at weeks 40 (RR, 1.22) and 41 (RR, 1.39).[100] A systematic review examining the impact of induction of labor at term on maternal and neonatal outcomes in women with intact membranes reported no increase in the frequency of cesarean delivery, instrumental vaginal delivery, maternal adverse outcomes, perinatal death, or requirement for admission to the neonatal intensive care unit in those randomly assigned to induction.[103] Systematic reviews that evaluated outcomes after induction in other clinical situations and subsequently published randomized trials described similar findings.[101-105] These findings have been further confirmed in the recently published ARRIVE (A Randomized Trial of Induction Versus Expectant Management) randomized controlled study, which demonstrated reductions in perinatal death, neonatal complications, and cesarean delivery in low-risk nulliparous women who were induced at 39 weeks compared with those who were managed expectantly.[106] In 1 study, 512 of 619 women completed a childbirth experience questionnaire.[104] There were no differences between the women undergoing induction and those with unscheduled delivery with respect to satisfaction with the childbirth experience.

Other EtD criteria and considerations. The panel considered the benefits of scheduled delivery, including the decreased risk for maternal bleeding. Access to neuraxial analgesia and anesthesia is another important consideration. The panel agreed that a multidisciplinary, individualized approach should be used when decisions are made about delivery plans and anesthetic options for women receiving anticoagulants. Shared decision making is required when peridelivery management in women receiving therapeutic anticoagulation and its potential impact on access to neuraxial analgesia and anesthesia are considered.

The panel recognized that the main causes of primary postpartum hemorrhage (the loss of ≥500 mL of blood from the genital tract within 24 hours of delivery) are uterine atony and trauma (although problems such as coagulation defects are also associated with excessive blood loss). Because the primary physiologic mechanism to stem bleeding from the placental bed after separation of the placenta is not the hemostatic system but sustained myometrial contraction leading to occlusion of uterine blood vessels,[107] it is presumed that anticoagulants like LMWH do not predispose the patient to atonic uterine bleeding. In contrast, traumatic bleeding from vaginal tears, episiotomy, and cesarean delivery can be adversely affected by agents that impair the hemostatic system. Therefore, careful attention should be paid to minimization of trauma and active management of the third stage of labor (with uterotonics such as oxytocin to enhance uterine contraction and promote placental separation) in women who might be receiving anticoagulants at the time of delivery to reduce the risk of bleeding.[107,108]

Current North American and European anesthetic guidelines call for at least a 24-hour interval between the last dose of greater-than-prophylactic-dose LMWH and placement of an epidural catheter.[109,110] The required time interval between the last dose of therapeutic LMWH and neuraxial analgesia or anesthesia could limit access to regional analgesia in these women; this is also important in women at increased likelihood of cesarean delivery, because the availability of regional anesthesia reduces the need to expose women and babies to the risks of general anesthesia. The panel also considered that the potential for maternal and neonatal harm with scheduled delivery for women receiving therapeutic anticoagulation was likely to be small. Scheduled delivery may remove an element of uncertainty around the peripartum period for women receiving therapeutic anticoagulation for both the clinician and patient.

The panel noted that other options for anticoagulant management, including conversion to intravenous UFH with cessation 4 to 6 hours before delivery or anticipated need for epidural insertion with a repeat activated partial thromboplastin time drawn after 4 hours to confirm normalization would be appropriate in patients considered at high risk for recurrent VTE with prolonged anticoagulant interruption (eg, those with proximal DVT or pulmonary embolism diagnosed 2 to 4 weeks before delivery). The panel did not review the safety of and optimal management of subcutaneous therapeutic-dose UFH around the time of delivery.

Conclusions and research needs for this recommendation. The guideline panel determined that there is a very low certainty in evidence for a net health benefit from using scheduled delivery with prior discontinuation of anticoagulants at the time of delivery. Because of very low certainty in evidence or no published information about outcomes of mortality or recurrent VTE, lack of better evidence does not imply that an effect does not exist and does not allow firm conclusions. The data informing this recommendation are of very low certainty, and this clinical scenario is likely to be heavily influenced by patient and clinician preferences. Not all panel members agreed with this conditional recommendation in favor of discontinuation of therapeutic anticoagulation before scheduled delivery, and 1 member specifically advocated a conditional recommendation for allowing for spontaneous labor, even with the potential for limiting access to neuraxial analgesia and anesthesia and increasing the risk of major bleeding. The panel noted an element of geographical variation in practice which seems to correlate with rates and acceptance of epidural analgesia during childbirth.

The panel identified the following additional research needs: more outcome data that examines different anticoagulant regimens at the time of delivery, including transitioning to intravenous UFH, would be helpful. Data should be obtained that assess other critical outcomes for pregnant women with therapeutic anticoagulation interruption around the time of delivery (including access to epidural analgesia and frequency of epidural hematomas, cesarean delivery, and maternal and neonatal morbidity and mortality).

Question 9: Should scheduled delivery with prior discontinuation of prophylactic-dose LMWH vs cessation of prophylactic LMWH at the onset of spontaneous labor be used for pregnant women receiving prophylactic-dose LMWH?

Recommendation 11

In pregnant women receiving prophylactic-dose LMWH, the ASH guideline panel *suggests against* scheduled delivery with discontinuation of prophylactic anticoagulation compared with allowing spontaneous labor (conditional recommendation, very low certainty in evidence about effects ⊕◯◯◯).

Summary of the evidence. We were unable to find any randomized trials specifically addressing this question. We identified 3 observational studies that examined the peripartum bleeding risk in women receiving prophylactic anticoagulation. One study used data from Swedish national registries to examine venous thromboembolic