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Simulation Scenario of a Postpartum Hemorrhage following Placental Abruption

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Simulation Scenario of a Postpartum Hemorrhage following Placental Abruption

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by

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This Project Thesis, directed and approved by the candidate's committee,
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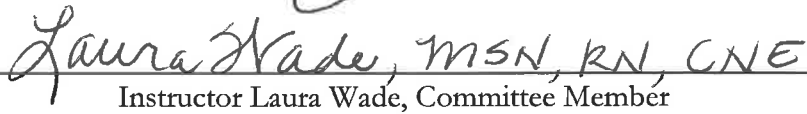
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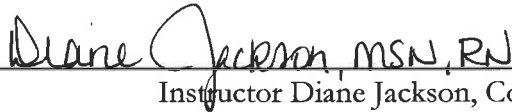
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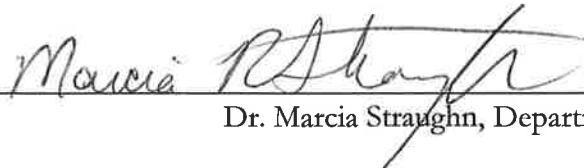
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Introduction

Simulation scenarios are used as immersive learning methods in nursing education. The National League for Nursing (NLN) describes them as “an evidence-based strategy to facilitate high-quality experiences that foster thinking and clinical reasoning skills for students [by] creating contextual learning environments that replicate crucial practice situations” (NLN, 2015, p. 3). Simulations can differ based on the facilitator discretion and the nature of the scenario. Some scenarios may use role play, while others use human patients or virtual simulators. During simulation, students are encouraged to practice their clinical skills while incorporating nursing theory. With the use of simulators, students can practice in a safe environment in which patients are unharmed; assisting students to learn from their mistakes. The first simulator dates back to 1911, when an adult size doll named “Mrs. Chase” was created so that nursing students could practice their skills (Owen, 2016).

Since 1911, simulators have progressed from low to medium to high-fidelity. Low-fidelity is comprised of a segmented simulator where students practice few, specific tasks; for example, an arm used to practice insertions of intravenous (IV) devices. Full body mannequins with limited computerized capabilities are classified as mid-fidelity. High-fidelity is considered the gold standard for simulation in nursing education as it creates the ability to mimic real patients as accurately as possible through the use of computers; for example, these full body mannequins can have seizures, deteriorate into respiratory distress or cardiac arrest, or experience a postpartum hemorrhage. Finally,

instructors use simulation as an evaluation tool to assess not only student performance, but also student nursing knowledge.

Literature Review

Simulation scenarios are fundamental in nursing education because “a significant gap exist between current nursing practice and the education of nurses for that practice [and] simulation may be one of the new educational tools that can narrow that gap” (Skrable & Fitzsimons, 2014, p. 121). To support this view, the NLN affirms that, considering the complex, ever-changing healthcare environment, the teaching methodology of simulation is one that will allow student nurses to provide the best quality of care (NLN, 2015).

A comprehensive review of the literature reveals that “simulation is useful in creating a learning environment which contributes to knowledge, skills, safety, and confidence” (Norman, 2012, p. 24). Moreover, students may not always be afforded adequate clinical experiences because of clinical site availability limitations and nursing preceptor shortage. These constraints necessitate high quality simulation in nursing education to augment clinical experience (Norman, 2012). Nursing literature also demonstrates that the implementation of simulation into nursing curricula is vital in obtaining more favorable, safer outcomes while delivering care (Norman, 2012). A study conducted by Skrable & Fitzsimons (2014) shows that students exposed to high-fidelity patient simulations improved on their critical thinking, knowledge, skills performance, and confidence level, making simulation an excellent adjunct to expand clinical knowledge and expertise.

Purpose

Norman (2012) asserts that new graduate nurses are expected to have clinical and time management skills to work under demanding circumstances, yet deliver the best quality of care. The purpose of this simulation is to provide nursing students with an immersion experience of managing care of a patient experiencing postpartum hemorrhage (PPH) related to placental abruption. Students are expected to utilize evidence-based practice while implementing the nursing process in an emergent, time-sensitive patient simulation.

