

Educational Need:

Peri-FACTS[®] is a self-instructional program designed to assist obstetric healthcare professionals in the acquisition of the knowledge and expertise needed to provide quality care for childbearing women.



Target Audience:

This educational content is intended for obstetric healthcare providers.

Learning Objectives:

After completing the program modules, participants should be able to:

- Identify factors that place the maternal-fetal unit at risk.
- Discuss the clinical assessment and management of common, obstetric complications.
- Identify baseline fetal heart rate, variability, periodic and nonperiodic changes, and contraction patterns; and describe components of fetal heart rate patterns.
- Identify factors affecting fetal heart rate interpretation and appropriate interventions.

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Microsoft Windows 2000 or above
High-speed Internet connection recommended
Internet Explorer (version 6.0 or greater) or Mozilla Firefox web browser
FlashPlayer (5.0 or greater), QuickTime (6.3 or greater), MediaPlayer (6.4 or greater), or RealOnePlayer (2.0 or greater)
Adobe Acrobat Reader (5.1 or greater)
Java VM 1.4 or greater

MAC

MAC OS 10.2 or greater

High-speed Internet connection recommended

Mozilla Firefox or Safari web browser with Flip4Mac plugin

FlashPlayer (5.0 or greater), QuickTime (6.3 or greater), MediaPlayer (6.4 or greater), or RealOnePlayer (2.0 or greater) or Flip4Mac

Adobe Acrobat Reader (5.1 or greater)

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your
ideas!**

The **Peri-FACTS** Team is currently preparing for the
2011 curriculum.

We are looking for topic suggestions that are of interest to you.

Please fax this form to (585) 276-2080 or
e-mail your ideas to us at
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Thanks for all of your help!

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Ideas need to be received by February 28, 2010.



Peri-FACTS®

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Peri-FACTS® Case #883

**February 2010 Topic:
Coagulation Disorders in
Pregnancy**

**Article: Thrombotic
Thrombocytopenic Purpura**

**This Clinical Case Study:
C.M.**

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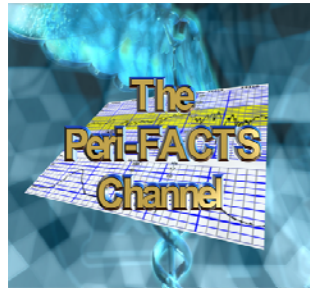
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Peri-FACTS®

*An eJournal for Lifelong
Learning in Obstetrics*

From the University of Rochester's
Department of Obstetrics and Gynecology



This Month, The Peri-FACTS®
Video Channel presents:

- Plasmapheresis to Treat
Thrombotic Thrombocytopenic
Purpura
- Strip Rounds No. 16

Learning Objectives for Peri-FACTS® Case #883: Upon completion, the learner will be able to:

- Describe the pathophysiology of thrombotic thrombocytopenic purpura (TTP) and how it differs from other thrombotic microangiopathies.
- Discuss symptoms and treatments associated with TTP.
- Evaluate a fetal heart rate tracing of a woman with TTP.

This clinical case study focuses on the materials found in the *Thrombotic Thrombocytopenic Purpura* article.

C.M. is a G4 P0120, 19-year-old woman who receives her prenatal care at the hospital's high-risk clinic. She comes to the obstetric triage area at 33 3/7 weeks' gestation complaining of bloody show and "red spots" on her feet. Upon further questioning, she admits to bleeding gums when brushing her teeth, occasional headaches, and intermittent blurry vision with floaters, symptoms which are new for her in the past two weeks.

On admission, her blood pressure is 146/73 mmHg, pulse 100 bpm, and temperature 36.7°C. There is minimal edema of her lower extremities and petechiae on her feet bilaterally.

Ultrasound examination reveals vertex presentation with an estimated fetal weight of 2,273 gm (90th percentile).

C.M.'s cervix appears closed by speculum examination.

C.M.'s medical history includes chronic hypertension, for which she takes no medication, thrombotic thrombocytopenic purpura (TTP) with a previous pregnancy, and classic cesarean section delivery at 26 weeks with neonatal demise due to prematurity. There also was one first-trimester spontaneous abortion, one pregnancy termination, atypical squamous cells of undetermined significance on a Pap smear, and domestic violence with her boyfriend. He remains involved. C.M. states that he is no longer abusive but is not supportive. C.M. has no allergies and takes no medications. She has gained 40 lb with this pregnancy and now weighs 220 lb.

