**Telehealth Simulation: Abdominal Pain**
***indicate telehealth focused content***

**A. Cover Sheet/Overview of Case**

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***Case purpose (e.g., brief description of the patient case and telehealth integration)**
The purpose of this case is to assist the learner to utilize telehealth for care delivery in a home-based setting and demonstrate history taking, a physical exam, and clinical reasoning skills to diagnose a patient with an abdominal disorder.

The case will illustrate telehealth care delivery tools that can be adapted for:

1) Telehealth visit using only ZOOM and no telehealth cart/remote patient monitoring/home kits
2) Telehealth visit using ZOOM with telehealth cart (or other similar equipment and platform) and peripheral tools otoscope, ophthalmoscope, body cam, horoscope, and digital stethoscope (if visit is at a telehealth hub location) [Adaptation is noted with an asterisk at the end of the Learner Information]

***Case Objectives (Sample objectives below. Select those that apply or create new)**

- Demonstrate an understanding of the different types of telehealth technologies and the use of telehealth as a care delivery method
- Demonstrate use of a decision-making algorithm for choosing telehealth or other type of best care delivery method
- Implement telehealth etiquette, professionalism, communication, and therapeutic influence skills during a virtual patient encounter
- Demonstrate a focused abdominal assessment and adaptation in technique for a virtual patient telehealth encounter
- Demonstrate best practices and evidence-based guidelines during a telehealth visit with an appropriate physical assessment, establishment of a differential diagnosis, and management of a patient with abdominal pain.

***Learner's prerequisite knowledge and skill:**

- Use of telehealth videoconferencing platform
- Telehealth etiquette and professionalism skills
- Ability to assess, diagnose and manage the non-complex (stable) primary care patient
- Basic knowledge of advanced history and physical assessment, pathophysiology, pharmacology, health promotion, primary prevention, secondary screening; and guidelines for staging and managing abdominal pain to include appendicitis.

***Telehealth Technology Addressed:**
Synchronous delivery using varied platforms – (videoconferencing, m-Health, telehealth hub with technology/peripherals as potential modification)

***Telehealth Technology Included in Case: (Select all that apply)**
Computer, iPad, iPhone, etc...
Videoconferencing platform (i.e., Zoom, doxy.me, etc..) or alternately a mHealth app or telehealth hub with peripherals or robot technology

***Scenario requirements:**

- Standardized patient or manikin between (5 and 18 years of age) [this can be adapted for an adult patient]
- Standardized embedded participant to serve as a caregiver and telepresenter for the patient
- Computers and ZOOM for healthcare for connection between provider and patient
- Two different setting/areas needed: Distant site for provider staged like a clinic and distant site for standardized patient staged like home.

**Case Complexity Adaption:**

- Beginning student: This case can be used with beginning students learning the role of the APRN provider in telehealth care delivery. A beginning student could focus on how to initiate a visit and orient the patient who is using telehealth for the first time. Depending on the equipment available and site of origin of the visit, the focus in a simple scenario would be on each other's roles and orientation/education of the patient. For each role, there would be a demonstration using evaluation tools and skills checklists of telehealth etiquette, telehealth professionalism, and communication.

- Intermediate/mastery student: This case can be adapted to a higher-level student and complexity using ZOOM or other video conferencing connection to the patient's home to do an abdominal pain history and physical exam, to diagnose and manage abdominal pain without any kit or peripherals.

- The scenario is adaptable to the university's resources and level of student.

**B. Case Information for Learners**

**Case Scenario Brief**

**You are the nurse practitioner provider who has a telehealth appointment with a (standardized) patient or standardized embedded participant who is the caregiver for a child (may change to adult) who is suffering from abdominal pain. They live in a rural area 100-200 miles away from you. The patients/caregiver's home is the originating site of the visit.*

*Your goal today is to 1) initiate a telehealth visit using best practices and proper telehealth etiquette, 2) demonstrate clinical judgement skills, 3) choose the best telehealth visit platform, 4) complete a pertinent history and physical (may include using equipment if peripherals or technology such as peripherals if available),5) identify a primary diagnosis and 2 potential alternative diagnoses including supporting and refuting data, and 6) develop and implement a plan of care. At the minimum there should be a focused history and physical exam around the patient's chief complaint, a management plan, and a follow up visit scheduled.*