Overview

Sasha Miller is a 35-year old gravida four para three who is 37 weeks pregnant. The patient was transported to the hospital by emergency medical technician (EMT) for evaluation after a motor vehicle crash (MVC) that happened Saturday at 1000; she is reporting abdominal pain and contractions that are 2 minutes apart. Upon assessment, the labor and delivery (L&D) team finds that the patient is 8 cm dilated and in active labor. After a precipitous labor, a baby boy is born with an Apgar score of 7/8. The scenario commences immediately following vaginal delivery of the baby on Saturday at 1130.

Time Allotment

The recommended scenario time is 15-20 minutes; the recommended debriefing time is 45 minutes.

Staging Instructions

Props

Supplies, equipment, and medications are adapted from Scenario 19 (Elsevier, 2014); however, some items were added or removed according to the needs of this specific simulation.

Equipment/supplies. Two 18 gauge (ga) intravenous (IV) catheters, two IV start kits with IV supplies, two IV infusion pumps, two sets IV tubing, multiple syringes (1mL, 3mL, 10mL), multiple subcutaneous and intramuscular needles, one pack of perineal pads, 1000 mL of simulated blood, one bed pan, one scale, one oxygen tubing, one nasal cannula, one face mask, multiple lab collection tubes for blood specimens, one printed copy of the postpartum hemorrhage protocol, one identification (ID) band for each family member, participants role badges, electronic health record (EHR), and one printed patient report.

Medications. Two 1000 mL IV bags of lactated Ringer's (LR) or normal saline (NS) solutions, one 1000 mL IV bag of LR or NS solutions with 20 units of oxytocin labeled with patient's information, one 1000 mL IV bag of LR or NS solutions with 10 units of oxytocin labeled with patient's information, one 10 mg/mL oxytocin vial for intramuscular (IM) injection, one multiple use 0.2 mg/mL Methergine vial or multiple single dose ampules, multiple 250 mcg/mL Hemabate ampules, and multiple 200 mcg Cytotec tabs to equal 600-800 mcg. All liquid medications will be simulated using water, while solid medications will be simulated with inactive tablets or pills; all medications will be labeled correctly.

Facilitator Action. The facilitators will have the simulation room prepared ahead of start time for students to start the scenario; this will allow the simulation to run smoothly and in the expected amount of time. Facilitators will place the ID band on the simulated patient and family members; dress the simulator in a gown and position it in the lithotomy position; insert the IV catheter in the simulator's arm and start infusing 1000 mL of LR or NS at a rate of 125 mL/h; place oxygen tubing, nasal cannula, face mask, scale, and patient chart in the room; saturate the sheets under the simulator with appropriate amount of blood to reflect a PPH; make the hemorrhage protocol readily available; prepare the medication cart containing all medications needed; prepare a supply cart with all the supplies listed above; set up 2 chairs for visitors and a baby crib in the room; role instructions will be given to the patient's husband (Elsevier, 2014).

Debriefing time is dedicated for dialogue among students and instructors immediately following clinical experiences. The U.S. Department of Health and Human Services (2017) defines it as a "central learning tool . . . for learning from defects and for improving performance." During debriefing, instructors usually ask questions such as "what went well" or "what could have been improved;" this gives students the opportunity to reflect on their personal and team performance and on the scenario outcome. Debriefing time is necessary to the learning experience because by thinking back to their own actions, students assimilate from their mistakes and grow professionally as student nurses. Furthermore, instructors encourage students to express their feelings and emotions about the simulation, especially in the case of patient's death or depression.

Identification Wristbands

The patient, husband, and newborn will have ID bands that must be worn at all times. The ID bands that will be used in the scenario are shown in Figure 1.