Her initial diagnosis is TTP versus preeclampsia, and she is admitted to the high-risk labor unit. Blood is drawn for complete blood count, platelet count, type and screen, reticulocyte count, D-Dimer, fibrinogen, fibrin degradation products, and ADAMSTS13. A peripheral blood smear is sent to the consulting hematologist. C.M.'s plan of care is for a repeat cesarean section if her platelet count is greater than 50,000/mm³. If the platelet count is less than 50,000/mm³, the plan is to begin plasmapheresis first and then deliver when she is clinically stable. The patient agrees with this plan and signs a surgical consent for cesarean section.

ARTICLE: THROMBOTIC THROMBOCYTOPENIC PURPURA

Question 1 (7.7 points): Thrombotic microangiopathies associated with pregnancy include:¹

- A. TTP.
- B. ITP.
- C. HELLP syndrome.
- D. factor V Leiden.
- E. all of the above.
- F. A and C.
- G. A and B.

Question 2 (7.7 points): Thrombotic microangiopathies cause tissue and organ damage because:¹

- A. thrombi become lodged in small arterioles and capillaries blocking blood flow to organs.
- B. clotting factors are depleted.
- C. red blood cells are hemolyzed leading to anemia.
- D. all of the above.

Question 3 (7.7 points): True or False. All thrombotic microangiopathies share the common feature of intravascular microthrombi with a high degree of clinical and laboratory overlap; thus, they respond similarly to treatment.¹

- A. True
- B. False

Question 4 (7.7 points): Which best describes the pathophysiology of TTP?¹

- A. Due to a deficiency of metalloprotease called ADAMTS13, large von Willebrand multimers accumulate and bind with platelets forming clots that occlude microvasculature.
- B. A decrease in von Willebrand multimers allows platelets to form thrombi, thus activating the coagulation cascade and consuming and depleting other coagulation factors (fibrinogen and thrombin). This leads to clot formation and uncontrolled bleeding.

Question 5 (7.7 points): True or False. TTP may be triggered by pregnancy, liver disease, and/or viral infections.¹

- A. True
- B. False

Question 6 (7.7 points): Diagnosis of TTP currently relies on which of these clinical manifestations?¹

- A. Fever
- B. Thrombocytopenia
- C. Neurologic abnormalities
- D. Microangiopathic hemolytic anemia
- E. Shistocytes and immature red blood cells on peripheral blood smear
- F. All of the above
- G. B, D, and E
- H. A, B, and D

Question 7 (7.7 points): The mainstay of treatment for TTP is:¹

- A. immediate transfusion of platelets to correct thrombocytopenia.
- B. transfusion of packed red blood cells to correct hemolytic anemia.
- C. plasmapheresis to remove autoantibodies against ADAMTS13 and replenish its levels.
- D. immunosuppressants to suppress autoantibodies (i.e., cyclosporine).

Question 8 (7.7 points): True or False. Because production of von Willebrand factor increases during pregnancy, women may experience TTP during their pregnancies but not between them.¹

- A. True
- B. False

Question 9 (7.7 points): True or False. If TTP is severe, von Willebrand multimers may cross the placenta where they bind with fetal platelets to cause thrombus formation and hemolytic anemia in the fetus.¹

- A. True
- B. False

Question 10 (7.7 points): A woman is admitted to the tertiary care obstetric unit at 36 weeks' gestation with the following clinical features: right upper quadrant pain, hypertension, intrauterine growth restriction, proteinuria, schistocytes in peripheral blood smear, and nosebleed. Her diagnosis and treatment most likely will be:¹

- A. TTP → delivery.
- B. TTP → expectant management.
- C. HELLP syndrome → delivery.
- D. HELLP syndrome → steroids, daily nonstress tests, and expectant management.

INTERPRETATION OF THE FETAL HEART RATE (FHR) TRACING

Question 11 (7.7 points): In columns 88301 through 88312 of this FHR tracing, the baseline FHR is described best as:²

- A. 145 to 155 bpm.
- B. 150 bpm.
- C. 140 bpm.

Question 12 (7.7 points): The best indicator of fetal well being in this FHR tracing is:²

- A. a stable baseline between 110 and 160 bpm.
- B. the presence of fetal heart rate accelerations.
- C. moderate variability.
- D. the absence of late decelerations.