*Telehealth choices for the visit are:*

- *Videoconferencing with patient in their home/with home equipment/caregiver present*

***Learner's task(s) to be completed**

- Initiate a telehealth visit
- Establish the reason for visit
- Outline the structure for the visit and the timeline
- Consent or verify consent of the patient
- Secure the environment (i.e., HIPAA/Confidentiality/Security)
- Identify participants (individuals present in both provider and patient environment)
- Establish an emergency plan
- Obtain HPI
- Manage emergency situations if required
- Perform an appropriate exam by adapting assessment techniques for a telehealth visit
- Communicate systems needed for a focused exam on patient with abdominal pain
- Develop appropriate, negotiated next step treatment plan with simulated patient (e.g.: medication adjustment, lifestyle, referral)
- Consider patient provided data from varied sources in treatment planning
- Establish plan and schedule follow-up appointment
- Prescribe medications if required and send (electronically via EMR or called in) to pharmacy of choice
- Outline procedure for sending summary of visit to patient

**Patient Name:** Maverick Allen
**Age:** 5 - 18 years – (May vary depending on course and age of SP)
**Gender:** Male or female
***Setting:** Rural area with patient in home setting, WIFI and ZOOM or other videoconferencing platform
**History:** Patient is experiencing abdominal pain
**Chief complaint:** "My child has been complaining of stomach pain for the past 2 days. Just worried I guess."
**HPI/PMH/Social HX/FMH:** Will be provided to you by standardized patient or caregiver based upon your communication with them
**Physical Exam**: Some elements will be provided by the caregiver based upon your communication with them. You direct the caregiver on what you would like them to do and how to use peripherals, if available.
**Vital signs**: you will direct the caregiver to obtain
**Lab results:** unavailable at this time

***Potential Adaptations for Case**: (Use if using a telehealth hub with an RN)

In the town, there is a telehealth hub with an RN, a telehealth cart with peripheral tools, and a platform that requires WIFI and ZOOM for health care. All people of the town have WIFI, broadband and ZOOM in their homes. The telehealth hub RN or caregiver in the home knows how to use the telehealth cart and peripheral tools. The RN or caregiver are also educated about remote patient monitoring and home monitoring kits.

The goal today is to work with the telehealth hub RN or caregiver in the home at the distant site to decide which site is best for the initial visit to meet the patient and introduce them to telehealth care delivery. The providers will have a planning meeting to decide how to conduct the encounter and then the patient encounter will be initiated. The goal is to complete a patient visit and address the problem. At the minimum there should be a focused history and physical exam around the patient's chief complaint, a management plan, and a follow up visit scheduled. The choices for the visit are:

- Videoconferencing with patient in their home/with home equipment/caregiver present
- Videoconferencing with patient at the telehealth hub with telehealth cart and peripheral tools with RN provider present with patient and APRN-NP remotely

Provider(s) can demonstrate clinical judgement skills, choosing the best telehealth visit platform, implementing best practices for telehealth, making a list of differential and medical diagnoses; implementing a plan of care based on evidenced based guidelines; deciding what type of visit for follow-up, and deciding what equipment is needed for the patient's home and how to ship it and educate the patient.

**Learner tasks suggestions to be completed:**

- Initiate videoconferencing with patient in their home/with home equipment/care giver present
- Initiate videoconferencing with patient at the telehealth hub/with telehealth cart and peripheral tools/with RN provider at clinic and APRN-NP remotely

**C. Content for Standardized Patients**

**Case summary/presenting information:** (include age, gender, summary statement, background info related to health care issue)

**SP can be a manikin instead and caregiver can be played by a Standardized Embedded Participant (SEP).**

*SP/manikin is a school age child with gender as self-described by the SEP. The chief complaint will be abdominal pain for the last 2 days. The SP/manikin has no past medical history with up-to-date immunizations and no surgeries. The SP/manikin has not been in or had any accidents recently.*

