients to care plan resources, involve patients' families in their care and drive patient loyalty to the reimbursement program. In one on-going pilot project (in Ontario, Canada), Cloud DX Connected Health services improved patient adherence to care plan from 67% (before the pilot) to 89%.

Learning Objectives:

- See the value connected health has on improving patient care.
- Feel empowered to take charge of their own health and monitor vital signs.
- Feel confident knowing clinician help is only a button away.

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Operations and Implementation

APRIL 29, 2018

4:05 PM–4:20 PM **April 29, 2018**

EPOSTER PRESENTATIONS

EP-136

TITLE: REGIONS HOSPITAL BURN TELEMEDICINE

PRESENTERS: LeeAnn Heim, MHA; Heidi Altamirano, RN MS

Abstract: Regions Burn Center covers a large geographic area to include North and South Dakota, Iowa, Minnesota and Western Wisconsin. Video telemedicine used for acute care burn consultations, as well as follow up visits, has enabled the burn team to expand their reach to places that are over 50 miles from St. Paul Minnesota. This has resulted in great partnerships with multiple rural critical access hospitals and healthcare systems who cannot afford a trauma/burn surgeon on staff. There are several major benefits the Regions Burn Center has experienced after implementing video telemedicine. Ensuring patients are managed at the most appropriate facility, in some cases involving the patient's local community, is one example. Video telemedicine for follow up care helps save patients and their families costly travel expenses and time away from work and family. For example, back in January a patient from a rural South Dakota hospital and was transferred to Regions Burn Center. They received care for a 15% burn from a gas fire. The patient did not stay long, but did require follow up services to oversee recovery. The Originating Site is 430 miles away from St. Paul MN, or 6.5 hours. To ask a patient to drive most of the day for a 20 minute follow up appointment is inefficient and potentially dangerous to the patient. An added benefit of video telemedicine has been reducing Regions Burn Center's loss to follow up cases, a key metric utilized by the American Burn Association for verification.

The burn telemedicine team is always looking to improve the way they provide care. Two areas of focus have expanded utilization of telemedicine; use of the full time burn psychotherapist and asynchronous store and forward telemedicine services.

Psychotherapy is offered full time at Regions Burn Center as of 2015 by an LCSW. In 2017 to make accessing care easier the psychotherapist started offering telemedicine follow up appointments to patients. This not only made it easier and more convenient for patients to receive care, it also helped the Regions Burn Center track PHQ9 scores, a key metric used in predicting post-traumatic stress.

While video telemedicine follow ups have been sown to be an efficient method to reduce the number of loss to follow up cases, additional processes may improve upon this rate such as transmission of burn pictures through an asynchronous store and forward system. In particular, allowing patients to transmit burn pictures directly from home in a safe and secure method was a key motivator for Regions Burn Center to develop a store and forward service. Multiple transmission methods were considered and many found to be useful.

Future uses of telemedicine currently under exploration are complementing in-person remote clinic visits, school reentry program assessments and virtual vocational rehabilitation services.

Learning Objectives:

- Analyze the challenges around using various telemedicine platforms as a hub site for burn care.
- Explain the value of a burn psychotherapist and their use of telemedicine to provider care to patients in a large geographic area.
- Compare various transmission methods of pictures in a store and forward application in a burn department, including submission of pictures directly from patients at home.

Operations and Implementation

APRIL 29, 2018

4:25 PM–4:40 PM April 29, 2018

EPOSTER PRESENTATIONS

EP-137

TITLE: ASYNCHRONOUS TELECONSULTATION AND PATIENT MOVEMENT: LESSONS LEARNED FROM AN INTEGRATED SYSTEM

PRESENTERS: Jennifer Mbuthia, Physician

Abstract: Tripler Army Medical Center (TAMC) serves as the Department of Defense (DoD) tertiary medical care facility for the Western Pacific Military Treatment Facilities (MTFs) in Japan, South Korea, and Guam which have limited or no access to local specialty consultation services. The Pacific region spans 5 time zones and is spread across large bodies of water. This unique medical and geographic situation created the need for asynchronous tele-consultation capabilities between Western Pacific MTFs and TAMC.

When patients need to be seen face-to-face at TAMC, whether inpatient or outpatient, additional coordination is required, and additional transparency of information supports a smoother and safer handoff of the patient. From the coordination of the flight medical crew on a military aircraft to the scheduling of multiple specialty visits prior to arrival to decrease the length of stay/time away from home, integrating the key roles for visibility supports better quality of care in a fiscally responsible manner.

The Pacific Asynchronous TeleHealth (PATH) system is a HIPAA-compliant platform used for provider-to-provider teleconsultation and, when required, aeromedical evacuation case management. PATH improves the quality of care provided, and reduces costs and length of stay. The purpose of the presentation is to review the overall workflow of PATH, using clinical examples as indicated that also demonstrate the various administrative support roles required. Additional data and clinical examples will show how PATH decreases the need for face-to-face referrals, and improves care coordination for complex and/or critical patients who require in-flight care on military flights.

Learning Objectives:

- Upon completion, participant will be able to describe the importance of transparency between medical facilities using asynchronous communications when patient movement is involved.
- Upon completion, participant will be able to describe key components of a successful platform that serves the dual role of asynchronous tele-consultation and patient movement.
- Upon completion, participant will be able to describe the challenges of integrating tele-consultation with patient referral and movement across a very large geographic area.

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2. Lin AH, Cole JH, Chin JC, Mahnke CB. The Health Experts onLine at Portsmouth (HELP) system: One-year review of adult and pediatric asynchronous telehealth consultations. *SAGE Open Medicine,* 2016.
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Value (Business Strategy and Financial Management)

APRIL 29, 2018

3:45 PM–4:00 PM April 29, 2018

EPOSTER PRESENTATIONS

EP-147

TITLE: THE VIRTUAL CARE EFFECT ON PATIENT ACCESS AT BRIGHAM HEALTH

PRESENTERS: Dale Ziobro, BA; Adam Licurse, MD; Daniel Kavanaugh, MBA

Abstract: Many healthcare systems increasingly face challenges with patient access; Brigham Health (Boston, MA) is not an exception. Our institution has realized value in using virtual care pilot programs to improve patient access. In 2016, the average ambulatory appointment lag time at Brigham and Women's Hospital was 14 days for surgical departments, and 36 days in non-surgical departments. In addition, only 40% of patients were seen within the timeframe requested by a referring primary care physician. Overall, 80% of ambulatory visits are for follow up care, hindering provider's ability to meet new patient demand.

In efforts to provide care for existing patients while accommodating new patient demand, our team is strategically expanding three key virtual care programs: virtual visits, eVisits, and eConsults. We strongly believe that expansion will improve patient access, engagement and experience.

As we scale our virtual visits program across the institution, we are targeting specific surgical and medical specialties with access challenges and strategic value to the organization. The specialty providers determine each patient's clinical appropriateness for program enrollment. Patients have enjoyed the convenience and flexibility that virtual visits offer, and by reducing or eliminating time needed for the waiting room, administrative duties, and rooming, providers typically complete a virtual visit in half the time scheduled for a routine office visit. This efficiency directly improves access by allowing office visits to become available for new or complex established patients. We will describe this effect with our organizational dashboard designed around telehealth.

The Brigham Health E-Visit program consists of a virtual tool that improves patients' access to their primary care providers (PCPs). The patient completes an online questionnaire; the provider reviews the patient's answers and determines the plan of care. The goal of the E-Visit tool is to control the PCP clinic's urgent primary care walk-in traffic. Providers are often able to virtually recommend at-home treatment for minimal severity conditions; thus, fewer patients need a provider's office visit time. In addition to this patient initiated process, we will pilot provider-initiated E-Visits in the near future. Our presentation will illustrate the E-Visit program's effect on PCP access and project E-Visits' expanded effects after we implement provider-initiated E-Visits.

Finally, providers, often PCPs, refer patients to specialists when they lack the expertise to diagnosis or treat a specific condition. Oftentimes, these referrals are clinically appropriate, but in many cases providers are able to treat the patient with appropriate specialty-specific information. The E-Consult program allows providers to virtually connect with specialists within the EHR to ask patient-specific clinical questions. The responding E-Consultant (specialist) offers expert advice and treatment recommendations. By keeping low severity patient care in a lower cost setting, specialists are able to prioritize

new or complex follow up patients. We will demonstrate E-Consults' effect on patient access in our virtual care dashboard.

At the ATA conference, our team will share our lessons learned in scaling our virtual care pilots into organization-wide programs and present an evaluation dashboard used to assess virtual care's effects on patient access.

Learning Objectives:

- Upon completion, participants will be able to describe our strategies, goals and lessons learned in expanding from small virtual care pilots to organization-wide programs.
- Upon completion, participants will be able to demonstrate how we measure the value and impact that ambulatory virtual care has on clinical access in specialty departments.
- Upon completion, participant will be able to outline how a large academic medical center spread virtual care across varied departments, practices, and providers.

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Value (Business Strategy and Financial Management)

APRIL 29, 2018

4:05 PM–4:20 PM **April 29, 2018**

EPOSTER PRESENTATIONS

EP-148

TITLE: TELEMEDICINE DATA LIBERATION

PRESENTERS: Noah Chang, MHA Candidate 2018; Irene Neequaye, MPH, PMP

Abstract: Our academic health system was one of the first in the country to adopt an electronic patient record (EMR), even winning an award for its efforts in the mid-1990s. Since then, our health system has developed a robust IT infrastructure and governing data trust. Centralization of telemedicine programs, however, has occurred only recently with the inauguration of an office of telemedicine in 2016.

One of the leading priorities of this office was to create a dedicated, centralized dashboard to communicate the value and impact of its projects within and beyond the institution. The framework below describes the process of building this dashboard.

Substantively, our health system has the following environmental characteristics with regards to data infrastructure and development of its telemedicine programs:

1. Decentralized operations with centralized IT
2. Heavy consolidation of IT under its EMR system
3. Highly prioritized data security within its data bureaucracy
4. Decentralized, clinically driven development of telemedicine programs
5. Limited consumer assessment surveys available for telemedicine
6. Degrees of socioeconomic determinants of health in target populations
7. Scalable relationships with third-party vendors for application development
8. Multi-hospital system in several states, a significant international division, and two major EMR vendors

Within this environment, the office attempted to develop its dashboard with the following milestones:

1. Data needs assessment
2. Resource assessment
3. Operationalization
4. Determination of KPIs
5. Test environment with use cases

Across the following value dimensions:

1. Access
2. Effectiveness
3. Experience
4. Financial Impact/Cost
5. Carbon Emission Reduction
6. The joy of medicine

The presentation will describe the lessons learned and achieve its learning objectives by examining the interactions between these three categories of environment, milestones, and dimensions and how they affect the liberation of data.

The findings discussed in the presentation will be useful for entities seeking practical information on large-scale, centralized telemedicine data collection in decentralized environments. It will also compare consequences of engagement with third-party data collection versus "home-grown" apparatuses and generally, the difficulties in collecting telemedicine data in modern, large health systems.

It will also provide mini-cases and examples demonstrating these interactions with specific emphasis on data liberation for large academic institutions.

Learning Objectives:

- Identify available institutional resources and partnerships for telemedicine data.
- Decide when to engage a third-party data apparatus.
- Prospectively frame telemedicine data-collection initiatives.

Value (Business Strategy and Financial Management)

APRIL 29, 2018

4:25 PM–4:40 PM **April 29, 2018**

EPOSTER PRESENTATIONS

EP-149

TITLE: SECONDARY COST SAVINGS ASSOCIATED WITH SCHOOL TELEHEALTH

PRESENTERS: Brian Robertson, PhD, MPH; Michiko Clutter, PhD; Karen E. Kaighan, RN, MSN, MPH; Stormee Williams, MD; Julie C. Hall-Barrow, EdD

Abstract:

Introduction: the economic impact of telemedicine is not well understood. From a medical perspective, technology can be more expensive than return revenue or observed cost savings, resulting in negative financial returns. The outcome of

the telemedicine is linked to financial sustainability through potential reductions in being treated at more expensive hospital settings, but the efficacy of volume reductions associated with telemedicine is also not well understood.

Methods: Different satisfaction surveys were developed for caregivers and nurses, and deployed across the 2015-2016 and 2016-2017 academic school years. Caregivers received surveys on a quarterly basis if their child was seen in the school telehealth visit, and nurses were given surveys twice per school year. Questions topics with financial impacts included sources of alternative care, school absence, travel costs, and work time saved.

Results: In all, 8,765 students were seen through the school telehealth program between October, 2014 and June 30, 2017. Ninety-seven school telehealth sites are currently active, expanding from 26 schools in the 2014-2015 school year to 57 schools in the 2015-2016 school year, and to 97 schools in the 2016-2017 school year. Throughout these visits, 349 caregivers responded, and 161 nurses responded to the surveys.

Thirty-six percent of the nurses surveyed responded that they strongly believed that the child would have visited an ED or Urgent Care Center if they had not been seen through the school telehealth visit. This equates to approximately 3,155 patients being highly likely to utilize these services. With a cost difference of approximately $1,215 between the ED and the school telehealth service, and approximately $106 between Urgent Care and the school telehealth service, this program potentially provides over $2 million in cost savings.

Forty-three percent of nurses responded strongly believed the school telehealth program reduced illness-related absenteeism, with another 38% somewhat agreeing. Furthermore, another 43% strongly believed the child would have left school without the school telehealth program.

On the other hand, over three-quarters of caregivers reported that the child would have missed at least a half of a school day without the telemedicine program. Based on responses, the school telehealth program may have averted over 12,000 illness-related absence days from more than 6,000 student contacts. At an average reimbursable rate of $9,559 per student for the State of Texas (in 2015), or a $53.11 per day reimbursement, this equates to over $650,000 saved to school districts in absences averted.

Transportation costs are yet another aspect of cost savings provided to the caregivers. By applying a $0.55 reimbursable rate to the distance brackets, the school telehealth program potentially saves upwards of $100,000 in travel costs. The average midrange cost for caregivers traveling at least 1 mile is almost $10.00.
Conclusion: This analysis was not exact in determining reimbursement, but looked to assess the potential cost savings due to the school telehealth program. This study shows significant cost savings across several different mechanisms including cost of care, travel, school absences averted, and potentially mitigating lost wages.

Learning Objectives:

- Discuss and identify carious avenues of exploring cost-savings opportunities found within a school telehealth program.
- Discuss the potential indirect cost savings of school telehealth programs as a subsection of determining overall value for this and similar programs.
- Discuss and identify challenges of determining cost savings, and determine the next steps in more accurately assessing cost savings.

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Clinical Services

APRIL 30, 2018

9:35 AM–9:50 AM **April 30, 2018**

EPOSTER PRESENTATIONS

EP-103

TITLE: IMPACT OF PEDIATRIC EMERGENCY ASSISTANCE FOR NEWBORN USING TELEHEALTH ON NEONATAL TRANSFERS FROM RURAL HOSPITALS

PRESENTERS: Madan Dharmar, MBBS, PhD

Abstract:

Aim: To develop a telehealth program to serve labor and delivery units in rural hospital nurseries in Northern California with timely evaluations and interventions from neonatologists and other pediatric subspecialists to improve health outcomes among infants delivered in underserved areas.

Methods: The Pediatric Emergency Assistance to Newborns Using Telehealth (PEANUT) is a comprehensive telehealth program that provides continuous access to neonatologists and other pediatric subspecialists to a network of six rural hospital nurseries. PEANUT supports care for newborns in rural hospitals by providing access to neonatologists and other pediatric specialists through telemedicine and phone consults These consults may include diagnostic and clinical support as well as interpretation of screening tests that may indicate a transfer, including pulse oximetry and echocardiograms. The program also seeks to improve the ability of rural providers to better treat newborns in their own communities by providing live monthly training and ongoing education to rural providers, including physicians, nurses, and technicians. Consultations may occur through telephone or telemedicine.