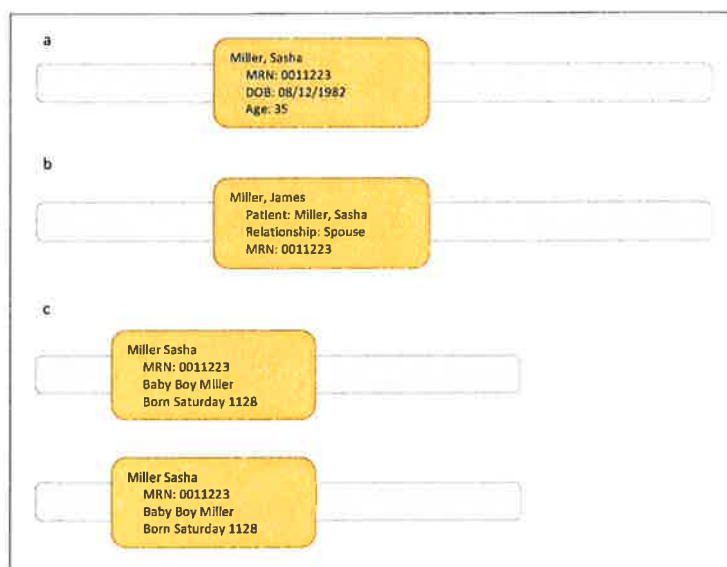


Figure 1. Participant ID bands: **a**, patient. **b**, husband. **c**, baby.

Patient ID Band

The patient ID band is protective safety measure for patient verification. Before any procedures or medication administration, healthcare professionals are expected to verify the patient; verification is implemented by asking the patient to verbally state their name and date of birth in conjunction with the healthcare professional matching the information printed on the patient ID band.

Husband and Infant Security Band

The patient's husband and newborn are also required to wear ID bands. These ID bands will be matched with the mother ID band for security purposes. The baby will have two ID bands, one for his wrist and one for his ankle. An alarm will also be attached to the baby's ankle; this alarm will sound when the baby is too close to the unit exit doors.

These measures are taken following standard safety hospital protocol to decrease the risk of abduction.

Participant Role Badges

Badges representing student roles will be made available for use. Students should wear their badges according to the role assigned to them by the instructor. Examples can be found in Figure 2.

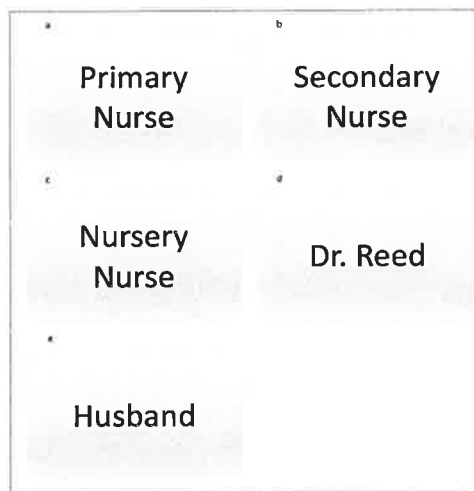


Figure 2. Participants' role badges. **a**, primary nurse. **b**, secondary nurse. **c**, nursery nurse. **d**, physician. **e**, husband.

Hemorrhage Protocol

Protocols are documents containing a system of steps, or rules, to follow in specific situations. The PPH protocol was designed to be utilized specifically for obstetric emergencies (California Department of Public Health and California Maternal Quality Care Collaborative Task Force, 2014). This protocol will be made available to students to use during the scenario, and is located in Figure 3.

