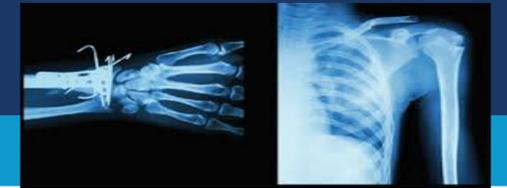


# Incorporation of Telemedicine at a Rural Orthopedic Practice

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## Purpose

The purpose of this project was to increase access to specialized orthopedic care by incorporating telehealth at Orthopedic Specialists & Sports Medicine for rural populations. Telehealth allows providers to manage, treat, and monitor patients through various technologies all from the comfort of the patient's home.

## Background

- According to the U.S. Census Bureau, 46 million Americans live in rural areas, facing obstacles limiting their access to quality health care (Centers for Disease Control, 2020)
- 1 in 5 Americans experience healthcare disparities due to socioeconomic status, geographic location, cultural differences, and/or health risk behaviors (Bauer, 2020)
- The patient to physician ratio in rural areas is 39.8 physicians per 100,000 people – this negatively impacts the rural population's health (National Rural Health Association [NRHA], 2020)
- Rural residents tend to have lower per capita income (NRHA, 2020)
- Uneducated, poverty-stricken Americans may delay or avoid care or forgo healthcare altogether increasing risk of morbidity and mortality (Speyer et al. 2018)

## Literature Review Summary

### Four common themes emerged

#### 1. Healthcare disparities exist among rural populations

- Americans face inequalities that affect their ability to access quality healthcare, including geographic location, socioeconomic status, race/ethnicity, and level of educational attainment (Gonzalez et al., 2018).
- Access to care and quality of care is a major problem in rural communities especially for racial/ethnic groups; have increased risk of poorer health outcomes and higher mortality due to higher rates of comorbidities such as obesity, diabetes, and cancer (James et al., 2018; Richman et al., 2019).

#### 2. Telehealth technology is user friendly and easily accessible

#### 3. Barriers exist to telehealth adoption

- Technical problems, additional workload on staff, and lack of face-to-face interaction (Bagchi et al., 2018; Bouskill et al., 2018; Carlisle & Warren, 2013; Daniel & Sulmasy, 2015; Lopez-Torres et al., 2015; Mathar et al., 2015; Segar et al., 2013; Spahn, 2017).

## Literature Review Summary cont.

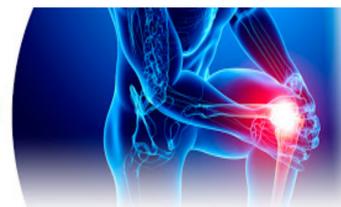
### 4. Telehealth offers rural populations greater access to specialized providers

- Video visit offers a solution by overcoming issues of distance and healthcare provider shortages, increases patient involvement in care and improves healthcare outcomes (Capriotti et al., 2020).
- Studies have shown positive use of telemedicine in telepsychiatry, telecardiology, tele-pediatrics, orthopedics, trauma, infectious disease, obstetrical and gynecological care, anesthesia, COPD, and diabetes management (Armstrong et al., 2014; Buvik et al., 2019; Carlisle & Warren, 2013; Contreras et al., 2018; Cyr et al., 2019; Dahlberg et al., 2018; Danbjorg et al., 2015; Kim et al., 2019; Kolltveit et al., 2017; Henderson et al., 2014; Lopez-Torres et al., 2015; Lowery, 2018; Mathar et al., 2015; Myers, 2018; Nerlich et al., 2019; Patel et al., 2020; Postora-Bernal et al., 2017; Rimmer et al., 2018; Sathiyakumar et al., 2014; Smith & Satyshur, 2016; Sundstrom et al., 2019; Vesterby et al., 2016; White et al., 2019; Xu et al., 2018).