Results: Since the launch of the program in August 2015, PEANUT has provided specialist consultations to a total of 302 newborns at six rural hospitals in Northern California. 68 of these consultations were telemedicine consultation and 234 were telephone consultations. PEANUT also provided pediatric cardiology consultations for echocardiogram for 211 newborns who either failed pulse oximetry screening for critical congenital heart defects or were suspected to have a congenital heart defect. Of the 302 newborns who received a telemedicine or phone consultation, 227 (75.2%) were transferred to a tertiary care facility. Transfer rates varied by site, ranging from 53.1% to 88.3%. Telemedicine consults were less likely to result in a transfer than phone consults (63.2% vs 78.6%, $p = 0.010$).

Conclusion: PEANUT may be effective in reducing unnecessary transfers to tertiary facilities. PEANUT provides timely access to pediatric subspecialists for care in the patient's own community; it also provides education and training to healthcare providers in the rural hospital which increase the level or competency of care that can be provided locally. PEANUT demonstrates a new model of care that can be adopted as a clinical service line for other children's hospitals in a competitive healthcare market.

Learning Objectives:

- Demonstrate the implementation of a comprehensive telehealth program to care for newborns.
- Demonstrate the impact of telemedicine consultations on transfer rates from rural hospital nurseries when compared to telephone consultations, the current standard of care.
- define a new model of care to provide neonatal telehealth services to rural hospital nurseries from a tertiary care center to differentiate themselves in a competitive healthcare market.

Clinical Services

APRIL 30, 2018

9:55 AM–10:10 AM April 30, 2018

EPOSTER PRESENTATIONS

EP-104

TITLE: CLEVELAND CLINIC'S PATH TO QUALITY IMPROVMENT FOR TELEMEDICINE VISITS

PRESENTERS: Ava George, DO; Kari Gali DNP, CNP; Matthew Faiman, MD, MBA, FACP; Mark Rood, MD; Jeffrey Arnovitz MSN, CNP; Andrea Marek, CNP

Abstract:

Background: Telemedicine improves provider access, engages patients and has great potential to improve clinical outcomes. Consequently, numerous health systems adapted telemedicine programs. Despite growth in telemedicine, many centers do not have clinical practice guidelines or quality review processes to support this new technology. The Cleveland Clinic Distance Health team began meeting weekly to create practice guidelines for common ailments seen on our on demand urgent care telemedicine platform "Express Care Online" and in the primary care setting. These guidelines are built using best practices and are internally vetted among subject matter experts to gain consensus. Once approved, the guidelines are shared electronically with all Cleveland Clinic providers via an enterprise wide policy repository. The team is now improving its quality monitoring program by developing practice guidelines for the institution, creating a more efficient chart review process utilizing smart-text and automated data pulls and focusing on performance improvement.

Objective: To standardize and enhance telemedicine process guidelines and the quality review process of telemedicine visits at Cleveland Clinic

Methods: The Distance Health team created templates for common ailments to facilitate standardized documentation. Smart data elements in these templates help with tracking data for quality review purposes. The team is working on an automated data pull from charts based on certain keywords, ICD and NDC codes, and demographics for quality review purposes regardless if a template is used. This automated data pull supports a large number of patient encounters being reviewed and limits what is needed for a manual review. Both the automated and manual review process ensure that either guidelines were followed or that proper clinical decision making documentation is provided in the chart to allow for deviation. Providers are then given feedback for performance improvement if necessary based on the chart audits.

Results: Process guidelines are simplified with the utilization of smart templates. While our analysis is pending, we hypothesize an improvement in quality monitoring and chart review process with the automated and manual data extraction and review.

Conclusion: The Distance Health team recognizes that as we modernize our delivery of care nationwide through newer methods such as telemedicine, an evolving, yet structured quality monitoring program is important in our efforts to deliver superior care.

Learning Objectives:

- List key quality measures when developing and implementing a quality monitoring program within the participant's organization.
- The participant will be able to compare their quality review process with the current process Cleveland Clinic is implementing.
- Identify ways to develop guidelines to support evidence based practice.

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Clinical Services

APRIL 30, 2018

4:05 PM–4:20 PM April 30, 2018

EPOSTER PRESENTATIONS

EP-105

TITLE: PSYCHIATRIC MENTAL HEALTH ADVANCED PRACTICES NURSES USING SYNCHRONOUS TELEPSYCHIATRY: A SYSTEMATIC REVIEW

PRESENTERS: Brooke A. Finley, BSN, RN-BC; Roberta K. Maixner, j.d., GradCertNursEd, BSN, RN; Kimberly Shea, PhD, RN, CHPN; Maribeth Slebodnik, MLS, BSN

Abstract:

Background/Significance: Estimates suggest that one in five Americans ages 12 and older are suffering from mental illness, yet less than half receive treatment (1,2). One modality to increase mental healthcare access and treatment is via telepsychiatry, which has demonstrated clinical effectiveness and satisfaction among providers and patients (3). Among psychiatric mental health advanced practice nurses (PMH APRNs; defined as graduate-prepared, licensed providers who may diagnose, provide psychotherapy, and prescribe medication for mental illness), telepsychiatry use does not have systematic exploration. Thus, this study is the first to systematically review PMH APRN's role and usage of synchronous telepsychiatry.

Methods: The systematic review followed PRISMA guidelines and was registered through Prospero International prospective register of systematic reviews (4). Searched databases included Medline, Embase, Google Scholar, PsychInfo, OpenGrey, and Scopus. Article inclusion criteria comprised the following: PMH APRNs must be represented among telepsychiatry service providers, written in English, telepsychiatry services must be synchronous, real-time, one-on-one treatment, and provide mental health services using visual and auditory teleconferencing technology. Exclusion criteria included the following: Not providing mental health services, not written in English, services provided by registered nurses not holding a graduate degree and/or psychiatric mental health advanced practice license, including only physician providers, non-individual (i.e., group) treatment, and telepsychiatry services that were asynchronous, and did not include both visual and auditory technology. There was no restriction on publication year. The search included syntactic variations and combinations of the following MeSH and commonly used terms: 1) 'advanced practice nursing'/exp OR 'nurse practitioner'/exp OR 'nurse practitioner' OR 'nurse clinician' OR 'advanced practice nurse' OR 'advanced practice nursing' OR aprn OR pmhnp; 2) 'mental healthcare'/exp OR 'mental disease'/exp OR 'mental patient'/exp OR 'substance abuse'/exp OR 'psychiatric treatment'/exp OR 'mental health'/exp OR stress OR anxiety OR psychosis OR psychotic OR suicide OR suicidal OR 'mental health'; and 3) 'telemedicine'/exp OR 'videoconferencing'/exp OR 'e-counseling'/exp OR 'telenursing'/exp OR 'telehealth'/de OR telepsychiatr* OR telemedicine OR 'tele-mental' OR telesupport OR 'tele-support' OR telemonitoring OR 'tele-monitoring' OR 'tele psych*' OR telepsych* OR 'tele-medicine'. The search was conducted by an associate medical librarian, yielding 277 articles, which were screened by the three nursing researcher authors according to PRISMA guidelines, yielding 100% interrater agreement for inclusion.

Results/Discussion: Only 12 articles met criteria. After, articles were analyzed using The Grades of Recommendation Assessment, Development, and

Evaluation (GRADE) Working Group method that holistically evaluates evidence quality and recommendation grading based on risk/benefit ratio (5). Next, results were synthesized using PRISMA guidelines, including narrative descriptions of key features like study characteristics, bias, results, overall integrating findings and summarizing evidence (4). Overall, the vast paucity of the literature andly low methodological quality warrants more telepsychiatry clinical utilization and original scholarly contributions from PMH APRNs, especially across diverse psychiatric clinical settings and geographical locations.

Learning Objectives:

- Participants will understand that there are currently no systematic reviews of psychiatric mental health advanced practice nurses' role using synchronous telepsychiatry.
- Participants will understand the method used for this systematic review, including PRISMA guidelines and GRADE quality assessment.
- Participants will understand the current utilization and recognize future opportunities for psychiatric mental health advanced practice nurses using synchronous telepsychiatry.

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Clinical Services

APRIL 30, 2018

4:25 PM–4:40 PM **April 30, 2018**

EPOSTER PRESENTATIONS

EP-106

TITLE: TELEREHABILITATION OF PATIENTS WITH INJURIES OF THE ELBOW JOINT OF THE UPPER EXTREMITIES

PRESENTERS: Andriy Tsvyakh, MD, PhD, DSc;
Andriy Hospodarskyy, surgeon

Abstract:

Objectives: The international orthopedic community aims to achieve the best possible outcome for patient care by modifying rehabilitation methods and using telemedicine technology. The theme of this article is to discuss the integration of telemedicine technology in the rehabilitation of patients with injuries of the upper extremities. Currently not sufficiently studied sequential algorithm of movement activity on the injured upper extremity after immobilization, not studied physiological and pathophysiological response during rehabilitation.

Methods: Consecutive patients were recruited over a 3-year period. A total of 84 subjects with upper extremity elbow joint injuries were enrolled in the study and monitored during 2-weeks period. 48 patients from the control group underwent traditional rehabilitation procedures for a 2-weeks period after completion of immobilization. A total of 36 subjects were enrolled in the telerehabilitation group for a 2-weeks period after completion of immobilization and were trained with a set of exercises for home use. Home remote monitoring for the 36 test subjects included use of a smartphone with gyroscope, G-sensor and magnetometer that was fixed to the injured forearm. Software for smartphone was developed in the I. Horbachevskyy Ternopil Medical University, Ukraine. Software permits the monitoring of exercise time, the frequency of active movements of the injured limb.

Results: The 1-month rehabilitation period started with the movements in the injured limb. During the telemonitoring, the physician controls the adequacy of execution of each stage of rehabilitation exercises and has the ability to adjust the load in real time depending on the functional state of the limb.

Subjects were also asked if their pain level increased after the first exercise and in the event that it did, they were asked to indicate by how much it increased by picking one of the following three options on the smartphone: 1-4 pain was a bit stronger; 5-7 pain was moderately stronger; and 8-10 pain was much stronger. The algorithm allows increasing the daily load on 1%, if the assessment of pain after exercise was not >7 points on 10-point scale and progressive limb edema was absent. If pain persisted or questions persisted, subjects were invited for a visit to the doctor with correction of the rehabilitation algorithm.

The orthopedic surgeon, during telerehabilitation, took significantly less time to consult patients (2.3 min – 0.4) than the traditional rehabilitation (12.6 min – 2.9). Patient satisfaction was higher for the telerehabilitation (83.1% - 14.2) than for the orthopedic surgeon's traditional rehabilitation (33.1% – 8.9).

Conclusion: The telerehabilitation system and dosed load algorithm can be used in complex rehabilitation of patients with injuries of the upper extremities. This will improve the quality of life in this group of patients and significantly reduce the cost of the rehabilitation period. These results provide preliminary evidence supporting the telerehabilitation model for orthopedic care. We conclude that telerehabilitation should be considered a key component in the long-term management of patients who have upper extremity injuries.

Learning Objectives:

- To provide telerehabilitation of patients with injuries of the elbow joint of the upper extremities.
- To use a smartphone with gyroscope, G-sensor and magnetometer for telemonitornig.
- To improve the quality of life of patients with injuries of the elbow joint of the upper extremities and reduce the cost of the rehabilitation period.

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Clinical Services

APRIL 30, 2018

9:35 AM–9:50 AM **April 30, 2018**

EPOSTER PRESENTATIONS

EP-115

TITLE: SPECIALTY CARE VIA TELEMEDICINE FOR CHRONIC DISEASE MANAGEMENT IN AN URBAN FEDERALLY QUALIFIED HEALTH CENTER

PRESENTERS: Guenevere V. Burke, MD, MBA; Neal Sikka, MD; Nicholas Reed

Abstract: Co-locating clinical services and integrated care models, often considered best practices in healthcare, have been well described in various traditional in-person settings, yet remain relatively underdeveloped with respect to telemedicine. We describe the development of a new program, which co-locates specialty care from an Academic Health Center via telemedicine with traditional primary care at a Federally Qualified Health Center (FQHC) to expand access to specialty care for the management of chronic disease for an urban, underserved patient population.

In order to address the greatest burden of disease in a traditionally underserved urban neighborhood, we developed the capacity to provide secure, live audio-visual encounters for patients with difficult to manage hypertension, diabetes and chronic kidney disease. Patients are referred to the program by their primary care provider, with the ability to obtain both initial consultation and ongoing care from a specialist at their usual site of care, the FQHC. Participating specialties include cardiology, endocrinology, and nephrology. The program has been able to successfully obtain reimbursement from the local Medicaid program as well as private insurers. Formal evaluation of provider and patient satisfaction, clinical outcomes and other detailed program metrics is ongoing and interval results from Year 1 of this 3 year grant supported study will be presented.

Experience to date has demonstrated keen interest, with demand outstripping available provider hours for certain conditions and demonstrates promise regarding improved access to care for urban underserved patients who often face a disproportionate burden of chronic disease and numerous barriers to accessing specialty services, including transportation and time lost from work. Early success in billing and reimbursement bodes well for future financial sustainability. Challenges remain regarding provider to provider communication for full care integration.

According to a recent national survey, the majority of community health centers do not offer telemedicine services, and the number of urban centers using telemedicine was far lower than rural centers. Our experience developing a new program for specialty care via telemedicine at an urban FQHC may inform future efforts to enhance the use of telemedicine at community health centers, improve access to care for underserved patient populations, and advance best practices of clinical care integration.

Learning Objectives:

- List common barriers to care for urban, underserved patients for chronic disease management.
- Describe a model of specialty care service delivery via telemedicine at a Federally Qualified Health Center.
- Describe challenges to care integration and financial sustainability in developing a specialty telemedicine program for underserved patients.

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Clinical Services

APRIL 30, 2018

9:55 AM–10:10 AM **April 30, 2018**

EPOSTER PRESENTATIONS

EP-116

TITLE: A PILOT STUDY EXAMINING THE USE OF ASYNCHRONOUS AND SYNCHRONOUS TELEPSYCHIATRY IN SKILLED NURSING FACILITIES

PRESENTERS: Glen Xiong, MD; Michelle Parish, MS

Abstract:

Background: For over 30 years, real-time synchronous telepsychiatry (STP) has been the traditional method of delivering psychiatric care to areas with provider shortages. However, STP is under-utilized because of administrative and cost barriers, problems that could be overcome by using a novel telepsychiatry model, asynchronous telepsychiatry (ATP). This pilot study assessed the acceptability and feasibility of ATP for skilled nursing facility (SNF) populations by comparing it to STP in a 12-month, randomized clinical study.

Methods: The study was conducted at two SNFs in the greater Sacramento, California area. The first served as a post-acute rehabilitation and skilled nursing facility (98 beds), while the second operated as a dementia and Alzheimer's nursing facility (150 bed). Both SNFs lacked on-site psychiatric services. Participants included in the study, average age of 74 (range 44 to 96), were SNF residents with non-emergent psychiatric issues. Each had multiple chronic medical problems in addition to their psychiatric symptoms.

STP consultations, scheduled based on the patients' and psychiatrist's availabilities, were typically conducted in a clinic-like manner wherein multiple STP consultations were conducted over a half-day period. ATP interviews consisted of a patient interview conducted by the SNF onsite facility

social services staff using the MINI questionnaire. ATP video-recorded consultations were then stored and viewed by the treating psychiatrist. Consultation notes were generated within 5 days. Follow-up STP and ATP consultations occurred at 6 and 12 months.

The primary outcome measurement was the psychiatrist-completed Clinical Global Impression (CGI). We also examined the medication recommendations reduction or addition of medications made by the psychiatrist. Finally, participant responses to a modified version of the Parent Telemedicine Satisfaction Survey were collected.

Conclusion: We will present the clinical outcome measures data generated over the course of the study. We will also analyze these data to show that ATP has the potential to be a viable alternative to STP for delivering telepsychiatry to SNF populations.

Learning Objectives:

- To describe the potential of a novel telepsychiatry model, asynchronous telepsychiatry (ATP), for use with skilled nursing facility (SNF) populations.
- To assess whether significant differences exist between ATP and synchronous telepsychiatry (STP), the traditional method of delivering telepsychiatry to SNFs, with regards to acceptability and feasibility.
- To analyze and interpret ATP and STP clinical outcome data, namely CGI, medication reduction/addition recommendations and patient satisfaction, generated in a year-long study with SNF populations.