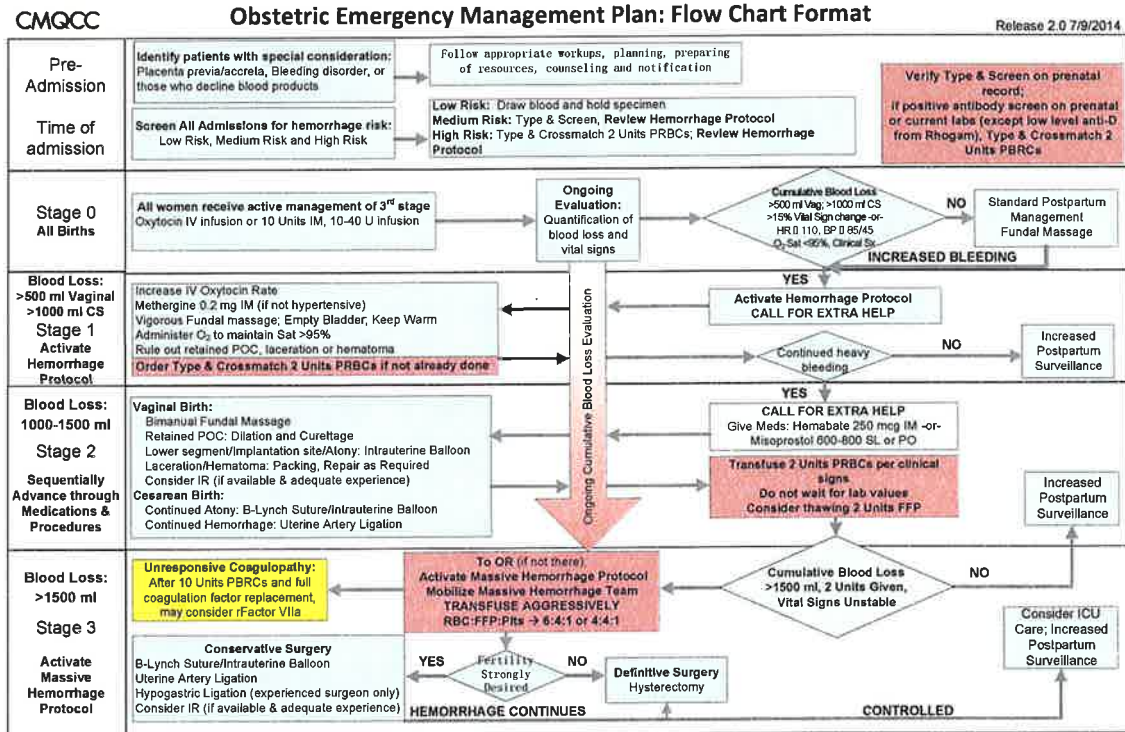


Figure 3. Obstetric emergency management plan represented in a flow chart (California Maternal Quality Care Collaborative Hemorrhage Taskforce, 2009).

Patient Report

SBAR Hand-Off

The patient was admitted to the L&D unit at 1045. The scenario begins on a Saturday at 1130.

Situation

The patient is Sasha Miller, a 35 years old Caucasian female. Her admission diagnosis is pregnancy 37 weeks gestation status post MVC; she complains of abdominal pain. She is a patient of Dr. Misty Reed.

Background

Medical history. The patient is a gravida four, term three, preterm zero, abortion one, living two (G4 T3 P0 A1 L2), 37 weeks gestation. She arrived to the emergency

department (ED) by EMT after a MVC and was admitted to L&D at 1045. She denies any injuries but complains that her abdomen is hurting. In addition to her current, healthy pregnancy, the patient reports a history of one elective abortion with her first pregnancy. With the second pregnancy, the patient had a term, uncomplicated delivery. With her third pregnancy she gave birth by cesarean section due to preeclamptic crisis. On the L&D unit, the patient was assessed to be 8 cm dilated and in active labor. Baby Miller was born at 1129 with Apgar score of 7/8. Risk factors for placental abruption were adapted from the article written by Ghaheh et al. (2013).

Social history. The patient is married to her husband James and they have two healthy children; they attend a Christian Baptist church every Sunday. She works as a bank teller.

Allergies. No known drug allergies (NKDA).

Code status. Full code.

Vital signs. The most recent set of vital signs (VS) were taken upon admission to the L&D unit and they demonstrate temperature (T): 99.2 degrees Fahrenheit; blood pressure (BP): 114/86; heart rate (P): 103 beats per minute; respiration rate (R): 17 breaths per minute; oxygen saturation (O2 sat): 97% on room air (RA).

Pain. 7/10, sharp, constant, in the abdominal region.

Peripheral access. 20 gauge left basilic, patent, and saline lock.

ADLs. Within defined limits (WDL).

Diet. Regular.

Braden Scale. Low fall risk.

Assessment

Neurologic. Patient is alert and oriented to person, time, place, and situation.

Cardiovascular. Sinus tachycardia; no abnormal sounds; non-pitting edema in the lower extremities; capillary refill less than 3 seconds.

Respiratory: Breath sounds clear in all lobes, anteriorly and posteriorly; breathing is non-labored, normal rate.

Gastrointestinal/Genitourinary: Patient is having contractions every 2 minutes and is 8 cm dilated.