*For the purposes of this information sheet, the case will be a child with an acute appendicitis, but may be adapted to a diagnosis of constipation, GI viral infection, salmonella, etc. Adjust the PMH and HPI accordingly.*

- *Visit format choices
    - ZOOM or other videoconferencing platform
    - ZOOM or other videoconferencing and choice of equipment (telehealth cart\peripheral tools, Tytocare, Backpack, or travel kit) (Adapt Case accordingly)

- Opening Statement: "My child has been complaining that their stomach has been hurting for 2 days and now they are vomiting."
- General Appearance (e.g., make up, how hair is worn):
    - Patient: tired, pale and in pain, guards side
    - Caregiver: Smiles, but obviously nervous and anxious
- Dress (e.g., patient nightgown, socks okay):
    - Typical for SP's age or manikin being used—may vary with what is available for the simulation.
    - SEP/Caregiver—typical for age
- Presentation and resulting behaviors (e.g., body language, non-verbal/verbal characteristics):
    - Caregiver: Steady eye contact, relaxed body posture, speaks well and is articulate
    - Child: In pain
- Mood/Emotions:
    - Caregiver: Happy but concerned about child's health status
- Dealing with open-ended questions and guidelines for disclosure**:** SPs will answer naturally to open ended questions.

**History of Present Illness** (Please answer these questions, only if asked.)

- Onset: Abdominal discomfort started 2 days ago
- Location: Abdomen-only state or point to the lower right side if asked where the pain is specifically.
- Duration: 2 days
- Characteristics/quality: Pain started at a 4/10 but is now worsening to an 8/10 and causing vomiting
- Intensity: Pain level 8/10 or crying face on face pain scale for children.
- Alleviating factors (what makes it better): Lying totally still, but still hurts
- Aggravating factors (what makes it feel worse): Moving at all, jumping is excruciating and hurts to touch
- Precipitating factors (what seems to bring it on): Noise, interruption of routine
- Radiation: from middle to right side
- Treatments: Tried ibuprofen, but not helping
- Significance (impact on patient's life): Significant, unable to do anything but lie still.
- Associated/other symptoms: Nausea with vomiting started today. No bowel movement for the past 24 hours.

- Pertinent negatives (if on SP checklist or other evaluation instrument) If asked:
- Are you eating well? No, doesn't want to eat
- Any unusual bruising? No
- Any headache? No
- Any memory loss? No
- Any temperature, coughing, chest tightness, trouble breathing, racing heart or heart palpitations? Temperature 101ºF this morning

**Review of Systems** (e.g., pertinent positives and negatives)

- General: No recent weight change. Participating in your afterschool activities without any issue until 2 days ago. You have had no known COVID exposures. You wear a mask when you go out in public and at school. You have been in small groups of friends. Your sleep schedule is very regular with 8 to 10 hours nightly until 2 days ago and now you are unable to get comfortable enough to sleep.
- HEENT: Denies ear pain, pharyngitis, sore throat, discharge, or pain/swelling in neck
- Cardiac: Denies chest pain, cyanosis, palpitations, swelling in feet
- Pulmonary: Denies shortness of breath at rest or with walking upstairs; Denies wheezing or coughing; Denies sputum, Last TB was 10 years ago and was negative; Last chest x-ray was 10 years ago and was normal
- Abdomen: Prior to pain starting 2 days ago, no GI issues. Starting 2 days ago, you have had middle to right-sided abdominal pain 8/10 and not relieved by anything. You started vomiting earlier this morning and cannot keep any fluids or food down. You have not had a bowel movement in 24 hours. You do not want anyone to bump you or touch your abdomen.
- Genitourinary: Gyn (if biologically female and appropriate for age): periods began at age 11 and are usually every 27 days and regular. You do not have excessive bleeding. You have no history of cysts. You have never been pregnant. If over 16 years of age: You are using oral contraceptives that you from the GYN and you also use condoms if you have sex with your partner. You have only had one sexual partner.
- Musculoskeletal: Denies any muscle weakness or pain
- Neuro: Denies headache, weakness, syncope, vertigo
- Endocrine: You have no history of thyroid or adrenal disease. You have no history of diabetes