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Clinical Services

APRIL 30, 2018

4:05 PM–4:20 PM **April 30, 2018**

EPOSTER PRESENTATIONS

EP-117

TITLE: YOUR GERIATRIC CLINICIAN IS A CLICK AWAY - INTEGRATING MOBILE SOLUTIONS WITH HOMEBOUND GERIATRIC PATIENTS

PRESENTERS: Agnes Cheng Tsallis

Abstract: Telehealth has evolved over the years. The technology has changed from room based video conference systems to software and apps that can be downloaded and used on a smart phone or tablet. These advancements make it easier for healthcare providers to deliver care to patients. Baycrest has changed how healthcare is delivered to our geriatric home bound patients via Telehealth. Delivering healthcare to our patients at home reduces the risks and resources required to transport vulnerable patients from their homes to the hospital. It also enables family members and caregivers to be present promoting family centered care.

Baycrest Health Sciences and The Centre for Aging and Brain Health Innovation began planning of two pilot projects in April 2016. The goals of the projects were to reduce emergency department visits and provide patients with complex chronic conditions to stay at home while being able to see a physician.

The Integrated Community Care Team (ICCT) and the Geriatric Psychiatry Community Service (GPCS) are comprised of physicians, nurses, social workers and various allied health professionals. Members of these teams provide an important service to homebound older adults with complex needs. They visit patients at home to provide assessments and/or recommendations on either complex conditions or psychiatric assessments for patients with depression and memory loss.

Due to various conditions that may arise while visiting a patient at home, the teams on occasion rely on input from colleagues that are not present. It was identified that ICCT and GPCS would benefit from using telehealth technology in the Virtual Care Project. The project utilizes telehealth to connect with a geriatrician or psychiatrist in the hospital during a home visit. The connection is made using a tablet brought to the patient's home. After the assessment is completed the physician is connected using the tablet via the Ontario Telemedicine Network (OTN) App.

A telehealth appointment no longer consists of physician/patient visit using room based systems. Smart phones and tablets have turned the technology into a mobile healthcare solution which reduces risks to vulnerable and complex patients while improving their safety and wellbeing.

Learning Objectives:

- Define what services the Integrated Community Care Team (ICCT) and the Geriatric Psychiatry Community Service (GPCS) provide to Baycrest patients and clients.
- Describe how the use of telehealth has changed from pricey room based systems to affordable mobile solutions (ie: tablets and smartphones)
- Interpret the benefits of how telehealth saves time for the patient, caregvers and family members and clinicians.

Clinical Services

APRIL 30, 2018

4:25 PM–4:40 PM **April 30, 2018**

EPOSTER PRESENTATIONS

EP-118

TITLE: TELEMEDICINE FOR RHEUMATOID ARTHRITIS IN ALASKA NATIVE PEOPLE: IMPACT ON OUTCOMES, QUALITY AND SATISFACTION

PRESENTERS: Elizabeth D. Ferucci, MD, MPH; Sarah Freeman, PharmD

Abstract: Rheumatoid arthritis (RA) is an autoimmune disease with a high prevalence in Alaska Native and American Indian populations. In RA, frequent visits to a rheumatologist improve disease outcomes. In the Alaska Tribal Health System, there has been rapid uptake of telemedicine using video teleconference by specialty clinics including rheumatology. Few studies have assessed the use of telemedicine for RA. The purpose of this session is to provide data from an ongoing research study evaluating the impact of telemedicine rheumatology follow-up on disease activity, access to care, and quality of care in RA. In addition, the study is examining views about telemedicine with a participant survey. Individuals with a diagnosis of RA seeing a rheumatologist for follow-up either in-person or by telemedicine, both of which are offered as part of usual care, were invited to participate in this study. Participants completed a telemedicine survey, the RAPID3 (a self-reported rheumatoid arthritis disease activity questionnaire), and agreed to medical record review for demographics, disease characteristics, and quality of care measures. Participants are being contacted at 6 and 12 months for follow-up surveys. For data analysis, participants are categorized as being in the telemedicine

group if they have had at least one telemedicine visit with a rheumatologist and in the in-person group otherwise. To date, 92 participants with RA have enrolled in the study. Additional enrollment is expected prior to this presentation. At baseline, demographics, disease activity and functional status were similar in the telemedicine vs. in-person groups. The telemedicine group had more visits with a rheumatologist in the past year (mean 3.3 vs. 2.3, $p = 0.002$). Disease activity and functional status were documented in the medical record more commonly in the in-person group ($p = 0.011$ and 0.018, respectively), but there was no difference in other quality measures. The telemedicine group was more likely to have favorable opinions about several aspects of telemedicine, and the majority (71%) felt that the medical care they receive in telemedicine visits is as good as in-person care. In summary, at baseline, the characteristics of study participants with RA who have been seen by telemedicine are similar to those seen in-person. However, participants ever seen by telemedicine have more frequent visits with a rheumatologist, which is likely to result in improve long-term disease outcomes. In addition, those seen by telemedicine have more favorable opinions of telemedicine than patients seen in-person only. Longitudinal data collection is ongoing and will be available by the time of the presentation.

Learning Objectives:

- Describe the differences or similarities in rheumatoid arthritis disease activity at baseline and follow-up in patients seen by telemedicine compared to in-person only.
- Understand the differences or similarities in quality of care for rheumatoid arthritis at baseline and follow-up in patients seen by telemedicine compared to in-person only.
- Compare and contrast the views of telemedicine by rheumatoid arthritis patients seen by telemedicine compared to in-person only.

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Direct to Consumer Strategies

APRIL 30, 2018

9:55 AM–10:10 AM **April 30, 2018**

EPOSTER PRESENTATIONS

EP-128

TITLE: CHARACTERISTICS OF UNRESOLVED E-VISITS IN AN ACUTE CARE TELEMEDICINE PROGRAM

PRESENTERS: Marty Player, MD, MS; Vanessa A. Diaz, MD, MSCR; Emily Sigmon, MHA

Abstract:

Context: Electronic visits (e-visits) are asynchronous electronic interactions between patients and providers through a secure patient portal. An e-visit program was implemented in December 2015 at the Medical University of South Carolina in Charleston, South Carolina to provide non-emergent acute care. As this new method of patient care continues to grow in use and develop into more areas of medical care, the quality of these visits remains of significant interest to insurers, healthcare systems, healthcare providers and to patients themselves. Studies often examine and present findings from e-visit programs in which the visits were resolved (ie the patient's problem was addressed, and they were billed for the encounter). There is limited information on the reasons why E-visits may remain unresolved, such as patient factors, severity of illness, and appropriateness of presenting complaints. In an effort to continually improve the quality of e-visits provided at our institution, we take the unique approach of analyzing factors associated with unresolved e-visits.

Methods: This study involves a retrospective chart review of 1575 e-visits submitted by adults (>18 years old) from December 2015 to July 2017. Patients could request e-visits for more than 20 common acute conditions, which include heartburn, diarrhea, influenza, rash, red eye, sinus problems, urinary problems, and vaginal irritation.

Descriptive statistics evaluating the characteristics of all e-visits as well as those which were not resolved were calculated. Chi-square tests were used to compare resolved and unresolved e-visits, evaluating differences between patient factors (age, gender), disease factors (condition being evaluated), and e-visit factors (response time, time the e-visit was submitted) All analyses were performed using SPSS.

Results: A total of 1575 e-visits were submitted from 18 December 2015 to 9 July 2017. Most e-visit were submitted by women (80.1%) and patients 18-45 years old (57.7%). One-fourth of patients (25.7%) submitted more than on e-visit. Most e-visits were successfully completed (92.5%). E-visits that could not be completed were more likely to be submitted by men than women (10.5% vs 6.4%, $p = 0.12$), patients >65 years old (6.6% for patients 18-45, 7.2% for patients 46-64, 13.5% for patients 65 and older, $p = 0.046$), and have a response time over 20 minutes (12.4% vs 5.2%, $p < 0.001$). Almost one-fifth of skin problems were not completed (18.1%), which was statistically significant ($p < 0.001$).

Conclusions: Most submitted e-visits were resolved. For those that went unresolved, patients were more likely to be men and older. Rash and other skin problems were the most likely presenting condition in the e-visits to be unresolved. Improvement in e-visit resolution rates may require amending the e-visit template to obtain more information (eg more precise questions and requiring a photo). A variety of reasons could be associated with men and older patients having a lower resolution rate. For instance, these patients may have more complex conditions, they could be providing less information through the e-visit questionnaires, or providers may feel less comfortable treating older and male patients because of perceived worse health. Thus, further evaluation of the underlying causes for our findings is needed.

Learning Objectives:

- Describe the prevalence of unresolved e-visits for acute conditions.
- Identify factors associated with unresolved acute e-visits.
- Formulate strategies to reduce the number of unresolved e-visits for acute conditions.

Direct to Consumer Strategies

APRIL 30, 2018

4:05 PM–4:20 PM **April 30, 2018**

EPOSTER PRESENTATIONS

EP-129

TITLE: MEASURING ARMY TELEMEDICINE TO MEET NDAA 2017

PRESENTERS: Kelly A. Coughlin; Jennifer Holloman; Katherine Igyarto, MBA, MSA

Abstract: Army Medicine has been using Telehealth to provide right care to soldiers at the right time across the world. NDAA 2017 outlined requirements to

advance and integrate Telehealth across the Department of Defense. This presentation is goal is to provide overview of recent efforts to improve Army Telehealth advancement and accountability through the development of enterprise metric structure. This presentation will discuss the development of Virtual Medical Center and the allocation of 47 new VH carts across the enterprise and discuss how the National Quality Forum's "Creating a Framework to Support Measure Development for Telehealth", Department of Health and Human Services was utilized.

Learning Objectives:

- Understand the development of metrics to meet NDAA 2017 investments to ensure telemedicine operations and ROI support key decision making.
- Discuss how Army applied and the guidance of Department of Health Human Services "Creating a Framework to Support Measure Development for Telehealth".
- Compare and contrast how military telemedicine is the same but different from stateside telemedicine.

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Direct to Consumer Strategies

APRIL 30, 2018

4:25 PM–4:40 PM **April 30, 2018**

EPOSTER PRESENTATIONS

EP-130

TITLE: SURVEYING THE INDUSTRY: THE CASE FOR TELEHEALTH, BY HEALTHCARE PROFESSIONALS

PRESENTERS: David Taylor, RN; Chris Otto, ME

Abstract: With its ability to address numerous issues for today's healthcare providers - from the need to reduce readmissions, engage patient populations, address long-term chronic care, and make care more accessible - telehealth represents one of the most promising technology solutions in the healthcare space.

Notwithstanding, the vast majority of healthcare providers have not been able to incorporate telehealth technologies - despite the desire to do so.

To better understand the pain points and roadblocks involved in using telehealth technology solutions, MobileHelp Healthcare recently reached out to healthcare providers with a comprehensive survey.

The results demonstrate that while the benefits of using telehealth are very clear to those in the provider space, the capability to invest in a new program or expand an existing one has significant challenges - from fiscal difficulties to personnel shortages.

Examining the results affords the opportunity to understand how those challenges can be addressed by products on the market today.

The Survey: Results Support Telehealth

The primary concerns among healthcare provider participants fell among five topic areas:

1. Increasing patient load;
2. Retaining trained nursing staff;
3. Readmission penalties;
4. Patient satisfaction rates; and
5. Increasing operating costs.

More than 80% of the participants felt "increasing operating costs" was the biggest concern, followed by "retaining trained nursing staff" and "patient satisfaction rates."

When asked follow-up questions related to technology and its ability to help address the major areas of concern, healthcare providers offered the following feedback: While only 29% of respondents reported using technologies like remote patient monitoring (RPM) to ease the burden of the issues expressed in major areas of concern, more than 85% of respondents felt RPM could benefit their patients in multiple ways.

The results of the survey is underscored by other studies, which indicate technology - and telehealth specifically - has the potential to 1) reduce healthcare costs, 2) provide much needed support to staff, and 3) increase patient satisfaction for an ever-growing patient population.

Growing Telehealth Utilization - and Challenges to Address

The data collected by this survey reflect the healthcare providers' desire to utilize technology to 1) more fully understand patient conditions and status, 2) offer ongoing care to their patients outside the traditional clinical setting, and 3) provide their patients with supplementary tools.

To address these needs, this poster will explore how new consumer-facing technology solutions are providing patients with the benefits of traditional remote patient monitoring with additional aspects such as video visits or the ability to provide customized education related to specific disease states.

Following the reimbursable period, patients have the opportunity to keep the telehealth equipment and shift to monitoring their own vital signs - allowing healthcare providers to essentially step out of the clinical care process - while giving patients the tools they need to engage more fully in their own care in the long-term.

In addition, a medical alert can be incorporated, which allows patients to access emergency help if and when they need it - a key feature for patients moving outside the traditional clinical care environment.

Learning Objectives:

- Upon completion, participants will be able to define the results of a recent survey conducted among healthcare providers around use and implementation of telehealth solutions;
- Upon completion, participants will be able to understand how to invest in a new telehealth program or expand on an existing one – and potential program challenges.
- Upon completion, participants will be able to discuss how telehealth challenges can be addressed by thinking about consumer-facing technology in new ways.

Operations and Implementation

APRIL 30, 2018

9:35 AM–9:50 AM **April 30, 2018**

EPOSTER PRESENTATIONS

EP-138

TITLE: IMPLEMENTATION OF A PUBLIC TELE-DERMATOLOGY PROGRAM IN BRAZIL AND DEVELOPMENT OF IMAGE DEEP LEARNING ALGORITHMS

PRESENTERS: Andre Pires dos Santos, MBA; Eduardo Cordioli, MD; Carlos Pedrotti, MD, MBA; Leandro Augusto da Silva

Abstract: Skin diseases include more than 2000 specific conditions, from simple rashes to malignant lesions and life-threatening anaphylactic responses. Although most rashes are easily managed by a well-trained general practitioner or internist,

patients are often referred to consultation with a dermatologist. In those cases, long waiting times may worsen disease outcomes and increase health overall costs.

São Paulo is the largest and most populous city in Brazil. Although Brazilian public Unified Health System guarantees universal health coverage, there is great inequality of access to good quality specialized healthcare, mainly in low-income areas. By July 2017, there were 477 public primary care facilities working in São Paulo, with a mean 16000 patients referred monthly to dermatologist consultation, exceeding the public system capacity of 10,000 visits per month. This imbalance lead to a mean waiting time of six months and a 65000+ patients long queue.

Since dermatologic examination is mostly visual, the field of tele-dermatology has grown exponentially with the recent advance of high definition image communication technologies. Tele-dermatology programs are already consolidated in well-developed countries and accuracy has been widely accepted to be comparable to in-person visits.

In early 2017, the city Health Department partnered with Hospital Israelita Albert Einstein, one of the country's most important private non-profit healthcare organizations, to develop a tele-dermatology program, aiming to reduce waiting times, increase quality of dermatologic care, reduce costs, and collect data to develop an artificial intelligence algorithm able to assist on skin lesions diagnosis, a full triple-aim program.

In brief, a Web-based platform was developed in-house to allow secure storage of images and patient information, available to trained hospital staff dermatologists for adequate documentation of diagnosis and recommendations. Trained nurses are responsible for filling patient data forms and perform the collection of digital images for asynchronous image and clinical data evaluation by a staff dermatologist. Diagnostic hypotheses, treatment options and recommendations are recorded for each case. Eventually the patient receives one of three evaluation results: 1) Definite diagnosis and treatment recommendation - return to primary doctor; 2) Suspected malignant lesion - ordered skin biopsy; or 3) Unable to give a definite diagnosis - referral to in-person dermatologic consultation.

Along with the patient-centered strategy, a dedicated technology staff was designed to develop an artificial intelligence algorithm using acquired image data. Deep learning techniques are being used to automatically suggest a probable diagnosis for skin lesions.

This e-poster will present the tele-dermatology program development, its implementation challenges and preliminary results. Over the first 40 days of implementation, 2054 skin lesions were evaluated. 47.9% of the patients were given a definite diagnosis and avoided an in-person consultation, 46.4% were referred to traditional care and 5.7% were directly referred to skin biopsy. The early-scale project is designed to evaluate 65000 skin lesions by early-2018. Deep learning algorithms are being generated and details about the developing process will be presented, as well as its first accuracy results.