Integumentary: WDL.

Ortho/mobility: WDL.

Psychosocial: Patient is anxious to meet her infant; she is cooperative.

Nurse note: Patient was induced into labor by the MVC, which resulted in precipitous delivery. No episiotomy or lacerations in the perineal area. The patient had a placental abruption as evidenced by (AEB) rapid, uncontrolled placental delivery immediately after infant delivery. Severe bleeding commenced upon placental expulsion.

Participant Response Guide**Patient – Sasha Miller**

The patient expresses concern about her abdominal pain. Once she is told she will deliver her baby today, she is excited; however, as labor progresses, she becomes anxious and irritable (McKinney, James, Murray, Nelson, & Ashwill, 2018). Finally, after labor, the patient will admire her infant and make positive comments about him. However, after delivery, the patient reports not feeling well and becomes agitated. Students are expected to assess and ascertain that the patient is experiencing a PPH and promptly initiate

hemorrhage protocol. If the hemorrhage protocol is followed immediately and accurately, the patient will respond appropriately and become hemodynamically stable; in this case, the scenario ends with success. If the hemorrhage protocol is initiated but the patient is not responding, or the protocol is delayed due to inadequate student response, the patient will report feeling dizzy, cold, and short of breath. The patient will become unresponsive if the protocol is not initiated within appropriate time frame. The algorithm denotes an outline of expected student performance and expected patient response, as well as a pathway for deterioration in the event of poor performance.

Patient's Husband – James Miller

Mr. Miller is excited about the birth of his baby boy AEB positive comments about the infant. Right after the physician establishes that there is an emergency, Mr. Miller and baby Miller are escorted to the nursery.

Patient's Provider – Dr. Misty Reed

As soon as the placenta is delivered immediately after the baby, Dr. Reed will state her diagnosis of placental abruption. She will explain to Mr. and Mrs. Miller that the patient is experiencing a complication of pregnancy; she will request for the husband and the baby to be escorted to the nursery. The Dr. will then begin to give a series of orders based on the students' actions and how the patient responds to treatment; these orders are listed below.

Physician's Orders

Because this scenario represents an emergency situation, there are no written orders. Dr. Reed is present in the room and will give verbal orders to the nurses as the scenario unfolds. The physician's role will be fulfilled by the scenario facilitator.

Immediately after diagnosis. The physician will order to initiate the PPH protocol; this includes administering 10L of oxygen via face mask, performing fundal massage, administering 10mg of oxytocin IM x1, administer Methergine 0.2mg IM and progress to next agent if no response, begin infusion of 1000 mL of LR or NS with 20 units of oxytocin as ordered, obtain a complete blood count (CBC), type and cross match two units of packed red blood cells (PRBC) immediately, insert two 18 ga IV catheters, continuous monitoring of vital signs.

Subsequent actions. Hemorrhage protocol will be followed until the bleeding is controlled and hemostasis is restored. Additional orders will include: continuing vital signs monitoring, administering Hemabate 250 mcg IM (up to three times every 20 minutes) or Cytotec 800 mcg sublingual (SL), increasing the infusion rate of LR or NS as ordered, calculate estimated blood loss (EBL). A bimanual uterine massage will be performed by the physician (Hofmeyr & Qureshi, 2016). If the type and cross match results aren't ready, the doctor will consider an emergency O negative transfusion. The Dr. may also decide to take the patient to the operating room in attempt to stop the bleeding. These determinations made by the physician are based on the success or delay of nursing actions performed by the students, as well as the discretion of the scenario facilitator.

Simulation Algorithm

The simulation algorithm is a one-page snapshot of the student's expected clinical performance; it will include different alternate outcomes based on the student's performance and clinical decision making. An example is "if the student does *this*, the patient will respond *in this way*." This algorithm can be found in Figure 4.