**Past Medical History**:

- Illnesses/injuries: None
- Hospitalizations: None
- Surgical history: None
- Screening/prevention: No screening tests. Had influenza vaccination in 2019 at school clinic
- Immunizations: Up-to-date on all vaccinations for age
- Current Medications (prescription, over the counter, supplements): multivitamin with dinner
- Allergies (e.g. environmental, food, medication and reaction): No known drug, food or latex allergies. Occasional seasonal allergies.
- Gynecologic: Deferred
- Psychiatric: None

**Family History:** Family tree (e.g., health status, age, cause of death)

- Mother and father: both alive and well with no chronic issues
- Brother: alive and well with no chronic issues

**Social History**:

- On Dad's health insurance through his job
- Substance use (past and present): None
- Drug use (recreational): None
- Tobacco use: None
- Alcohol use: None
- Home situation/environment: Lives with both parents and brother
- Support systems: parents, friends, church
- Occupation: Student
- Relationship status: None
- Leisure activities: Biking, reading, and playing video games with friends
- Diet: Nothing special eats 3 meals per day
- Exercise: Rides bike every day to school

**Physical Exam Findings:**

**Vital Signs:** Use these or will be done in exam by caregiver

(T101ºF P784 R22) (SaO2 98%) (BP 110/70)

Exam done by caregiver with guidance of the APRN student. The findings below are a guide and the standard patient findings are what will be documented. The exam should be done on a minimum of 3 systems chosen by learner.

*General: Through the camera, there is a healthy appearing patient who is slightly pale in color. The patient is nervous and seems to be in pain but maintains good eye contact. Caregiver answers questions accurately in normal voice, has good recall, and has a comfortable demeanor.

Head: Normocephalic with equal distribution of hair.

*Eyes: On inspection pupils are equal, round, and with penlight applied by the patient or provider at telehealth hub, the pupils are reactive to light and accommodation (patient or provider to shine penlight in eyes). No nystagmus. Sclera is white, conjunctiva light pink. EOMs intact. Able to see pupils react as child looks into the computer camera and caregiver shines the light as instructed in each eye.

*Nose: On inspection there is no nasal flaring, the nose is normal color and blends with rest of skin tone; no drainage or swelling or bumps or bruising; with head tilted back and use of light to see into the nares and nose pointed to telehealth camera - nares are patent, no redness, swelling or drainage; turbinate are slightly pink and no swelling or bogginess. On palpation by patient/caregiver/ telehealth hub RN, there is no pain.

Ears: On inspection pinna appear smooth and set equal to canthus of eye, no visible drainage or ear wax present, with palpation by caregiver as directed by provider there are no lumps or pain; no pain to palpation of tragus. **If there are peripherals in the home, the patient/caregiver can use the home equipment otoscope in ear so APRN provider can view inner ear. Telehealth hub RN can use the telehealth cart otoscope to send a picture of inner ear to APRN provider. The tympanic membranes are pearly grey with good light reflex and landmarks at appropriate locations, no distortions or bulging present.*

*Mouth/Throat: On inspection when child opens mouth and faces camera and light is used to illuminate oral cavity - teeth are intact and no cavities; tongue is midline; posterior pharynx is pink without exudate; tonsils +2 bilaterally without exudate.

Neck: On inspection no swelling in neck. No supraclavicular retractions. On palpation by caregiver as directed - no tenderness in neck in location of occipital, posterior, anterior and lateral lymph nodes. On palpation, no tenderness or lumps in thyroid region of neck. Able to swallow without difficulty. No hoarseness with talking.

*Cardiac: On inspection of anterior thorax there are no visible pulsations. On palpation by patient/caregiver or telehealth hub RN there is a regular rate and rhythm pulsation. On auscultation with digital stethoscope there is clear and distinct S1 and S2 and no murmurs, skips or gallops, no S3 or S4 auscultated. (If patient in home, instruct patient/caregiver to apply a home stethoscope to listen to heart sounds and patient can palpate own pulse for rate and regularity) (If patient in telehealth hub the RN will use the cart tools and digital stethoscope to transmit sounds to APRN provider).