Learning Objectives:

- Define main steps to implement a tele-dermatology service able to reach thousands of patients.
- Determine the cost-reduction potential of a tele-dermatology approach.
- Get acquainted to artificial intelligence algorithms being developed to automatically screen skin lesions.

Operations and Implementation

APRIL 30, 2018

9:55 AM–10:10 AM **April 30, 2018**

EPOSTER PRESENTATIONS

EP-139

TITLE: PATIENT SATISFACTION WITH TELEMEDICINE: A MIXED-METHODS STUDY TO IMPLEMENT A SATISFACTION TOOL (MASTER'S THESIS)

PRESENTERS: Kerry Cotter, MPH '18

Abstract: The University of Virginia Karen S. Rheuban Center for Telehealth is nationally recognized as one of the oldest and most successful telehealth programs in the country. Founded in 1995, the UVA Center for Telehealth has facilitated more than 67,000 telemedicine service encounters in the following categories: live video patient encounters, store and forward, remote patient monitoring, patient education, clinician-to-clinician consultation, and patient home visits. The UVA Center for Telehealth offers 60 telemedicine specialty services at more than 150 partner sites throughout the Commonwealth of Virginia, including health systems, community hospitals, federally qualified health centers, community service boards, health departments, skilled nursing facilities, medical practice sites, schools, and correctional facilities.

Despite the successful history of the Center for Telehealth, a comprehensive patient satisfaction review has never been conducted. In order to promote and grow the services of the center, both within the health system and with outside partners, we need evidence that shows the value and quality of the care we support and provide. My Master of Public Health thesis is a comprehensive satisfaction review and will be completed in December 2017. My study will assess the overall patient satisfaction with telemedicine services provided by the UVA Center for Telehealth at several of our rural partner sites. Furthermore, my study will evaluate the difference in satisfaction between various telehealth delivery systems: video consults, phone conversations, image transfer, and group education sessions. This is a mixed-methods study. The qualitative portion will consist of extensive interviews conducted with participants over the phone, and the quantitative portion will consist of Likert scale surveys filled out by patients in the clinics who choose to participate. In addition, a demographics assessment will be completed to assess differences in satisfaction between patients.

In fact, there is a lack of qualitative research on patient satisfaction with telemedicine. Also, there has been no standard satisfaction tool or assessment developed, as the field of telemedicine is extremely diverse and has not been universally adopted. Garcia et al. (2007) noted in their study, "Patient satisfaction can play an important role for decision makers implementing telemedicine systems. Yet there remains a limited understanding on what exactly constitutes satisfaction and what are the dimensions that define it." A literature search revealed that the majority of published studies are quantitative studies involving Likert scale survey assessments (e.g. LeRouge et al., 2015). Therefore, this qualitative research will be critical not only to improve and grow the UVA Center for Telehealth, but also to contribute to the existing field of telemedicine satisfaction literature. Additionally, I was unable to find a qualitative study that comprehensively looked at the difference in telemedicine delivery methods, which will be an important part of my study.

After completion of the study and subsequent analysis, the findings will not only inform the Center for Telehealth of current patient satisfaction but will also be used to develop and implement a satisfaction tool to be used with every telemedicine encounter.

Learning Objectives:

- Upon completion of this session, participants should be able to understand how to complete a mixed-methods study (qualitative + quantitative components).
- Upon completion of this session, participants should be able to understand important aspects of developing a patient satisfaction tool to apply to their own programs.
- Upon completion of this session, participants should be able to compare patient satisfaction with telemedicine at a large academic institution to satisfaction at their institutions.

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Operations and Implementation

APRIL 30, 2018

4:05 PM–4:20 PM **April 30, 2018**

EPOSTER PRESENTATIONS

EP-140

TITLE: TELEMEDICINE-ASSISTED TRANSPORTATION OF CRITICALLY ILL PATIENTS BETWEEN SAME-INSTITUTION LOCATIONS

PRESENTERS: Carlos Pedrotti, MD, MBA; Eduardo Cordioli, MD

Abstract: Transportation of critically ill patients between hospital locations usually requires a highly-specialized ambulance team, including a trained driver, paramedics and a medical doctor. However, keeping a physician available to assist on that type of transportation is expensive, expanding idleness and occupational hazard.

This e-poster intends to present a full-scale live video telemedicine service to assist critically-ill patient transportation between same-institution locations and was developed by the Hospital Israelita Albert Einstein Telemedicine Center. Considered one of the best hospitals in Latin America, Hospital Israelita Albert Einstein is a 650-bed high complexity general hospital located in the city of São Paulo, the largest and most populous city in Brazil as well in the southern hemisphere.

Albert Einstein has four full-equipped satellite emergency department locations distant 5 to 15 miles from the main building. All patients requiring hospital admission should be transported to the main building. Due to heavy traffic, even with ambulance priority, transfer duration can easily reach more than one hour. Under these conditions the potential need of medical intervention or complications during the conveyance increases.

However, since after medical evaluation and treatment most patients requiring admission to a semi-intensive or intensive care unit are already stable at those locations, selected low-risk cases could be suitable to be transported under telemedicine-assisted supervision by a physician. As a result, a single doctor can be available to assist multiple transportations without the need to be onboard, reducing idleness and optimizing costs without compromising patient safety.

Therefore, a protocol was designed to select patients with lower risk of transportation, mainly excluding those considered unstable, needing advanced respiratory support and/or vasoactive agents. Also, STEMI and acute stroke patients were also excluded from telemedicine-only supervision transportation. Selected patients were transported by a trained paramedic, connected through 4G broadband internet connection on an onboard tablet device, under live video supervision by a staff physician at the hospital.

Over the first six months of 2017 there were 766 critically-ill patient transportation between distant emergency departments and the main building, 606 (79%) of which were assigned to medical supervision by telemedicine. That figure represents roughly a 30% reduction in transportation costs. Medical intervention has been needed on only 1% of the cases, all of which considered safe to be done under supervision at a distance. There were no severe adverse events reported nor technological malfunction/loss of signal reports (it's a highly-urbanized area). Therefore, transportation of selected low-risk critically-ill patients under physician supervision by telemedicine can be considered safe and feasible. A continuing analysis of the results is being carried on, and a thorough cost-benefit analysis is under investigation.

Learning Objectives:

- Implement a telemedicine solution to assist critically-ill patient transportation by ambulance for short distances.
- Design a protocol to select patients suitable to transportation assisted by telemedicine, replacing the need for an onboard physician.
- Understand most common caveats in the implementation of a telemedicine-assisted transportation system.

Operations and Implementation

APRIL 30, 2018

4:25 PM–4:40 PM **April 30, 2018**

EPOSTER PRESENTATIONS

EP-141

TITLE: UNIQUE PARTNERSHIP AIMS TO REDUCE UNNECESSARY TRANSFERS FOR SENIOR LIVING RESIDENTS USING TELEHEALTH

PRESENTERS: Lauren Sweeney, MPH

Abstract: This poster will outline the implementation and findings from a telehealth pilot program that is a partnership between a tech company, physician partnership, Educational Institution, Hardware Company and Senior Living Facility.

The goal is for the viewer to understand how a study is being performed to understand value in a niche area, as well as appreciate how many large organizations were willing to come together to resolve this question.

Learning Objectives:

- Appreciate how many parties are part of a telemedicine program.
- Describe how a telemedicine program can add value by reducing unnecessary transfers from senior living facilities.
- Understand study design and data sharing between organizations.

Value (Business Strategy and Financial Management)

APRIL 30, 2018

9:35 AM–9:50 AM **April 30, 2018**

EPOSTER PRESENTATIONS

EP-150

TITLE: PROTECT AND INCENT = A PROVIDER-BASED APPROACH TO CREATING TELEHEALTH VALUE

PRESENTERS: David J. Houghton, MD, MPH

Abstract: Most experts agree that the use of interactive digital technology to facilitate healthcare has passed its proverbial inflection point, and the only question that remains is "how widespread will telehealth become?" Yet, one significant cause of turbulence along telehealth's ascent remains the complicated interplay of workload, lifestyle, and compensation of telehealth

providers. (In fact, there was no direct mention of "provider" on the referenced 2018 list of 51 ATA Key Topics!).

Provider engagement is critical in the success of a telehealth, particularly as part of a large healthcare system initiative. Without the buy-in of the practicing physicians, nurse practitioners, physician assistants, social workers, and counselors, the first and lasting impressions to the patient and family are at risk. The appropriate conversion of a strong "bedside manner" to a similar "webside manner" depends on it. At minimum, busy clinicians envision telehealth as a neutral change to their modus operandi (i.e. protection). Ideally, they find it an improvement by creating more proficiency, efficiency and/or revenue (i.e. incentives). Thus, we follow the mantra to "protect and incent" providers in order bring champions to a telehealth program.

Specific "protect and incent" strategies are culturally-specific to the healthcare system in which they are employed. For example, when providers are part of a protected, non-incentivized, capitated salary structure, then trickling incentivized revenue down to the providers may not be necessary. But maintenance/reduction or expected workload with maintenance/improvement of lifestyle will be more important in this situation. Conversely, in an RVU or billable working model, incentivized pay may be essential.

During the ePoster presentation, we will demonstrate how to create a 2×3 grid: with protect and incent along the x-axis, and workload, lifestyle, and compensation along the y-axis. This will demonstrate the value of this provider strategy exercise that should accompany any new telehealth offering. An early understanding of the potential motivations and deterrents to provider participation will become apparent via real life examples from the authors' programs as well as comparative national and regional programs. Specific examples will include telestroke, telepsychiatry, teleICU, direct-to-consumer primary/urgent care visits, direct-to-consumer specialty care visits, and virtual second opinions.

With careful consideration and a sophisticated understanding of added value from telehealth programs, healthcare administrators appreciate how critical it is to protect and incent their provider champions.

Learning Objectives:

- Consider the complicated interplay between provider willingness to participate in telehealth and its impact on workload, lifestyle, and compensation.
- Review the potential motivations and deterrents to provider participation in telehealth.
- Examine the concept of "protect and incent" to create provider champions and telehealth value.

Value (Business Strategy and Financial Management)

APRIL 30, 2018

9:55 AM–10:10 AM **April 30, 2018**

EPOSTER PRESENTATIONS

EP-151

TITLE: DOES PROVIDING INPATIENT TELEMEDICINE CONSULTATIVE SERVICES SAVE MONEY

PRESENTERS: Chancey Christenson, MD, MPH; John Mcilwaine, DO, MBA, FCCP

Abstract: Geisinger is an integrated healthcare system, having more than 29,000 employees, providing care for individuals in over 40 counties spread from central to northeast Pennsylvania. There are 3 tertiary, 2 community acute care facilities and one inpatient rehab facility. Geis inger has a growing health plan with over 300,000 members and a Group Practice with more than 1,000 providers. Many of its clinic facilities are in rural counties with limited healthcare access. As such, patients in rural areas often face prolonged wait time with delays in diagnosis and appropriate treatment when consultation with specialty services is required. In 2012, Geisinger implemented an inpatient Telemedicine program which allowed physicians and patients located onsite at one hospital to receive specialty consult services located at another Geisinger campus. Many subspecialty medicine services were represented and provided telemedicine consultation. For many of the departments, the number of consultations was less than twenty a week, and in some cases, less than ten a week. This would mean that in order to provide consultative services at the satellite hospitals, departments had two options. They could require their physicians to provide coverage and remain on site in the rural facilities, with a subsequent loss in income because of the low volume of patients and episodic nature of the consults. Alternately the different departments could provide coverage by having their physicians drive to the facility. However, many of the facilities are located quite far away with an average travel time greater than 30 minutes. Two of the facilities are approximately an hour and a half away. This travel time represents a significant increase in non-productive time and energy for the consulting physicians; for the most distant hospitals it represents almost half of a work day. Long transit time leads to delays in signing out other cases, or responding to critical changes that can affect patient's care and outcomes.

After the implementation of the Telemedicine service, 1,800 telemedicine consults were generated within a 5 year period. A retrospective study was performed to analyze the average number of consults per department and generate a volume analysis. Statewide average physician salaries for each specialty were determined in order to characterize the cost of non-productive downtime. Average transit time was calculated for each facility. This enabled us to determine what the average cost of having a physician onsite would require. It also enabled us to determine the number of man hours lost and cost of long transit. The study found that there is a significant cost-savings associated with the inpatient Telemedicine program. Approximately three million dollars was saved over the course of 5 years by preventing increases in provider non-productive time, preventing increase in provider staffing without a commensurate increase in revenue, and decreasing transit time. It was also estimated that the average physician would save approximately 1.5 hours driving per work day due to the Telemedicine consult service.

Learning Objectives:

- Demonstrate how the development of a telemedicine consult service can provide care to patients by providing increased access to specialists, leading to quicker diagnosis, and decreased time to treatment.
- Determine the effect of an inpatient telemedicine consult service on non-productive transit time.
- Describe the value of a telemedicine service through decreased non-productive time for physicians and reducing episodic consults to reducing the backlog of other clinical duties secondary to remote coverage.

Value (Business Strategy and Financial Management)

APRIL 30, 2018

4:05 PM–4:20 PM **April 30, 2018**

EPOSTER PRESENTATIONS

EP-152

TITLE: COST-UTILITY OF A NEURO-EMERGENT TELEMEDICINE CONSULTATION PROGRAM

PRESENTERS: Andrew L. Hollander, PhD, MBA, PMP

Abstract:

Objective: Evaluate from the cost-utility of a Neuro-Emergent telemedicine consultation program in the management of acute ischemic stroke.

Methods: A Markov model was developed for both 90-day and lifetime horizons. Costs were gathered using a societal perspective and include initial and recurrent stroke treatments, consultations, patient transports, rehabilitation, long-term care, and caregiver costs. Effectiveness was measured by quality-adjusted life years (QALYs). Incremental cost-effectiveness ratios (ICERs) were calculated using QALYs gained combined with costs incurred. Costs and QALYs were discounted at 3% annually in the lifetime horizon model. Model inputs were taken from findings from the Access program for emergency room patients in rural New Mexico from May 2015 to February 2017 and existing literature. One-way and Monte Carlo sensitivity analyses were also conducted.

Results: Compared with no network, patients treated in a Teleneurology network had a cost savings of $28,598 for the 90-day horizon and $54,925 in the lifetime horizon. Incremental QALYs increased from 0.01 for the first year to 0.13 over a lifetime. Overall, results were robust in both Monte Carlo and one-way sensitivity analyses. With cost savings ranging from $21,000 to $106,000 and QALYs gained from 0.08 to 1.56. The model also shows that the rural hospitals would be able to maintain patients who were not transferred for a gain to the rural hospital of $4.2 million per 100 patients per year.

Conclusion: A Neuro-Emergent Telemedicine Consultation Program demonstrates significant savings and improved quality of life. Unlike other telemedicine programs, ACCESS has shown to be cost-effective in both the 90-day and lifetime horizons.

Learning Objectives:

- Present potential benefits of Teleneurology.
- Determine patient cost savings and health outcomes.
- Describe 90-day and lifetime benefits to payer and patient.

REFERENCES:

1. Kepplinger J, et al. Emergency Transfer of Acute Stroke Patients within the East Saxony Telemedicine Stroke Network: A Descriptive Analysis. *Int J Stroke* 2014;9(2):160-65. Print.
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3. Demaerschalk BM, Raman R, Ernstrom K, Meyer BC. Efficacy of telemedicine for stroke: pooled analysis of the Stroke Team Remote Evaluation Using a Digital Observation Camera (STRokE DOC) and STRokE DOC Arizona telestroke trials. *Telemed J E Health.* 2012;18(3):230-37.