## Nursing Theoretical Framework

- Nola Pender's Health Promotion Model (HMP) defines health as a positive dynamic state rather than simply the absence of disease & explores what motivates people to use health-promoting behaviors (McEwen & Wills, 2019).
- HPM examines perceived benefits and barriers, situational & interpersonal influences, and self-efficacy to telehealth technology
- Major concepts of HMP are patient's characteristics, experiences, knowledge, attitudes, and commitment to a plan of action to improve one's health
- Researchers use Pender's HPM to improve the health of populations by utilizing health promotion interventions
- HPM allows researchers to assess perceived benefits and barriers to new technology

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## Methods/Project Description

### Business proposal to key stakeholders of OSSM on implementation of telehealth services

**Phase 1:** Telehealth program purchased through current EMR – E Clinical Works to provide video visits through patient's mobile device (cell phone, tablet, computer)

**Phase 2:** Pilot Study conducted from March 2020 – August 2020 – 180 patients were seen during the 6-month time frame via video visit

**Phase 3:** Cost-Benefit Analysis to evaluate cost for the practice and reimbursement from patient visits  
Implicit cost OSSM: minimal due to the pandemic – appoints were already spaced out – this allowed time for telehealth visits during working hours – all salary - therefore there was no additional cost for personnel to conduct the visit

Explicit cost OSSM: Cost of telehealth visit \$2/visit + marketing

Revenue: insurance reimbursement for initial orthopedic consults or follow-up appoints after 90-day global period;  
Note: if patients were seen within 90-day global period, OSSM received no payment; self-pay patients were charged \$350 visit for new consultations; excluded x-ray if need at outside facility

**Phase 4:** Two company meetings (discuss pilot study/cost-benefit analysis and plans on implementation)

## Implications for APRNs

- Telehealth allows Nurse Practitioners (NP's) and other providers to manage a variety of orthopedic pts remotely with various diagnoses at OSSM
- Video visits allow the NP and other providers to evaluate new problems, educate patients on postoperative wound care and teach proper exercises for rehabilitation (Daniel & Sulmasy, 2015).
- Cost-effective and efficient way to deliver healthcare to patients living in rural communities
- Remote visits give value to rural, vulnerable populations who lack supportive resources
- Telehealth plays integral role in generating cost savings to the community by preventing unnecessary emergency room visits and hospital readmissions
- Telemedicine improves quality of life for rural residents by offering greater accessibility to specialty providers, ultimately minimizes healthcare disparity among these populations

## Outcomes & Evaluation

- Cost-Benefit Analysis showed explicit expenses increased last 2 months due to increase in marketing cost; total explicit revenue peaked 3 months into pilot study with May showing highest profitability; June, July, & August appeared to decline in revenue – due to providers seeing more patients face-to-face; follow-up telehealth visits consisted of post-op knee & hip replacement patients, shoulder arthroscopy, & rotator cuff repair
- Evaluation included clinical notes made by providers in patient charts to track diagnoses and indicate recommended follow-up times after completion of each visit; instructed patients to report signs of infection or new hospital admission during the pilot study; no reports of infection or hospitalizations during 6-month time frame
- Patient and provider correspondence were noted in the patient's chart - positive feedback was noted for all 180 pts; only minor issues of usability due poor internet connection

## Conclusion

- OSSM providers can improve access to specialized orthopedic care by eliminating barriers such as travel cost, transportation, and wait times for patients
- Telehealth offers another mode of evaluation by allowing providers to do consultation and follow-up visits from the comfort of the patient's home
- Evidence revealed a major lack of resources for patients living in rural, underserved communities
- The prevalence of chronic disease, lack of access to healthcare, and the need for specialty providers were clearly evident
- Telehealth provides socioeconomic benefits and improves health outcomes by enhancing collaboration between primary care and specialty doctors
- Barriers such as usability, technical problems, quality, safety, lack of empathy and loss of patient-provider connection involved with a virtual visit were accessed
- Telehealth offers a safe mode of healthcare delivery, adds convenience, and has high patient satisfaction rates for specialty orthopedic care