*Pulmonary: On inspection there is a respiratory rate of 20, rhythm and depth of respirations is normal and full. The skin tone is normal color for rest of the body and no bruising or lesions. On palpation there are no areas of pain or tenderness or lumps. (If there are peripherals in the home, instruct patient/caregiver to apply stethoscope from home kit to listen to lung sounds). (If patient in telehealth hub the RN will use the cart tools and digital stethoscope to transmit sounds to APRN provider). On auscultation the lungs are clear with vesicular sounds, with no wheezing, rales, or rhonchi.

*Abdomen: On inspection there are no visible pulsations. On palpation (by patient/caregiver or telehealth hub RN) there is pain, tenderness and guarding in the right lower quadrant. Other 3 quadrants are sore without guarding. On auscultation, there are hyopactive bowel sounds in all four quadrants. (Adapt for use of cart tools and digital stethoscope or home kit).

**Note:** If the APRN student addresses McBurney's point you will state that McBurney's sign is positive.

If the APRN student asks you to palpate the lower left quadrant, you will have pain in the lower right quadrant. This is known as Rovsing.

Peripheral vascular/extremities: On inspection there is normal color and no cyanosis; no swelling or edema; on palpation the patient/caregiver or RN palpates warm toes and fingers; on palpation there are strong pulses (2+) in the carotid, brachial, and radial areas on both upper extremities which are equal; on palpation the patient/caregiver or RN reports strongly felt (2+) pulses in the femoral, popliteal, and tibial pulses which are equal on both sides. On palpation there is no pitting edema with applied pressure. On auscultation the provider(s) will use the stethoscope to listen for bruits in carotid and abdominal and femoral arteries (use adaptation for home kit tools).

**Diagnoses should include:**

- Abdominal Pain
- Appendicitis

**Plan:** Student should have the patient call an ambulance if alone or have the caregiver drive them to the emergency department ASAP.

**Adaptations of Scenario:** can be adapted for the following diagnoses: (adjust History and Physical Findings accordingly)

- Constipation
- Recurrent Abdominal Pain in Children
- GERD
- Gastroenteritis
- Salmonella, Shigella
- Other abdominal pain diagnoses dependent on age of patient

**D. Post-Encounter Activities/Evaluation with focus on Telehealth***

1. Tools adapted for the evaluation of the student:

- ***Telehealth Simulation Checklist***
    - Faculty Evaluation of Student
    - Standardized Patient Evaluation of Student
    - Student Self-Evaluation
- Faculty Evaluation of Oral Report to Preceptor of Student
- Evaluation of clinical SOAP note including documentation of billing and coding data using a written note rubric
- Student Self-evaluation and Reflection for Improvement incorporating the following questions:
    - Reflect on and describe your comfort level with the learning activities in this telehealth activity and the overall telehealth simulation experience.
    - Describe how your participation during the telehealth simulation experience could potentially affect your future practice as a nurse practitioner.
    - Describe strategies you used to establish your provider relationship with the patient and family member during this telehealth experience.
    - Discuss how these strategies are similar or different to those you have used to establish your provider relationship with the patient during face-to-face clinical encounters.

2. Two-faculty debriefing in groups of students (6 students is ideal).

- One faculty member could be a simulation expert and address content addressing the actual simulation experience using best practiced described in International Nursing Association for Clinical Simulation and Learning (INACSL) Standards of Best Practice: SimulationSM Debriefing (INACSL Standards Committee, 2016).
- Second faculty member with experience in pediatrics may be useful in facilitating discussion related to the atypical presentation of abdominal pain in children and considerations related to clinical management of children with telehealth.

**3.** Discussion questions/topics for Debrief:

- Comfort with equipment
- Comparisons, and contrasts between live and telehealth visits with regard to establishing rapport, gathering a history, performing a physical examination, diagnostic work-up, establishment a diagnosis, and probable treatment plan
- Relationship building in the virtual environment, positive and negative experiences.
- Atypical presentation of illness in a child - considerations of history taking and physical examination, inclusion of family caregiver, determining diagnosis/alternative diagnoses, considerations in clinical management, acuity of case, and referral.
- Role of simulation staff in creating separate virtual rooms to facilitate small group prebrief and debrief activities and rooms for the actual encounters.