Value (Business Strategy and Financial Management)

APRIL 30, 2018

4:25 PM–4:40 PM **April 30, 2018**

EPOSTER PRESENTATIONS

EP-153

TITLE: COST SAVINGS ASSOCIATED WITH TELERETINAL IMAGING IN PRIMARY CARE

PRESENTERS: Kristen L. Stebbins, MSPH, RN, CCRP; Seema Garg, MD, PhD

Abstract: The high costs of diabetes in the United States are well known, with estimated total costs at approximately $245 billion, including $176 billion in direct medical costs each year(1). Much of this cost is attributed to comorbid conditions like kidney disease, heart disease, and eye disease. As an example, diabetic retinopathy (DR), the leading cause of blindness in working-age adults in the United States(2), accounts for $2 billion in healthcare costs, as well as additional indirect costs related to lost productivity. Welch Allyn and RTI Health Solutions have developed an economic model to demonstrate the effect of teleretinal screening on rates of blindness and costs of treatment.

The American Diabetes Association, along with several other professional organizations, recommends that all diabetic patients in the U.S. have an annual dilated retinal exam (DRE) to evaluate for the presence or absence of DR(3). Currently, on average, less than 65% of patients are compliant with these recommendations(4). Due to late detection of disease, many of these patients will require costly treatment and many will suffer preventable severe vision loss from DR.

As a method to increase DRE compliance and early detection of sight-threatening DR, teleretinal imaging uses specialized cameras to acquire retinal photos in primary care clinics. Ophthalmologists remotely interpret the retinal images and return a diagnostic report to the primary care provider. Patients with vision-threatening eye disease are urged to follow up with an ophthalmologist for a dilated eye exam.

The effectiveness of teleretinal imaging is well documented, with evaluation rates increasing from 30% to over 90%(5). However, this study is the first comprehensive assessment of current costs of DR and the monetary effect of the implementation of teleretinal screening.

Welch Allyn and RTI Health Solutions have developed an economic model that employs the gold-standard for cost-effectiveness models - a Markov-based approach with health states to capture: (1) the incidence and progression of DR, including progression to clinically significant macular edema (CSME) and irreversible severe vision loss; (2) the detection and treatment of vision-threatening DR and CSME; and (3) death over a 10-year time period for both the entire U.S. diabetic population as well as only the Medicare population.

Early results of the model show that with the current paradigm of DR detection, that is, referral to an ophthalmologist for a DRE by the primary care provider, the rate of blindness from DR will continue to increase over the next 10 years. Additionally, costs associated with screening and treatment will rise steadily, largely because DR is not being detected in the early stages when it can be treated effectively and cost effectively. Implementing teleretinal screening nationwide could reverse the trend and decrease the rate of severe vision loss from diabetes. In addition to preserving vision, teleretinal imaging results in a global cost savings, largely due to less-costly screening and the cost-effectiveness of early treatment. Additional statistics, including actual costs saved and percent reduction in diabetes-related blindness, will be included in the final presentation.

Learning Objectives:

- Upon completion, participants will be able to understand the health-related and financial burden of diabetic retinopathy on the United States.
- Upon completion, participants will be able to understand how changing the paradigm for diabetic retinopathy evaluation can reduce rates of diabetes-related blindness and save costs to patients, providers, and payers.
- Upon completion, participants will be able to understand how economic modeling can help researchers understand the health and financial impacts of changing the standard of care.

REFERENCES:

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5. Mansberger SL, Sheppler C, Barker G, Gardiner SK, Demirel S, Wooten K, Becker TM. Long-term comparative effectiveness of telemedicine in providing diabetic retinopathy screening examinations: A randomized clinical trial. *JAMA Ophthalmol.* 2015;133(5):518-25.

Direct to Consumer Strategies

APRIL 30, 2018

9:35 AM–9:50 AM **April 30, 2018**

EPOSTER PRESENTATIONS

EP-127

TITLE: USING WEARABLE SENSORS TO EVALUATE DAILY ACTIVITIES OF OLDER ADULTS'

PRESENTERS: Sukwon Kim, PhD; Jian Liu, PhD

Abstract: Monitoring of activities of daily living (ADL) using wearable sensors can provide an objective indication of the activity levels or restrictions experienced by patients or elderly. The proposed study will present a two-sensor ADL classification method designed and tested specifically with elderly subjects.The findings of the current study will be used as the first step towards a more comprehensive activity monitoring technology specifically designed for the aging population.

Learning Objectives:

- describe detection mechanisms of postures.
- understand benefits of employing sensor technology in healthcare system.
- understand the use of inertial measurement units in the elderly care.

REFERENCES:

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2. Gokalp H, Clarke M. Monitoring activities of daily living of the elderly and the potential for its use in telecare and telehealth: a review, *Telemed J E Health.* 2013;19(12):1-14.
3. Su B, Tang Q, Wang G, Sheng M. (2016). The Recognition of Human Daily Actions with Wearable Motion Sensor System. In Z. Pan, A. D. Cheok, W. Müller, & M. Zhang (Eds.), Transactions on Edutainment XII (pp. 68-77). Berlin, Heidelberg: Springer Berlin Heidelberg.

Direct to Consumer Strategies

APRIL 30, 2018

4:45 PM–5:00 PM **April 30, 2018**

EPOSTER PRESENTATIONS

EP-160

TITLE: THE VALUE PROPOSITION INITIATIVE: ATA'S NEW COLLABORATIVE RESEARCH EFFORT

PRESENTERS: Amanda Bell, MHA; Matt Levi; Helaine Resnick, PhD, MPH; Gary Raju

Abstract:

Objectives: The American Telemedicine Association is the voice of the telemedicine industry. In this role, ATA engages in ongoing efforts to communicate the value of telemedicine to various stakeholders, including patients, healthcare systems, payers, providers, policy makers, and communities. ATA must also demonstrate value to its members, including development of implementation of novel collaborations with members that promote telehealth to external stakeholders. In 2017, ATA launched the Value Proposition Initiative (VPI). The VPI is an ambitious, far-reaching, and multi-pronged collaborative strategy in which ATA works with members to optimize ATA's ability to communicate telemedicine's value to external stakeholders. This presentation describes initial efforts to develop the "VPI Use Case Library," one of several activities that ATA is launching under the VPI umbrella.

Methods: The VPI Use Case Library concept was introduced to ATA Platinum Members in the Summer of 2017, and it received considerable support. Platinum members were asked which aspects of telemedicine should be prioritized in the Use Case Library, and it was agreed that use cases highlighting the value of telemedicine in terms of its financial impact and cost to health systems and payers should be targeted first. ATA Platinum Members were then asked to work with a consultant to generate content for the Use Case Library with an initial focus on financial impact and cost. Three ATA member organizations "Mercy Virtual, Avera Health, and CHI Franciscan Health "were early collaborators in this effort. These organizations identified a point of contact who worked with ATA's consultant to generate content for specific use cases. Use case content includes epidemiologic data that frames the use case in a public health/public policy context, as well non-public financial, cost, and other data provided by the member that demonstrate the value of telemedicine for health systems and payers. Each use case can be thought of as a "book" in the VPI Use Case Library, and the Library can be thought of as a resource for ATA's membership and the larger telemedicine community. The first VPI use cases on financial/cost issues for systems and payers were finalized in late 2017.

Results: Mercy Health developed a use case highlighting the value of telemedicine for Medicare Advantage, Avera Health developed a use case on the value of telemedicine in rural emergency departments, and CHI Franciscan developed a use case on use of telemedicine in direct-to-consumer chronic care management for high risk diabetes patients. Mercy Health's application of telemedicine in high risk Medicare Advantage patients resulted in a 50% decline in the rate of hospital admissions and a 35% decrease in the rate of emergency department visit in the first month of the program, and sustained declines since that time. Avera Health's eEmergency program showed that from 2009-2014, 1,175 avoided transfers were attributed to tele-emergency, with an estimated savings of $4.5 million in avoided patient transportation costs. Tele-emergency also increased hospital revenue through local ED service provision and increased inpatient admissions resulting from avoided transfers to other hospitals. The 9,048 tele-ED encounters in 85 hospitals resulted in $542,880 in additional revenue to study hospitals. Related work from Avera showed that critical access hospitals that provided tele-ED services saved Medicare $25,222 per hospital per year. CHI Franciscan conducted a six-month study on direct-to-consumer telemedicine management of high risk people with type two diabetes. In addition to marked improvements in guideline-based outcome metrics, claims data for the high-risk diabetic intervention group were compared with an equivalent control group. Monthly charges and payments were analyzed for both groups and included all participating payers with varying rates. Charge savings were 45% lower for the intervention group (intervention group $1,338 patient/month vs. control group $2,434 patient/month). Payment savings were also 36.3% lower ($374/patient/month vs. control $587/patient/month respectively).

Conclusions: ATA's Value Proposition Initiative is a set of inter-related activities focused on the goal of better communicating the value of telemedicine to external stakeholders. The VPI leverages the knowledge and experience of ATA members to develop use cases and other communication vehicles that can effectively demonstrate how telemedicine can improve health and healthcare in the United States and beyond. The Use Case Library, a key effort under the VPI umbrella, is actively developing content that will be accessible to ATA members and the larger telemedicine community. In addition to addressing the value of telemedicine in terms of its financial and cost impacts, ATA expects this library to cover additional topics, including access to care, patient and provider experience, effectiveness, and quality.

Learning Objectives:

Clinical Services

MAY 1, 2018

9:35 AM–9:50 AM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-107

TITLE: MANAGING SLEEP APNEA VIA TELEHEALTH ENCOUNTERS

PRESENTERS: Steve Burton, PhD, Diplomate, American Board of Sleep Medicine

Abstract: Sleep Apnea presents a high level of risk in many clinical settings, including: Peri-surgical assessment, Commercial transportation, and day-to-day healthcare practice. Recent clinical studies show that the typical patient suffers from sleep apnea on average 8 to 10 years prior to the official diagnosis - during which time the patient has on average 17 medical encounters. Session will review published, peer review science that demonstrates that primary medical providers have equal or better outcomes in managing patients with sleep apnea. Session will review technology advancements and changes in healthcare insurance guidelines that now enable virtually any medical provider to effectively identify, diagnose, initiate treatment and manage patients with sleep apnea. Session will outline how to gain PAP treatment compliance reports via online apps and use this information in a clinical pathway based on Telehealth encounters to provide an efficient and effective means to consistently improve outcomes in patients at-risk for sleep apnea.

Learning Objectives:

- Improve outcomes in patients diagnosed with sleep apnea using telehealth encounters as a cornerstone in a disease management protocol.
- Better understand the basic elements of a successful clinical pathway for managing patients with sleep apnea.
- Demonstrate the process for developing a clinical protocol to manage sleep apnea patients in a wide range of clinical settings.

REFERENCES:

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Clinical Services

MAY 1, 2018

9:55 AM–10:10 AM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-108

TITLE: GETTING TO ZERO: LEVERAGING TELEMEDICINE TO DRIVE DOWN SUICIDE RATES AND REINTEGRATE BEHAVIORAL HEALTH

PRESENTERS: Kristin Laberis, MTS; Matthew Stanley, DO

Abstract: With over 30 hospitals, 200 clinics, and 40 long term care facilities, Avera Health is one of the largest care networks in the upper Midwest. Moreover, with a footprint that spans six states and 72,000 square miles, telemedicine is an indispensable tool for delivering care to the organization's remote rural communities. Launched more than 20 years ago, Avera's eCare telemedicine program links specialists, pharmacists, nurses, and other care team members in Avera's Sioux Falls-based "virtual hospital" with local care teams in remote rural communities. The program won Hospital & Health Network's 2012 Innovator Award for its use providing emergency services and served as the model for a NATO multinational telemedicine initiative.

Avera is now leveraging their advanced telemedicine platform to reintegrate behavioral healthcare into all aspects of their care delivery system. Recognizing that suicidal individuals can fall through the cracks in an often fragmented healthcare system, their eBehavioral Health program links primary care providers in the field with pharmacopsychiatry specialists and "triage therapists" to improve screening, early intervention, and access to specialists. The new program, based on the Zero Suicide framework, is helping Avera deliver more responsive, convenient and personalized patient care while avoiding high acuity/high cost emergency visits and associated admissions. It's also leading to greater physician satisfaction by helping non-behavioral health providers have confidence that specialists will support them and their patients if they reach a point where they cannot provide care. The results of the program thus far have been impressive, including a 13% decrease in suicide attempts, nearly 50% reduction in associated ED visits, and over 20% reduction in admissions.

In this hands-on Learning Lab session, attendees will see how they can reintegrate behavioral health into their own care systems using telemedicine to save lives, save money, and provide more effective patient-centered care. Following an overview of the Avera program and its results, the speakers will walk through the Zero Suicide framework's "7 Essential Elements of Suicide Care" – Lead, Train, Identify, Engage, Treat, Transition, and Improve – and show how they can be supported through telemedicine. Throughout, they'll discuss best practices for the use of telemedicine for behavioral health and how to avoid pitfalls during the design and implementation of a program.

Suicide prevention is the ultimate expression of patient safety and one of the most fundamental responsibilities of the healthcare system, making this session relevant to care organizations of all kinds.

Learning Objectives:

- Describe how the Zero Suicide model can be used to integrate behavioral health back into all aspects of healthcare in order to save lives and reduce costs.
- Define the challenges of implementing the seven elements of Zero Suicide, as well as demonstrate ways to use innovation to overcome these challenges.

- Demonstrate a variety of ways telemedicine can be used to solve for challenges in rural behavioral healthcare that are proven to improve patient outcomes and decrease costs.

REFERENCES:

1. http://zerosuicide.sprc.org/

Clinical Services

MAY 1, 2018

11:35 AM–11:50 AM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-109

TITLE: HOW PHYSICAL THERAPY, KNOWN AS A "HANDS-ON" APPROACH, CAN TRANSITION TO A VIRTUAL WORLD

PRESENTERS: Aideen Turner, MPT, Cert. MDT, CEAS

Abstract: Technology is moving forward at an unprecedented rate. It is changing how we do things in our daily lives, and these changes are naturally migrating into healthcare. The internet has empowered the public to take a role in their own well-being, by simply providing the access to knowledge and specialists at their fingertips. Patients like the convenience, as well as being an integral part to their own healing. Because of this, healthcare must evolve to meet the demands that the public now requires. Telerehabilitation is emerging as one of these new platforms.

Physical Therapy has always been known for its "hands-on" treatment approach, and has taken a third-row seat, behind Primary and Orthopedic physicians in treatment of MSDs. With the changing healthcare landscape, we will see a change in how, where and when patients are treated. We will also see a change in the gatekeeper role for MSDs.

In order to keep up with these demands, clinicians have to change the very foundation of how we have traditionally operated. Currently, we require tedious paperwork and "hands-on" evaluations and treatments. We will discuss how our functional assessment tools, evaluations and home instruction can be more efficient and convenient, without losing integrity. New ways to modify how we can perform certain testing/treatments virtually, have been investigated and will be discussed. Not every patient is suited for telerehabilitation, we will provide guidance on how to determine who is suited. Lastly, we will outline limitations to telerehabilitation and how to prepare and minimize these challenges.

We can now bridge technology and the virtual assessment to reach more individuals with musculoskeletal disorders (MSDs) and consequently: reduce costs, improve convenience, eliminate waiting time to see MSD specialist, improve accessibility in rural areas, maintain high satisfaction rates, and improve outcomes.

Learning Objectives:

- How to collect important PMH, Pain Levels and Functional Scales in a virtual world without extensive paperwork and time requirements?
- What clinical skills are required to transition from a "hands-on musculoskeletal assessment" to a virtual one, without losing the assessment integrity?
- Understand limitations of telerehabilitation and how to overcome and prepare for these challenges?

REFERENCES:

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Clinical Services

MAY 1, 2018

11:55 AM–12:10 PM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-110

TITLE: DERMATOLOGY ECHO: AN EVALUATION OF PHYSICIAN LEARNING USING A GUIDED PRACTICE MODEL

PRESENTERS: Calli Morris, BS; Mirna Becevic, PhD; Karen Edison, MD; Rachel Mutrux, BA; Daniel Shyu, BS

Abstract:

Introduction: Primary care providers (PCPs) in rural and isolated areas face unique challenges in keeping up with evidence-based guidelines, which would require them to spend 600 hours each month evaluating the current literature (Alper, et al., 2004). Extension for Community Healthcare Outcomes (ECHO) Project utilizes telemedicine technologies to deliver education and mentoring to PCPs practicing in rural and other medically underserved areas. The Missouri Telehealth Network at the University of Missouri spearheads the Show-Me ECHO Project, which consists of several different specialties - dermatology, pediatric asthma, hepatitis C, autism, and healthcare ethics, among others. The goal of Show-Me ECHO is to provide participating PCPs with live-interactive video case-based mentoring in order to increase their capacity to care for patients with complex and chronic diseases.