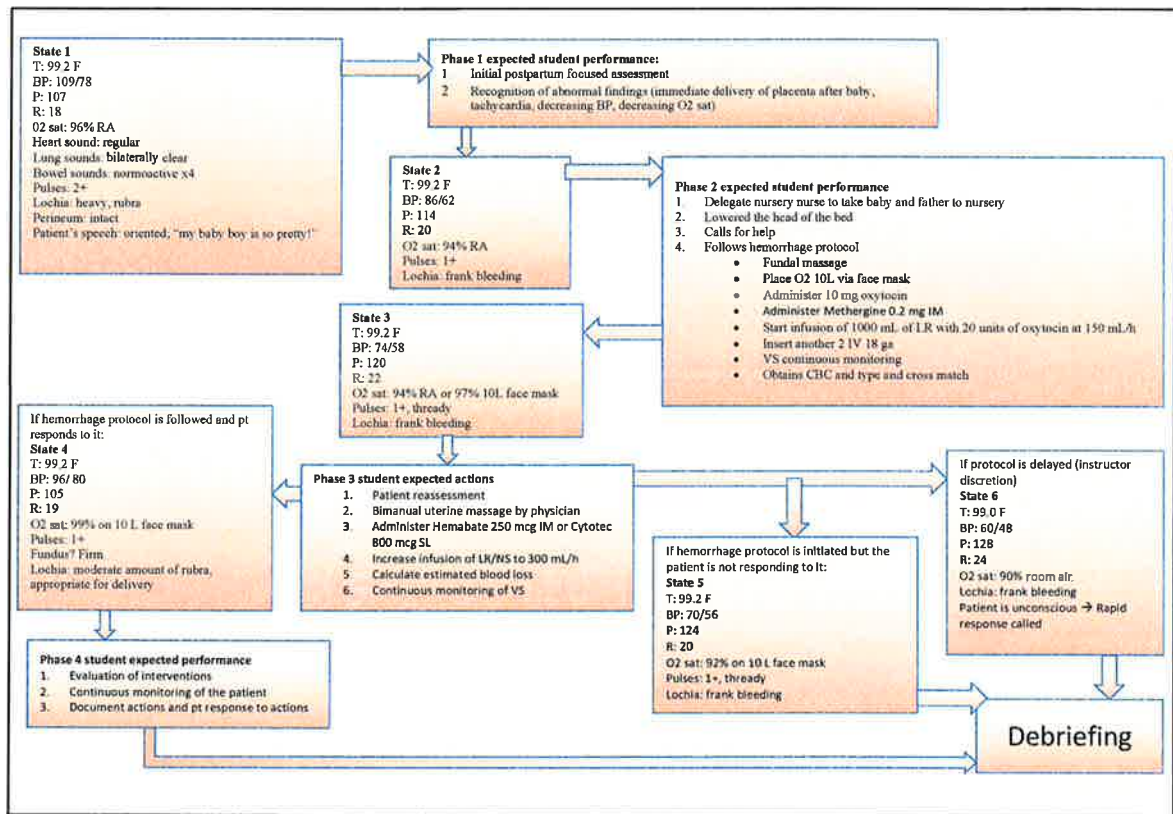


Figure 4. Simulation algorithm.

Performance Checklist

This scenario is based on team collaboration. Students will be paired in teams of two and will be evaluated as a team. Successful performance is determined according to a pass/fail evaluation. This checklist is represented in Figure 5.

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NURS XX: Postpartum Hemorrhage Management

Students Name: _____ Faculty Name: _____

| <i>Criteria</i> | <i>Pass</i> | <i>Fail</i> | <i>Comments</i> |
|---|-------------|-------------|-----------------|
| Focused assessment - Performs focused maternal assessment - Recognizes abnormal findings (premature placenta delivery, BP, O2 sat) | | | |
| Communication - Calls for help - Delegates relocating baby and husband to nursery | | | |
| PPH protocol - Lowers HOB - Fundal massage - O2 10L face mask - Oxytocin 10 mg IM - Methergine 0.2 mg IM - Start infusion of LR/NS with 20 units of oxytocin as ordered - Insert 2 large bore IV - CBC and type and cross - Hemabate 250 mcg IM or Cytotec 800 mcg SL - Increase LR/NS as ordered - Calculate EBL | | | |
| Evaluation - Continuous monitoring - Evaluates patient response to interventions - Provide reassurance | | | |
| Documentation - Documents findings, interventions, and patient response | | | |

Figure 5. Evaluation checklist.

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