Question 13 (7.7 points): True or False. The external cardiometer of the fetal monitor amplifies the fetal heart beat allowing us to hear and count it. The fetal scalp electrode detects frequency changes in reflected ultrasound signals and produces an artificial electronic sound on the monitor.²

- A. True
 - B. False
-

BONUS QUESTION

Question 14 (7.7 points): Select the correct statement regarding care for women with TTP.¹

- A. Platelet transfusions should not be given to patients who are not actively bleeding.
- B. Transfusions should not be withheld in patients with thrombocytopenia and active hemorrhage.
- C. Both A and B are correct.
- D. Neither A nor B is correct.

RELATED READING

1. The University of Rochester Medical Center, **Peri-FACTS** Education Program (2010). Article: Thrombotic Thrombocytopenic Purpura, Case #882. Rochester, NY: The University of Rochester.
2. Woods JR, Glantz JC, Pittinaro DR, and Giffi C (2009). Principles of Fetal Heart Rate Monitoring, (Ed. 4). Rochester, NY: **Peri-FACTS**, University of Rochester.

* We reserve the right to modify certain aspects of this case for purposes of confidentiality.

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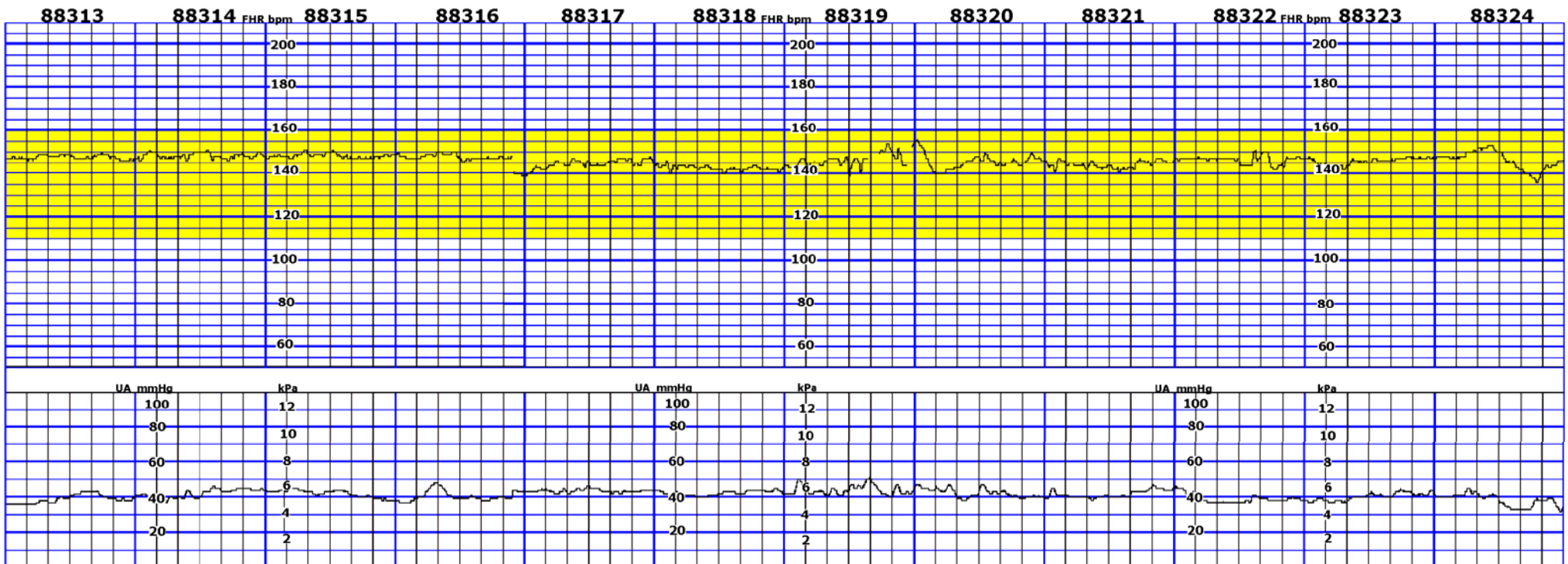
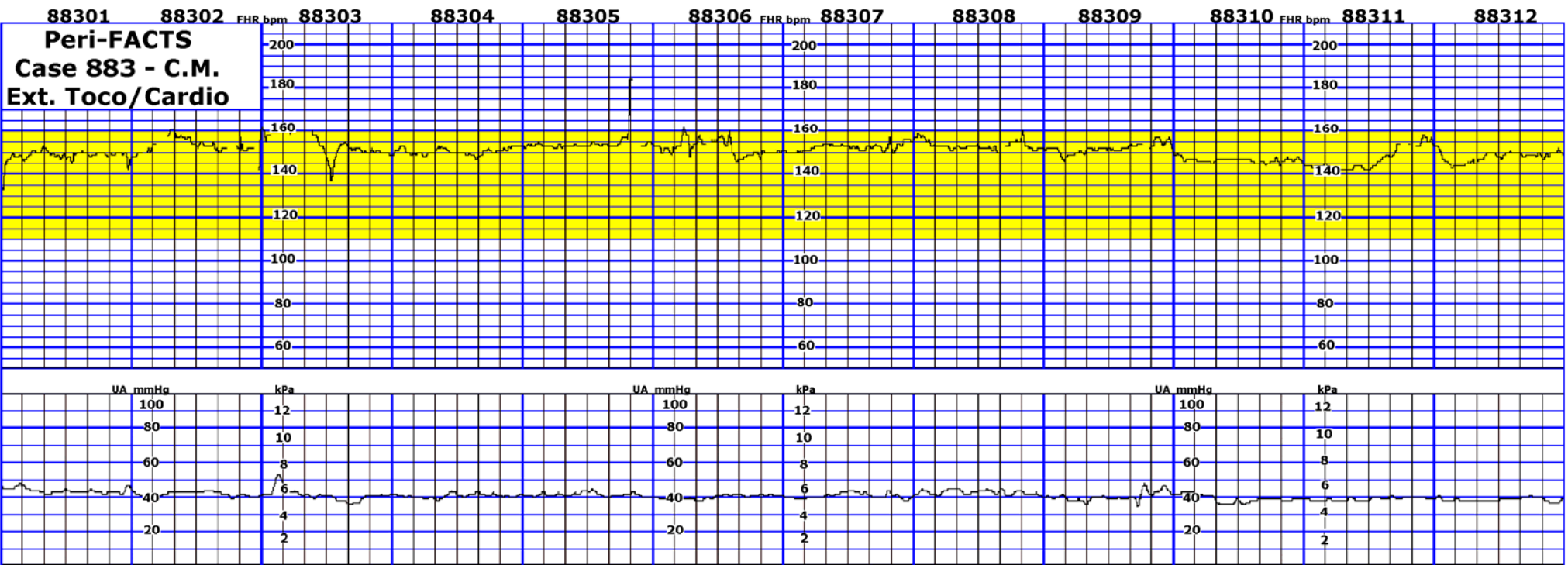
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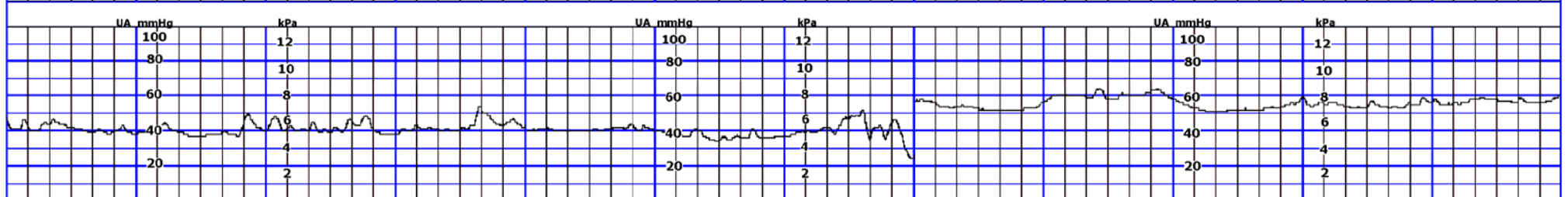
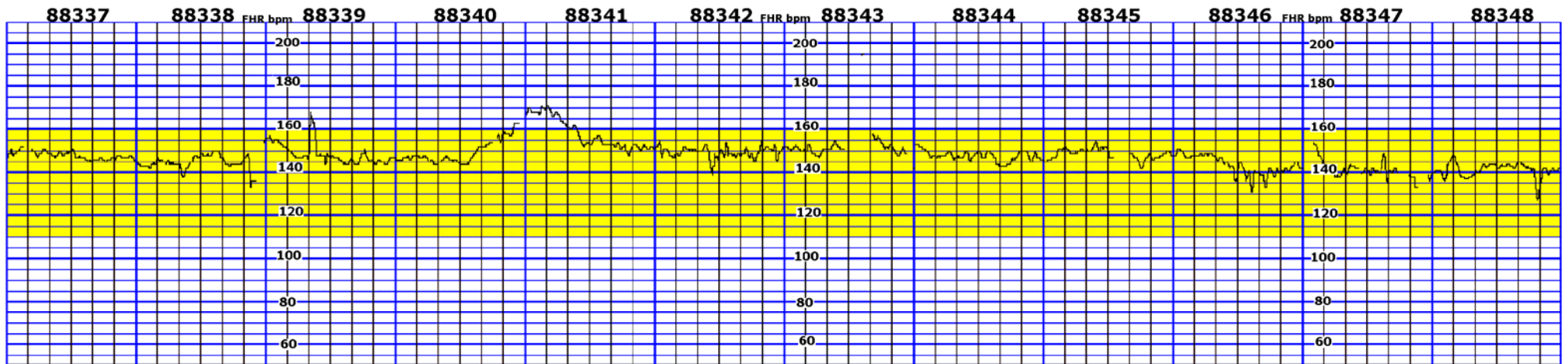
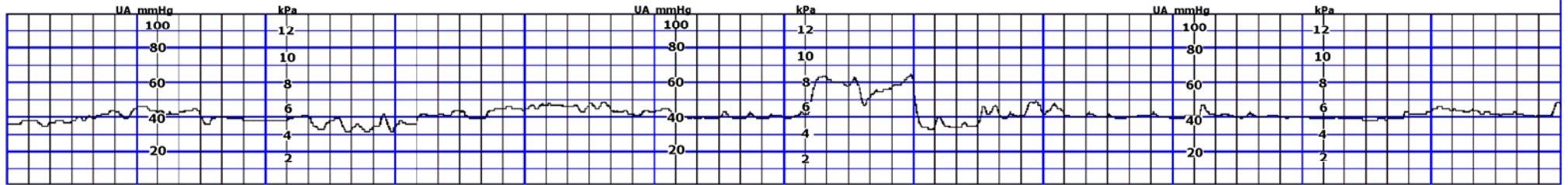
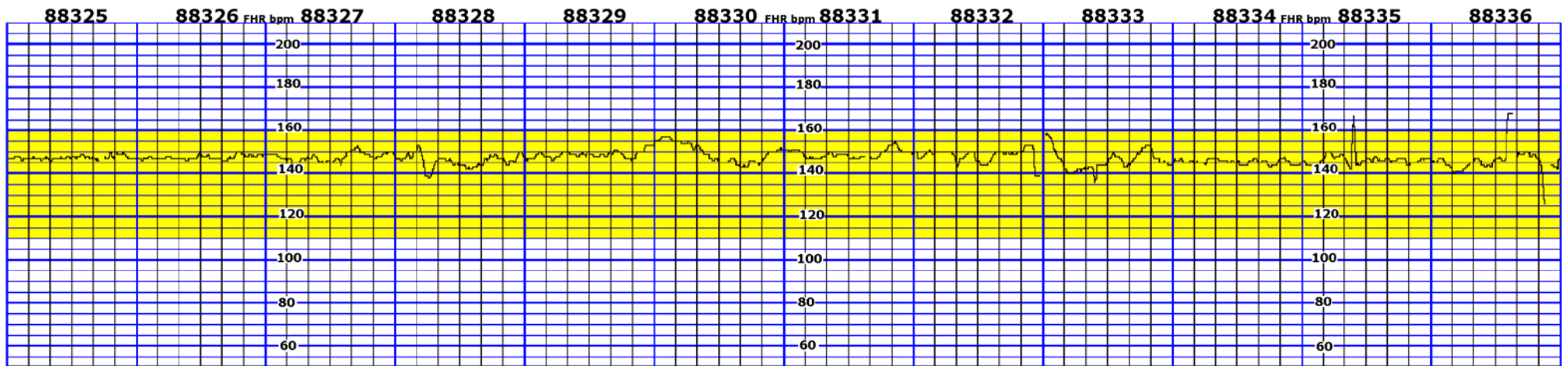
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Case 883 – ANSWER SHEET

February 2010 Topic: Coagulation Disorders in Pregnancy

Article: Thrombotic Thrombocytopenic Purpura

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