The objective of our study was to evaluate the specific dermatologic conditions presented at Dermatology ECHO by participating providers, and examine the accuracy of diagnoses. Our goal was to understand if attending Dermatology ECHO sessions improves the diagnostic ability and accuracy for participating providers.

Materials and Methods: Dermatology ECHO sessions are offered every Friday, from 12:00- 1:00 pm, throughout the year. Participating PCPs from rural and isolated areas of Missouri join via Zoom to present de-identified cases for targeted education and mentoring. In addition, each Dermatology ECHO includes a continuing medical education (CME)-approved didactic presentation. The de-identified cases are reviewed and discussed with the Dermatology ECHO specialty hub team, which includes general dermatologists, pediatric dermatologists, a dermatopathologist, and a clinical psychologist, who mentor them regarding clinical diagnosis, treatment, and management.

Data from the presenting PCPs (patient demographics and provisional diagnosis), as well as the data from Dermatology ECHO specialty hub team (final diagnosis and treatment options) were collected via standardized Dermatology ECHO case forms.

There were 141 unique, de-identified patient cases presented from November 2015 to July 2017 during the 62 Dermatology ECHO sessions. Of the 141 cases, we analyzed 122 case presentations, which had complete and accessible data regarding provisional and final diagnoses.

Results: PCPs most frequently presented cases categorized as dermatitis, hypersensitivity, psoriasis or scaling disorders, as well as almost equal num-

bers of focal and diffuse dermatologic disorders (48% and 52% of cases, respectively). Seventy four percent (74%) of provisional diagnoses were in the same category as the final diagnoses, and 61.5% of cases had provisional diagnoses that exactly matched the final diagnoses. The percentage of cases with exact matching diagnoses improved significantly from 2016 to 2017 (48.9% to 68.9%, p-value = 0.034).

Conclusion: Our findings suggest that Dermatology ECHO is an excellent option for successful telementoring of PCPs practicing in rural and isolated areas. It provides telementoring in diagnosis and treatment of complex dermatologic disorders, increasing their capacity to care for patients that would not otherwise have access to specialty care. PCPs showed significant improvement in diagnostic accuracy after attending Dermatology ECHO sessions. Dermatology ECHO may also improve the health and quality of life of patients in rural and underserved Missouri.

Learning Objectives:

- Recognize the Dermatology Extension for Community Healthcare Outcomes (ECHO) Project as a means of providing virtual education and mentoring to rural and underserved primary care providers.
- Analyze the Dermatology ECHO evaluation results, in terms of case presentations and didactic topics.
- Describe the outcomes regarding accuracy of diagnoses from the Dermatology ECHO Project.

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Clinical Services

MAY 1, 2018

12:15 PM–12:30 PM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-111

TITLE: USE OF ELECTRONIC PATIENT REPORTED OUTCOMES AND WEARABLES FOR HEART FAILURE DISEASE MANAGEMENT

PRESENTERS: Ashish Atreja, MD, MPH; Emamuzo Otobo, MD, MPH; Akshay Kohli, MD

Abstract: Congestive Heart failure (CHF) is a major public health issue. Today, CHF affects 6.5 million people in the U.S. and the incidence rate is projected to rise by 46% to more than 8 million cases by 2030. Current reimbursement policies use readmission rates and length of hospital stays as indicators of quality of care. Providers are incentivized to meet these quality measures as the cost of hospitalization alone significantly contributes to the overall burden of CHF on patients and health systems. Symptoms of CHF can be unpredictable and presently there are no reliable solutions to track disease control for discharged patients.

This session aims to improve patients' self-monitoring practices post-hospital discharge, quickly identify critical warning signs, decrease hospital readmissions and reduce healthcare costs for CHF patients by integrating remote monitoring ePRO and connected devices into standard outpatient care practices.

Sixty patients were enrolled in the study (Female 32%, Male 68%) with a median age of 62. 42 patients (70%) continue to actively use the mobile apps and smart devices to track blood pressure and weight. All 60 patients have completed one month of active usage while 9 patients have dropped out. Overall, there have been 6 hospital readmissions (12%) after month, mainly due to non-compliance and other chronic related disease. Barriers faced in enrollment included: on-boarding time (30 minutes), competition with other initiatives and research trials at Mount Sinai, language barrier, and low health literacy.

Given the increasing burden of CHF on patients and healthcare systems, there is a critical need for an effective, sustainable, and feasible remote monitoring system for CHF patients following hospital discharge. The ability for providers to access patient-reported outcomes and vital signs in real-time can significantly impact the quality of outpatient care, potentially reducing readmissions and costs. CHF patients are showing positive health outcomes; CHF patients had a 7% readmission rate compared to the national rates of >20% readmission rate within 30 days of discharge1. Enrollment challenges were overcome by enrolling CHF patients 2-3 days before expected discharge and adding a patient coordinator to hospital rounds. These latest advances in remote monitoring show promise for the future of technology-connected healthcare.

Learning Objectives:

- Upon completion of this session, participants should be able to understand improvement in patients' self-monitoring practices post-hospital discharge, as well as identify critical warning signs.
- Participants should understand the decrease hospital readmissions and reduction in healthcare costs for CHF patients by integrating remote monitoring ePRO and connected devices into standard outpatient care practices.
- Demonstrate the workflow and implementation science required to make remote monitoring successful for transitions of care and readmission reduction.

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Clinical Services

MAY 1, 2018

9:35 AM–9:50 AM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-119

TITLE: ACCESSIBLE NONMYDRIATIC RETINAL IMAGING INCREASES DIABETES SURVEILLANCE RATES

PRESENTERS: Jerry Cavallerano, OD, PhD; Ann Tolson, BA; Paolo Silva, MD; Dorothy Tolls, OD; Cassondra Marcy, BFA; Jessica Rodriguez Navarro, BS; Elizabeth Halprin, MD; Robert Gabbay, MD, PhD

Abstract: We present a retrospective, comparative cohort study of patients imaged from 04/01/2016-03/31/2017 with NM-UWFI provided without additional cost beginning 10/16/2016. Patients were offered retinal imaging if they were presenting for initial examination at Joslin Diabetes Center or did not have an eye examination at the Beetham Eye Institute of the Joslin Diabetes Center within the previous 12 months. Based on these criteria, a prompt to offer imaging was embedded in the electronic medical record. Images were evaluated for DR and diabetic macular edema (DME) using a standard protocol at a centralized reading center with certified graders. Standardized ocular history and DR awareness were obtained on all patients.

A total of 759 and 2,080 patients was imaged using NM-UWFI during the 130 working days before and after the initiation of no-fee imaging on 10/16/2016, respectively. The difference represents a 274% increase in the number of patients imaged after 10/16/2016. There were no statistically significant differences between groups in the distribution of DR severity (before: 50.2% no DR, 30.1% mild DR and 19.7% referable DR; after 48.9%, 32.3%, 18.8%, $p = 0.54$). However, with the increased surveillance rates, there was a 292% increase in the number of eyes with mild DR and a 261% increase in referable DR that required closer follow-up and possible treatment. Ninety-two additional cases of proliferative DR were identified, which would prevent 6.7 cases of severe visual loss, with a total cost savings of $211,874 (cost of severe loss = $31,623). No differences were observed in gender, ethnicity, or HbA1c. In this cohort in patients with referable DR, self-awareness was low over-all, with no significant difference between the before and after groups (39.4% vs 43.8%, p 0.3725).

In summary, providing NM-UWFI as part of comprehensive diabetes care increased the number of patients identified by nearly 3-fold. These data suggest the removal of barriers to eye care may substantially increase patient surveillance rates which should translate into improved long-term patient outcomes.

Learning Objectives:

- Recognize the impact of increased accessibility on surveillance rate for diabetic retinopathy.
- Understand impact of out of pocket costs in a telemedicine program as a barrier to increased surveillance for diabetic retinopathy.
- Demonstrate the value of retinal screening as part of comprehensive diabetes care at no additional cost to patients or their insurers at a tertiary academic diabetes specific medical center.

Clinical Services

MAY 1, 2018

9:55 AM–10:10 AM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-120

TITLE: EMERGING PRECISION MENTAL HEALTH SOLUTIONS TO PAIR WITH TELEMEDICINE

PRESENTERS: Harris A. Eyre, MD PhD

Abstract: Innovations in mental health are critical given the inadequacies of the current approaches to care, including subjective diagnoses, trial-and-error treatments, poor treatment adherence, and shortages of trained psychiatrists. The fully realized vision of precision mental health involves the capacity to rapidly, accurately and cost-effectively diagnose, and develop personalized treatment and prevention plans based on combined analysis of genotypic, phenotypic, environmental, clinical, digital and behavioural data. Telepsychiatry is a near equivalent to in-person psychiatric visits, minimises issues of the psychiatrist shortage in rural areas, however we believe other synergistic tools will further develop the telemedicine experience. In this presentation, we will provide a concise review of the top 10 most relevant emerging technologies with brief case examples of easy-to-implement technologies which enhance the clinical and economic value of telemedicine. Examples will include: Multimodal and dynamic analyses of facial, voice and body movement can be combined with machine learning algorithms to support the screening and diagnosis of depression, and tracking of treatment outcomes. Advanced genetic testing can be used to personalize the treatment of antidepressant medications. Simple personality-based questionnaires can be completed on patients to derive communication insights to clinicians to boost adherence. We believe the paring of emerging precision mental health solutions will dramatically enhance patient care via telepsychiatry.

Learning Objectives:

- Upon completion, participant will be able to outline the field and aims of precision mental health.
- Upon completion, participant will be able to outline the top 10 most promising precision mental health solutions which can be paired with telepsychiatry services.
- Upon completion, participant will be able to outline the state-of-the-art of technologies pertaining to vision learning in psychiatry, genetic guidance of medications, and personality-driven adherence tools.

REFERENCES:

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2. http://ieeexplore.ieee.org/document/7869262/
3. https://www.linkedin.com/post/edit/6309460376253796352

Clinical Services

MAY 1, 2018

11:35 AM–11:50 AM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-121

TITLE: PERSONALIZED MULTIMEDIA AS A TOOL FOR NEUROSURGICAL PATIENT ENGAGEMENT AND SATISFACTION

PRESENTERS: Jessie S. Lamprecht, BS; Ken Court; David Langer, MD

Abstract: This seminar will discuss the process of implementing personalized multimedia patient engagement software in the Neurosurgery Department and the associated challenges with introducing new technology in the clinical space. By the conclusion of this session participants should be able to: Identify how personalized multimedia can enhance the patient experience, understand the workflow for creating and disseminating patient personalized multimedia and Identify how personalized multimedia can enhance care team communication. To be discussed are formal analysis of the software through research studies and how clinical and patient feedback was used to create changes in software design and workflow. Lessons learned through a prospective pilot study, two retrospective quality analyses and an ongoing clinical trial will be discussed.

The project started with one physician making videos with the use of a screen capture program and sending them to patients by the use of a digital content management system. These videos captured the physician's insight

into the patient's condition with the visual of the patient's diagnostic imagery and extended the physician-patient conversation to be replayed by the patient on any digital device at their convenience. The physician had great patient feedback however the process was labor intensive. In order to have a more elegant workflow and accessibility to other staff he teamed up with the hospital system and an outside software vendor to create a more robust automated program in a web client. The program was expanded to be used to create personalized videos for inpatient discharge process as well.

Two pilot studies were created to garner formal patient feedback in order to make improvements to the software. It was recognized that only about 40% of the patients who received the video accessed it upon leaving the office. Because of this we realized the importance of signing up the patient and showing them how to use the web client before they left the hospital. To measure efficacy we retrospectively analyzed Patient Satisfaction Surveys that were sent to our patients by a third party for the years 2015-2016. The Press Ganey Clinician and Group Experience Survey and HCAHPS surveys were analyzed. For each question Top Box Ratio scores, or frequency that patients chose the most positive answer, were calculated for patient groups: those receiving a personalized video intervention and those who received the standard of care. For every question analyzed the video group had a higher overall top box ratio. Our ongoing Zelen Randomized Clinical Trial studying personalized multimedia in the discharge process currently has 111 patients enrolled.

Not only were these outpatient "Virtual office visits" useful to the patient, they were useful to our inpatient staff as well. If our staff knew there was a preoperative patient who received a video they would review the video to enhance their understanding of the case so that they could be more prepared to postoperatively care for the patient.

The implementation of a personalized multimedia software platform led to increases in satisfaction and engagement for both patients and their care team.

Learning Objectives:

- Upon completion, participants will be able to identify how transitions in care can beenhanced by personalized multimedia.
- Upon completion, participants will be able to describe the workflow for creating and disseminating patientpersonalized multimedia.
- Upon completion, participants will be able to describe the relationship between personalized multimedia, patient engagement and patient satisfaction.

REFERENCES:

1. https://www.wsj.com/articles/what-patients-need-to-remember-after-leaving-the-hospital-1448908354

Clinical Services

MAY 1, 2018

11:55 AM–12:10 PM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-122

TITLE: TELEOPHTHALMOLOGY: REMOTE REFRACTION AS BLINDNESS PREVENTION STRATEGY IN PRIMARY CARE IN BRAZIL

PRESENTERS: Alexandre C. Taleb, MD, PhD

Abstract: Uncorrected refraction errors account for more than 150 million patients presenting reversible severe vision loss all over the world. Brazil, due to its continental dimension, faces some challenges in addressing this blindness cause. Although there are enough certified ophthalmologists to cover the Brazilian population (1:15.800) they are not evenly distributed throughout the country and large areas are unserved.

Since 2007 the Brazilian Ministry of Health promotes the Telessaude Brasil Redes Program, that empowers multiple Telemedicine Nucleus in all States to offer teleducation and teleassistance to remote and unserved urban areas. We have been coordinating NUTTs - Nucleo de Telemedicina e Telessaude - in the State of Goias, Brazil, since 2007.

Teleophthalmology has been used by our center as a strategy in blindness prevention for the last 10 years through the use of itinerant non-mydriatic fundus cameras, where digital retinal pictures are remotely evaluated by ophthalmologists. It has been able to detect the four major blindness causes: cataract, glaucoma, diabetic retinopathy and age related macular disease. Still, the burden of uncorrected refraction errors had not been met.

We present the use of a portable wearable remote refraction system, using adaptive lens technology, to address this burden. All exams took place at Primary Care Units in the State of Goias, remotely supervised by a certified ophthalmologist. A portable refractometer linked to a wearable refractor was used to perform refraction exams in 1348 patients. Portable video slit lamp and video indirect ophthalmoscope were available and used whenever needed to address any special request from the remote ophthalmologist.

We present the design of this blindness prevention strategy, its results and a critical analysis of the lessons learned.

This remote refraction blindness prevention strategy is ready to be spread through Brazil as a permanent Teleophthalmology service and can be reproduced as an effective tool to prevent blindness from refractive errors, specially in underdeveloped countries.

Learning Objectives:

- Understand Primary Care limitations in Brazil.
- Observe Remote Refraction as a Strategic tool to prevent blindness due to refractive errors.
- Discuss involved Technology.

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3. Haddad A, da Silva D, Monteiro A, Guedes T, Figueiredo A. Follow up of the Legislation Advancement Along the Implementation of the Brazilian Telehealth Programme. *J Int Society Telemed eHealth.* 2016;4,e11 (1-7). Retrieved from http://journals.ukzn.ac.za/index.php/JISfTeH/article/view/141

Clinical Services

MAY 1, 2018

12:15 PM–12:30 PM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-123

TITLE: IMPACT OF A PEDIATRIC OUTPATIENT TELE-NEUROLOGY PROGRAM ON PATIENTS' ACCESS TO CARE AND HOSPITAL UTILIZATION

PRESENTERS: Parul Dayal, MS; Ilana Sigal, MPH; Jamie Kissee, MA; Hadley Sauers-Ford, MPH, CCRP; Monica Lieng; James P. Marcin, MD, MPH

Abstract:

Background: The shortage of neurologists relative to patients' demand for services stands at 10% for adults and 20% for children, and is projected to grow or persist over the next decade (1). In rural and medically underserved areas, this general shortage is exacerbated by the clustering of subspecialists in urban areas. Hardships associated with long travel distances such as missed work and transportation costs may put parents at risk of missing their child's scheduled appointment. Missing routine visits leads to inconsistent management of care, which can result in unplanned visits to urgent care, emergency department (ED), or hospital admission (2-3). Telemedicine has the potential to improve access to pediatric neurologists. The Pediatric Telemedicine Program at University of California Davis (UCD) Health has provided more than 5,500 subspecialist consultations through telemedicine to children in underserved regions since 1996. The pediatric neurology telemedicine program is one of oldest telemedicine programs for children at UCD Health. The objective of this study was to characterize the patient population served by this program and to evaluate its impact on patient outcomes.

Methods: We conducted analyses of a convenience sample of patients which included children (â‰¤18 years old) who obtained a pediatric neurology consultation between 1/1/2009 and 12/31/2016. We compared demographic and diagnostic data of children receiving consultations in-person (at UCD Health) and children receiving consultations over telemedicine.

Results: During the study period, there were 797 tele-neurology consultations on 357 children and 9,230 in-person consultations on 3,250 children. The mean age at first encounter with UCD Health was 8.1 (SD 5.4) years for children who obtained telemedicine consultations and 7.7 (SD 4.6) years for children who obtained in-person consultations ($p > 0.05$). 44.7% of children in the telemedicine group and 45.1% children in the in-person group were female ($p > 0.05$). 95% of the telemedicine consultations were reimbursed through Medicaid or the university's telemedicine contracts and grants, while 5% were reimbursed by commercial insurance. In contrast, 53% of the in-person consultations were reimbursed by commercial insurance while 47% were reimbursed by Medicaid ($p < 0.001$). The primary diagnoses of the telemedicine consultations included convulsions (17.7%), epilepsy (15.0%), head and neck symptoms (5.0%) and developmental delays (4.8%). In comparison, the primary diagnoses for the in-person consultations included epilepsy (13.9%), behavioral disorders (9.7%), developmental delays (6.3%) and convulsions (3.9%). 14.3% of children in the telemedicine group had one or more chronic conditions compared to 30% of children in the in-person group ($p < 0.001$). The mean encounter length of telemedicine consultations was 43.5 (SD 14.3) minutes and that of in-person consultations was 38.4 (SD 15.2) minutes ($p < 0.001$).

Conclusions: In this study we found that children who obtained telemedicine consultations and children who obtained in-person consultations are comparable with respect to demographics such as age and gender, but have different clinical characteristics and required slightly longer visit times. In future analyses, we will evaluate the association between the use of telemedicine and no-show rates of patients' scheduled appointments. We will also evaluate the association of telemedicine use with all - cause and neurology specific - hospital encounters among children.

Learning Objectives:

- Understand the differences in demographic and clinical characteristics of children (≤18 years old) who obtained outpatient neurology consultations through telemedicine and children who obtained outpatient neurology consultations in-person.
- Understand whether outpatient neurology consultations provided through telemedicine are associated with lower 'no-show' rates of scheduled consultations compared in-person consultations.
- Understand whether the tele-neurology program is associated with a reduction in the rate of unplanned hospital and emergency department encounters.

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Direct to Consumer Strategies

MAY 1, 2018

9:35 AM–9:50 AM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-131

TITLE: LACTATION SERVICES: DIRECT TO CONSUMER STRATEGIES FOR IMPROVING ACCESS TO CARE AND PATIENT SATISFACTION

PRESENTERS: Tasia Walsh; Sshune Rhodes, MHA

Abstract: Within this e-poster, participants will gain an understanding of how MUSC Center for Telehealth in collaboration with MUSC Women's Health developed a direct-to-consumer lactation telehealth program for breastfeeding mothers who delivered their baby at MUSC or had a baby cared for at our MUSC Children's Hospital. We will highlight the different types of workflows developed; direct-to-consumer and site-to-site connection. The successful integration within our EMR patient portal will be exhibited. We will display the types of breastfeeding support offered through telehealth. We will also cover the advantages of providing a lactation telehealth program and lessons learned.

Learning Objectives:

- Describe how to develop a direct-to-consumer lactation telehealth program.
- Define how to integrate lactation service with an EMR patient portal.
- Take advantage of our "Lessones Learned" to streamline setting up this service at their facility.

Direct to Consumer Strategies

MAY 1, 2018

9:55 AM–10:10 AM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-132

TITLE: FROM PREPAREDNESS TO ACTION: TELEHEALTH LEARNINGS FROM HURRICANES HARVEY AND IRMA

PRESENTERS: Anne Stowell

Abstract: There is preparing for crises, and then there is preparing for Mother Nature. When Hurricanes Harvey and Irma struck, there was no predicting the

far-reaching impact, nor the timing of back-to-back needs for help. A solid quality foundation, effective strategies to reach consumers and providers alike, and an ability to rapidly scale, telehealth services can help patients in their most dire time of need.

In this session, Teladoc will share its pre- and post- crisis learnings including:

- Which communication strategies proved most effective in reaching patients who were evacuated, staying in shelters and away from regular power sources?
- When were the greatest times of need? How did volume of requests, as well as the type of requests (from general medical to behavioral health), evolve throughout the crisis?
- How did patients who needed care most prefer to receive it? What was the mix of outreach by phone vs. web and video?
- When care providers are also among those being evacuated, what strategies assure care needs are adequately met, with state-licensed and board-certified staff, trained in delivering care via telehealth?

* Note to ATA organizers: we anticipate that this will be an interactive session and we intend to invite hurricane-impacted Teladoc client speaker/s to join us as a participant in the dialogue. However, as we are still in active crisis response mode, we were unable to secure those client speaker names in time for today's submission deadline. If accepted, we will submit client speaker names as a part of the November confirmation.

Learning Objectives:

- Consider modern communications strategies, including mobile and social, to increase awareness of telehealth services in affected areas.
- Assess provider network scale and quality network, effectively mobilize clinicians to provide telehealth services during crisis.
- Anticipate and mitigate crisis-related clinical and operational challenges.

Direct to Consumer Strategies

MAY 1, 2018

11:35 AM–11:50 AM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-133

TITLE: TELEMEDICINE: BRINGING YOUR DOCTOR TO YOU (VIDEO VISITS, CURBSIDE CONSULTS, & TELEDERM)

PRESENTERS: Brent Steineckert, MPH, PMP

Abstract: For more than two years, Sharp Rees-Stealy medical centers have been connecting patients with their own primary care physician or specialist through the use of telemedicine. Patients have the option to receive care for certain conditions through a telephonic or video visit. Using their own device (smartphone, tablet, computer), patients can access care while at home or at work, and can avoid the hassle of traffic, parking, and wait times. Unlike most telemedicine programs, patients conduct video or phone visits with their established primary care physician or specialist physician. This means the physician treating the patient knows their medical history, their family history, and their chronic conditions without the need for lengthy questionnaires or intake processes. Furthermore, since it's the patient's own doctor, medications can be refilled, labs/imaging can be ordered, and patients can complete their testing on a walk-in basis at one of the many Sharp locations throughout San Diego. Patients love the convenience and physicians enjoy the focused nature of the telemedicine visit.

To date, over 5,000 telemedicine visits have been conducted between the patient and their own primary care physician or specialist. this has led to several hundred thousand dollars in cost-savings and improved access to care.

Learning Objectives:

- Integrate telemedicine into a multi-specialty medical group.
- Avoid common mistakes when implementing a direct-to-consumer telemedicine program.
- Design a return on investment model suitable for their payor mix.

REFERENCES:

1. Patient Testimonial - https://youtu.be/e0aPUdq8w8s

Operations and Implementation

MAY 1, 2018

9:35 AM–9:50 AM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-142

TITLE: UPMC ANYWHERECARE: HOW TO SUCCESSFULLY LAUNCH A SYNCHRONOUS VIDEO VISIT PLATFORM FOR ON DEMAND CARE

PRESENTERS: Christine Htoon; Ryan Richards; Julie Lamb

Abstract: In November 2016, UPMC launched UPMC AnywhereCare, a synchronous video visit platform that allows consumers access to providers via smartphone and web. UPMC's first use case was On Demand Care, a service that allows patients to have access to non-emergent medical care 24/7, nationwide. This new telemedicine service was implemented with joint champions and workgroups from UPMC's Health Services and Insurance Divisions. The goal of this presentation is to share proven strategies for managing the implementation of a new telemedicine service that involves two large company divisions, multiple internal work groups, and a third party vendor. The presentation will cover: (1) how to effectively manage implementation and launch (2) how to use product ownership and project management skills to drive stakeholder buy-in and project execution, and (3) how to overcome challenges when confronted with legal and technological obstacles.

Learning Objectives:

- Manage a successful implementation of a synchronous video visit platform through a team governance structure, clear assignments of tasks, regular status meetings, and collaborative working sessions.
- Define legal and technological challenges early on by engaging proactively with the appropriate channels to brainstorm alternative approaches and adjustments to scope.
- Demonstrate strong product ownership, advocacy for the consumer, and robust project management skills through a small focused group, which will drive buy-in and championship from critical stakeholders.

Operations and Implementation

MAY 1, 2018

9:55 AM–10:10 AM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-143

TITLE: A NOVEL BLOOD PRESSURE MONITORING SYSTEM AT HOME

PRESENTERS: Jui-chien Hsieh, Ph.D; Yi-Hsing Chiu

Abstract: Recent research indicated that day-by-day variability of blood pressure (BPV) measured at home could be a potential indicator for the prediction of organ morbidity and mortality. However, most home-used blood pressure (BP) devices lack an intelligent risk alarm for medical conditions such as stroke. This is because patients' daily BP data and stroke events are rarely recorded for further studies. The aim of this study is to develop a trial BP recording and a BPV analysis cloud platform for stroke prediction. Our methods are as follows. First, a general Bluetooth BP device was adopted, which transmitted patients' BPs measured at home onto a cloud database in real time. Second, a BPV analysis server was developed by R, a statistical tool. The server automatically calculated patients' BPV indexes, such as standard deviations (SDs), coefficient of variations (CV), variation independent of means (VIM), from database. Third, a BPV-based mathematical modeling using survival analysis and Cox regression was developed to analyze risks for stroke. In this study, we analyzed BPV from 400 simulated patients to assess the performance of this system. With the recording of at least 2 week day-by-day BP at home, the system can serve as an intelligent risk alarm for stroke based on the BPV model analysis. In conclusion, this study demonstrated a smart BP monitoring system at home which effectively alerts the risk for stroke. This novel blood pressure monitoring system can inform patients of their health status, prevent stroke, reduce medical costs, and be conveniently used at home, which will be on great demand in the near future.

Learning Objectives:

- The audiences will be able to realize correct blood pressure measurement at home, and how to manage blood pressure records.
- To learn the meaning of blood pressure variability (BPV) and BPV applications on stroke prevention.
- To learn the BPV analysis, and the development of a new blood pressure monitoring system.

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Operations and Implementation

MAY 1, 2018

11:35 AM–11:50 AM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-144

TITLE: MEETING CURRENT & FUTURE WORKFORCE TRAINING NEEDS THROUGH A TELEHELALTH EDUCATION ECOSYSTEM

PRESENTERS: Ragan DuBose-Morris, PhD; James T. Mcelligott, MD; S. David McSwain, MD MPH; Mary Mauldin, EdD

Abstract: As telehealth services are extended throughout the healthcare delivery system, administrators are finding that training and certification initiatives are emerging as natural requirements for practicing professionals as well as trainees in most health professions degree programs. At the Medical University of South Carolina (MUSC), an educational ecosystem has been implemented to demonstrate the concepts of telehealth for trainees and certify that all providers have the proper foundation of knowledge to deliver telehealthcare. Interventions include a semester-long interprofessional course that provides teams of students from MUSC's 6 colleges with an overview of telehealth and a focus on population health opportunities. Even though telehealth is becoming more common, three-years of cohort data shows no statistically significant changes in the students' baseline knowledge of telehealth principles. Post-test results for all cohorts show significant improvement in students' knowledge of telehealth history, ability to explain how current telehealth applications have contributed to healthcare and determination of how telehealth improves quality of care and communication among providers. Students' career outlooks were altered through their exposure to telehealth concepts, with students stating: "Through telehealth, I can function as an oral health expert and become a member of a larger team that has one common goal-to provide patient-centered care"; "I now realize that my role in any sort of provision of care is to utilize all possible aspects of technology in healthcare to ensure that the population and individuals receive phenomenal care"; and "Utilizing interprofessional techniques similar to those seen in telehealth models reinforces my belief that additional perspectives and incorporation of different healthcare professionals will always provide better health outcomes". Similar success and high-levels of engagement have been seen in interventions for residents that span multiple years. Curriculum is tailored to meet residents at their levels of practice with 1st-years getting high-level overviews, 2nd-years engaging in an online didactic course and 3rd-years shadowing and demonstrating proficiency with telehealth services. Residents plan to pay it forward and "use [the course] to train fellow physicians and support staff". Similarly, continuing education models have been developed for practicing providers who need certification for privileging and credentialing. Through a combination of online and in-person experiences, providers are required to demonstrate proficiency in basic telehealth concepts as well as in equipment and processes specific to their disciplines and program areas. Similar types of interventions are in development with community and academic partners across the state that include the integration of telehealth simulation activities and shared evaluation metrics. The faculty members responsible for the ongoing development of these initiatives view telehealth education as a lifelong process that draws upon current best practices and helps to inform future practice, research and training efforts. Programs in South Carolina have been developed specifically to address state, federal and institutional require-

ments that currently exist or might be mandated. Outcomes from the current telehealth education ecosystem at MUSC demonstrate how telehealth programs can meet evolving requirements for the provision of telehealth services while fostering a new generation of telehealth empowered providers.

Learning Objectives:

- Upon completion, participants will be able to identify the federal, state and institutional mandates driving the adoption of formal training and certification programs.
- Upon completion, participants will be able to explain ways that academic and community organizations can partner to speed the development and dissemination of interventions that are discipline and setting appropriate.
- Upon completion, participants will be able to implement the development of telehealth training and certification programs that support team-based care across populations.

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3. Henry BW, Block DE, Ciesla JR, McGowan BA, Vozenilek JA. Clinician behaviors in telehealthcare delivery: A systematic review. *Adv Health Sci Educ Theory Pract* 2016;22(4):869-88.

Operations and Implementation

MAY 1, 2018

11:55 AM–12:10 PM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-145

TITLE: DATA-DRIVEN PUBLIC HEALTH METHODS FOR MAXIMUM IMPACT: TARGETING CHRONIC DISEASE THROUGH SCHOOL-BASED TELEHEALTH

PRESENTERS: Kathryn Cristaldi, MD, MHS; Regan Stewart, PhD

Abstract: As the field of telehealth has moved from pilot programs to population-level approaches, research in the field has in turn progressed from feasibility and acceptability studies to those that examine the quality of care and value added. However, some of these studies have created pause as "unbridled" telehealth may in fact decrease efficiency which has contributed to the narrative that telehealth is not, in fact, cost effective. In order to combat this narrative, it is of upmost importance that we take on what has become known as "precision public health methods" in our design of telehealth programs. In the world of public health, "precision public health" describes data-driven approaches that take into account geographic distribution of disease and gaps in the healthcare system in order to guide interventions for upmost efficiency and impact. Here we will discuss how these methods have been employed throughout the design, implementation and now evaluation stages of a multidisciplinary school-based telehealth program.

From its inception our program has aimed to increase access to care in a particularly rural state with a physical and mental health provider shortage and a costly chronic disease burden. Development of the program has been led by data in two ways. First, three costly chronic disease use-cases were identified and telehealth solutions were designed that added efficiency to the system, rather than duplicating care. The physical health component of our program has targeted pediatric asthma, as one of the most common chronic diseases of childhood and attention deficit/hyperactivity disorder as a common chronic disease that directly impacts educational disparities. The telemental health program was designed to compliment existing school-based mental health services by targeting children affected by childhood traumatic stress and treating PTSD. These specific use cases addressed concerns of key stakeholders such as patients, school-districts, payers and state law makers as well as existing gaps in the healthcare system using proven standards of treatment.

Secondly, geographic data was used to guide program implementation and expansion to target the areas of highest need. The pilot sites were selected based upon rurality and provider shortages as well as burden of healthcare disparities. Once feasibility in these pilot sites was established, rapid program expansion was guided by careful "heat mapping" of the most expensive chronic disease burden.

These targeted approaches have driven quality, health and cost-savings outcomes. Outcome data regarding improved adherence to treatment guidelines when compared to traditional in-person methods, increased symptom management and analysis of impact on costly utilization patterns will be presented. The authors will discuss specific steps in developing and implementing a school-based telehealth program that is focused on increasing access to care and service utilization while improving management of chronic disease and decreasing overall cost for chronic health conditions in a specific youth population. However, this program will serve as a "case study" for use of precision public health techniques and the authors will use their experience to present lessons that are generalizable to telehealth programs across a broad spectrum of applications.

Learning Objectives:

- Describe the importance of "Precision Public Health" methods in the design and implementation of a large scale telehealth program.
- Understand how using a data-driven approach to program design can impact downstream quality, health and cost outcomes.
- Using the multidisciplinary school-based health program presented as a model, apply these methods to other telehealth applications.

Operations and Implementation

MAY 1, 2018

12:15 PM–12:30 PM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-146

WITHDRAWN

WITHDRAWN

Value (Business Strategy and Financial Management)

MAY 1, 2018

9:35 AM–9:50 AM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-154

TITLE: ACUTE CARE TELEMEDICINE CARING FOR RURAL AMERICA

PRESENTERS: LeeAnn Heim, MHA

Abstract: Hospital Medicine at Regions Hospital in St. Paul Minnesota has started using video telemedicine to create a unique opportunity to improve the quality of care for patients and quality of life for physicians in rural hospitals during the evening and night time shifts. It is common in remote areas for a primary care provider to be on call for hospital admissions during the night and often enter hold over orders when an admission arrives. The patient and family in the hospital do not see to a doctor until the next day. In the morning the provider's clinic is full, but they still have to complete admissions from the night before and are now sleep deprived. What if we could make the primary care provider's work life balance better? What if we could progress patient care overnight connecting patients and families to a hospitalist immediately? What if we could do all this by a single hospitalist covering multiple Originating Sites using video telemedicine technology?

Access to a hospitalist physician should not be dependent on where a patient lives or the time of day care is needed. Supporting critical access hospitals in order to keep patients close to home and progress care around the clock is the main goal of the Hospital Telemedicine service. Through engaging key stakeholders and thinking innovatively the Hospital Medicine Service Line has furthered their pursuit of achieving the Triple Aim.

This presentation will detail the new staffing model and patient care system at Regions Hospital in support of rural hospitals during the evening and night time shifts. A checklist of the implementation steps to consider when deploying a hospital telemedicine program will be included, such as operations and workflow, reimbursement, technology & device support, contracting, credentialing, training & education and marketing. Clinical competencies and lessons learned from developing and supporting an overnight acute care telemedicine service will be shared in this presentation. A critical component to a successful hospital telemedicine service is support by Originating Site staff. A description of the process Regions Hospital undertook to engage rural site leadership and frontline nursing staff will be included.

Learning Objectives:

- Analyze the pros and cons of using a virtual hospitalist staffing model to complete hospital admissions at various Originating Site through video telemedicine.
- Recognize the importance of early collaboration with each Originating Site to ensure hospitalists and nursing staff are comfortable with the hospital telemedicine admission process.
- Explain how hospital medicine services can complete hospital admissions using video telemedicine technologies and systems.

Value (Business Strategy and Financial Management)

MAY 1, 2018

9:55 AM–10:10 AM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-155

TITLE: THE BUSINESS CASE FOR TELEMEDICINE EMERGENCY SERVICES: WORKFORCE, CLINICAL, AND FINANCIAL SUCCESS

PRESENTERS: Heidi A. Schultz, MBA

Abstract: In 2009, The Leona M. and Harry B. Helmsley Charitable Trust awarded two multi-million dollar grants to Avera Health, a health system located in Sioux Falls, South Dakota. Avera had created a telemedicine program (Avera eCare) to provide support to the rural hospitals and providers within their system, and Helmsley asked them to build their infrastructure to serve the seven-state service area of the Helmlsey Rural Healthcare Program. One of the primary reasons Avera created their eCare services was to help with recruiting and retention of rural providers. One of the primary reasons The Helmsley Trust chose the seven upper Midwest states of IA, ND, NE, MN, MT, SD, and WY to focus their Rural Healthcare Program was the healthcare workforce shortages in those states. A partnership continues, and together Helmsley and Avera have outfitted over 146 hospitals with eEmergency services. Beyond the support of Helmsley, eCare has expanded to other states and services. The business model that enables small, rural Critical Access Hospitals to sustain the program beyond the life of the Helmsley grants includes several facets that apply to all hospitals, in addition some hospitals are able to change their staffing and call-model for their emergency departments. Once CMS provided clarification on EMTALA regulations that was hampering hospitals from utilizing a physician via telemedicine (live, two-way video) to supervise non-physician providers in the emergency department, hospitals began changing their emergency room staffing models. This has allowed hospitals to staff their ED with advanced practice providers with supervision via a Board certified emergency physician, rather than staffing the ED with locum tenens and/or paying local physicians or locum physicians to be on-call for oversight of non-physician providers covering the emergency room. This allows hospitals to save hundreds of thousands of dollars (Actual case studies will be shared in the presentation), which is more than adequate to subsidize the service fees and connectivity fees of the eEmergency services. Recently the State of Iowa revised a law and rules that will allow Iowa hospitals to follow the federal regulations which will allow supervision of advanced practice providers via telemedicine. Twenty Iowa

hospitals that utilize eEmergency services will now have the opportunity to review their ED staffing model and make changes as they choose (Case studies for potential savings will be shared in presentation). In addition to saving the patient and family money as well as saving expenses to other payers, this presentation will present the business case for a rural hospital to utilize telemedicine for emergency services. This presentation will look at the multiple business models: 1.) From the funder's perspective: how can the project become sustainable; 2.) From the service provider's perspective: how can it sustain and grow, pricing and scaling; 3.) from the hospital's perspective: how can the hospital afford this new, additional service and sustain it after the grant, and 4.) savings to patients and payers.

Learning Objectives:

- Describe an effective business model for teleEmergency services in small, rural hospitals.
- Demonstrate awareness of physician and advanced practice provider recruitment and retaining improvement and improved job satisfaction.
- Compare financial and staffing models for rural hospitals before and after implementation of teleEmergency services.

REFERENCES:

1. Effect of tele-emergency services on recruitment and retention of U.S. rural physicians. Rural and Remote Health. http://www.rrh.org.au/publishedarticles/article_print_2787.pdf
2. The Business Case for Telemedicine, Telemed J E Health. http://online.liebertpub.com/doi/abs/10.1089/tmj.2014.0241
3. Advancing the Transition to a High Performance Rural Health System. http://www.rupri.org/wp-content/uploads/2014/11/Advancing-the-Transition-Health-Panel-Paper.pdf

Value (Business Strategy and Financial Management)

MAY 1, 2018

11:35 AM–11:50 AM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-156

TITLE: BEYOND FALLS: REASONS WHY OLDER ADULTS USE A PERSONAL EMERGENCY RESPONSE SYSTEM

PRESENTERS: Jennifer Felsted, PhD; Jorn Op den Buijs, PhD

Abstract:

Background: Individuals in the United States are living longer than ever before, yet this is often associated with increased risk for chronic illness. Managing age-related chronic conditions is crucial for enabling older adults to remain independent. The Personal Emergency Response System (PERS) enables older adults living at home to signal for help in emergency medical situations. Traditionally, the PERS service is used after a fall to alert caregivers or medical professionals and prevent further injury due to lying on the floor for an extended time. Beyond fall notification, the PERS service may help older adults during acute medical situations such as COPD exacerbation, acute decompensated heart failure, or severe diabetic hypoglycemia [1]. We hypothesize that, beyond a fall notification service, PERS benefit patients with chronic conditions. Specifically, here we investigated: 1) the medical reasons for enrolling in a PERS service, 2) the situations of PERS help-needed calls resulting in ambulance transport, and 3) the primary diagnoses for emergency hospital stays in PERS users.

Methods: A retrospective, longitudinal analysis was conducted utilizing data from patients who a) received care through the Partners HealthCare at Home (PHH) program and b) were enrolled in Philips Lifeline commercial PERS service between 2011-2015. Electronic medical record (EMR) data included demographic, hospital utilization and medication information. These clinical data were combined with PERS data, which included demographics, self-reported medical conditions, and electronic case information gathered during subscribers' help-needed calls. Data from 1,156 individuals were aligned to analyze healthcare utilization before and after PERS enrollment.

Results: PERS users were, on average, 78 years old at service enrollment, the majority (76%) were female, and nearly a third were widowed. 80% of PERS enrollment was immediately preceded by a healthcare encounter, 35% of which were emergency hospital visits. Chronic conditions were the principal reason for more than 50% of those visits, while fractures due to falls accounted for only 12%. At PERS enrollment, 90% of individuals self-reported having one or more medical conditions, where COPD, CHF and diabetes were most common.

Per 1,000 PERS users, 380 ambulance transports were requested annually. 46% of emergency transports were classified as "physical or psychological symptoms", with reasons including respiratory problems, chest and other pain, illness and dizziness, whereas only 23% of emergency transports were due to a fall or fracture. Further, the most common principal diagnoses for unplanned hospital admissions after these transports were CHF, COPD, urinary tract infection, pneumonia and septicemia.

Conclusion: Our results demonstrate that, in addition to falls alerts, the PERS service is broadly used to signal for help in situations often related to underlying chronic conditions such as respiratory distress, chest pain and other acute symptoms. Early referral to a PERS service for patients with chronic conditions and high fall risk may facilitate timely interventions leading to reduced costly emergency admission, better clinical outcomes, and improved well-being of patients and their families. Moreover, combining the PERS service with predictive analytics to monitor patients' risk for needing emergency hospital transport has the potential to provide valuable insights to significantly improve chronic disease management and support independent living for older adults.

Learning Objectives:

- Identify medical reasons why elderly enroll into a PERS service.
- Classify situations that lead to ambulance transport in PERS users.
- Identify most common medical diagnoses of emergency hospitalizations in PERS users.

REFERENCES:

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Value (Business Strategy and Financial Management)

MAY 1, 2018

11:55 AM–12:10 PM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-157

TITLE: TELEPSYCHIATRY FOR PEDIATRIC MENTAL HEALTH EMERGENCIES AS STANDARD OF CARE

PRESENTERS: John Frederick Thomas, PhD, MSSW

Abstract: Session will review a videoconference-based psychiatric emergency consultation (telepsychiatry) service established at an urban-based academic center that was initially evaluated in 2015 as a study comparing telemedicine to usual care involving ambulance transport for in-person psychiatric emergency consultation prior to disposition to inpatient care or discharge home.

After the study revealed the telemedicine-enabled visits had significantly shorter median ED lengths and lower total patient charges and higher patient and provider satisfaction, with no safety concerns based on readmissions within 72 hours, the practice became standard of care.

Telepsychiatry consultations have become the standard procedure for pediatric psychiatric emergencies after the initial study indicated a cost-benefit and a breakeven analysis of 112 patients. The use of telemedicine for psychiatric service consultation grew 100% in the next fiscal year and the model is demonstrating promise for increasing access to other specialized healthcare needs.

Learning Objectives:

- Upon completion learners will be able to identify opportunities in their facility where a similar approach can be applied.
- Upon completion learners will be able to understand the value of ROI in telemedicine applications and how to calculate a break-even analysis of an application of telemedicine.
- Upon completion learners will be understand the aspects of types of revenue and fixed and variable costs used in calculation.

Value (Business Strategy and Financial Management)

MAY 1, 2018

12:15 PM–12:30 PM **May 1, 2018**

EPOSTER PRESENTATIONS

EP-158

TITLE: CHAT WITH A DOCTOR | ASYNCHRONOUS TELEMEDICINE TO ENGAGE HARD TO REACH HEALTH PLAN MEMBERS

PRESENTERS: Blake McKinney, MD

Abstract: Facing constant pressure to keep up with demand for access, and the desire to provide our members rapid access to medical advice and care, Kaiser Permanente Colorado sought a virtual care solution which would connect a member to a KP physician on-demand, eliminating the inconvenience of phoning for an appointment. Additionally, the solution would need to have a high level of resolution for patients to ensure their problems were addressed which would both increase patient satisfaction and help to control costs.

The Chat with a Doctor program is set up to operate as a HIPAA-compliant instant message system, so patients can chat and share images with a doctor, connecting in less than 85 seconds on average. Launched without advertising in November 2016; the virtual care program was rapidly scaled to be available to all 660,000 Kaiser Permanente Colorado members through their patient portal from 8am-10pm, seven days-a-week with no co-pay.

Chat with a Doctor has been very well received and volume is growing rapidly. In its first weeks, the program averaged 45 encounters per week, however that number has grown rapidly to upwards of 700 encounters per week; upwards of 200 patients per week are repeat patients.

In its first few months, KP Colorado physicians have effectively diagnosed and treated a wide array of conditions with Chat with a Doctor. Seventy percent of chat encounters are handled with advice only or a prescription, 18% are referred for appointments in the KP system, 7% are sent to our Urgent Care centers, 2% to our acute diagnostic centers, 1% are referred to the ED, while only about 3% abandon chat prior to disposition.

One unexpected positive outcome of the program is its ability to connect to members who have been historically difficult to engage. This segment of the population-young, healthy individuals-often opt not to have a PCP and avoid the health system until an injury or unexpected illness force them to. Many of these encounters, which previously represented a significant portion of our unnecessary ED and acute care visits, have been managed via chat.

We have found this point of contact to aid us in engaging with these members, helping them to navigate our system and provide an additional level of satisfaction with the KP system. With the expansion of the service to mobile platform, we expect utilization by this younger age group to grow even further, greatly increasing the cost savings generated by it.

The asynchronous nature of the communication allows physicians to handle multiple simultaneous chat threads, leveraging the physician's time and creating efficiencies not attainable in other 1:1 encounters. Chat has become one of our highest-resolution lowest-cost care channel.

With increased utilization came an opportunity to offer more specialized advice. We have added Pediatricians, Ob/Gyn NP's, a clinical pharmacist and soon, will add a Behavioral Health Specialist in addition to support agents who assist with scheduling those patients felt to need in person care.

During the presentation, patient enrollment and physician staffing processes for Chat with a Doctor will be reviewed. Service adoption and care metrics for this unique telehealth application will be described, as well as future service line and platform development plans.

Learning Objectives:

- Describe access to care benefits of an asynchronous virtual care program.
- Quantify adoption rates in this unique text-based application of telehealth.
- Contrast patient engagement and satisfaction levels pre- and post-implementation of an asynchronous telemedicine program.

CLINICAL SERVICES

MONDAY, APRIL 30, 2018

4:05 PM–4:02 PM **Monday, April 30, 2018**

E-POSTER

EP-159

TITLE: IMPROVING ICU OUTCOMES: AN INTEGRATED TELE-INTENSIVIST PROGRAM

PRESENTERS: P. William Ludwig, MD, FCCP; Yasmina Nassar, MBA

Abstract: Examine one community teaching hospital's program to combine a daytime intensivist with a nighttime teleintensivist to ensure all ICU patients receive a consultation. Explore the resulting improvements in ICU length of

stay, mortality and readmission as well as reduced overall costs. Identify quality metrics and critical outcomes that need to be measured in such a program, and gain insights into economic and staffing issues to consider.

Learning Objectives:

- Understand the structure of a successful care model. Specifically, the combined team approach to ICU care including all ICU staff and care coordination between daytime on-site physician and night Teleintensivist.
- The participants will gain knowledge as to the quality metrics and critical outcomes that need to be measured and followed in a telemedicine intensivist program.
- The participants will also gain an understanding of some economic and staffing factors that affect delivery of intensive care.

REFERENCES:

1. https://www.nuviewhealth.com/about-nuview