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Altogether Now! Early Introduction of Case-Based Learning for Success in Clinical Chemistry

Cristy E. Moss

Andrews University, cristy@andrews.edu

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Altogether Now! Early Introduction of Case-Based Learning for Success In Clinical Chemistry

Cristy Creighton-Moss, MBBS, MLS(ASCP)CM
Associate Professor
Department of Medical Laboratory Sciences
Andrews University



Active learning encompasses “instructional activities involving students in **doing things** and **thinking** about what they are doing”
(Bonwell and Eison, 1991)

Objectives

- Differentiate between active & passive learning.
- Identify ways early integration of case-based learning is beneficial for the medical laboratory student.
- Summarize current methods for Integration of case-based activities into routine lecture / discussion sessions with students.

A 22-Year-Old With Diabetic Foot

Name: O. Mye

Age: 22 years

Sex: Female

Presenting Complaint: Foot not healing x 5 months

PMH: Type II DM

Laboratory Findings:

HbA1c - 9.6%

CRP - 47 mg/dL



A 22-Year-Old With Diabetic Foot

Name: O. Mye

Age: 22 years

Sex: Female

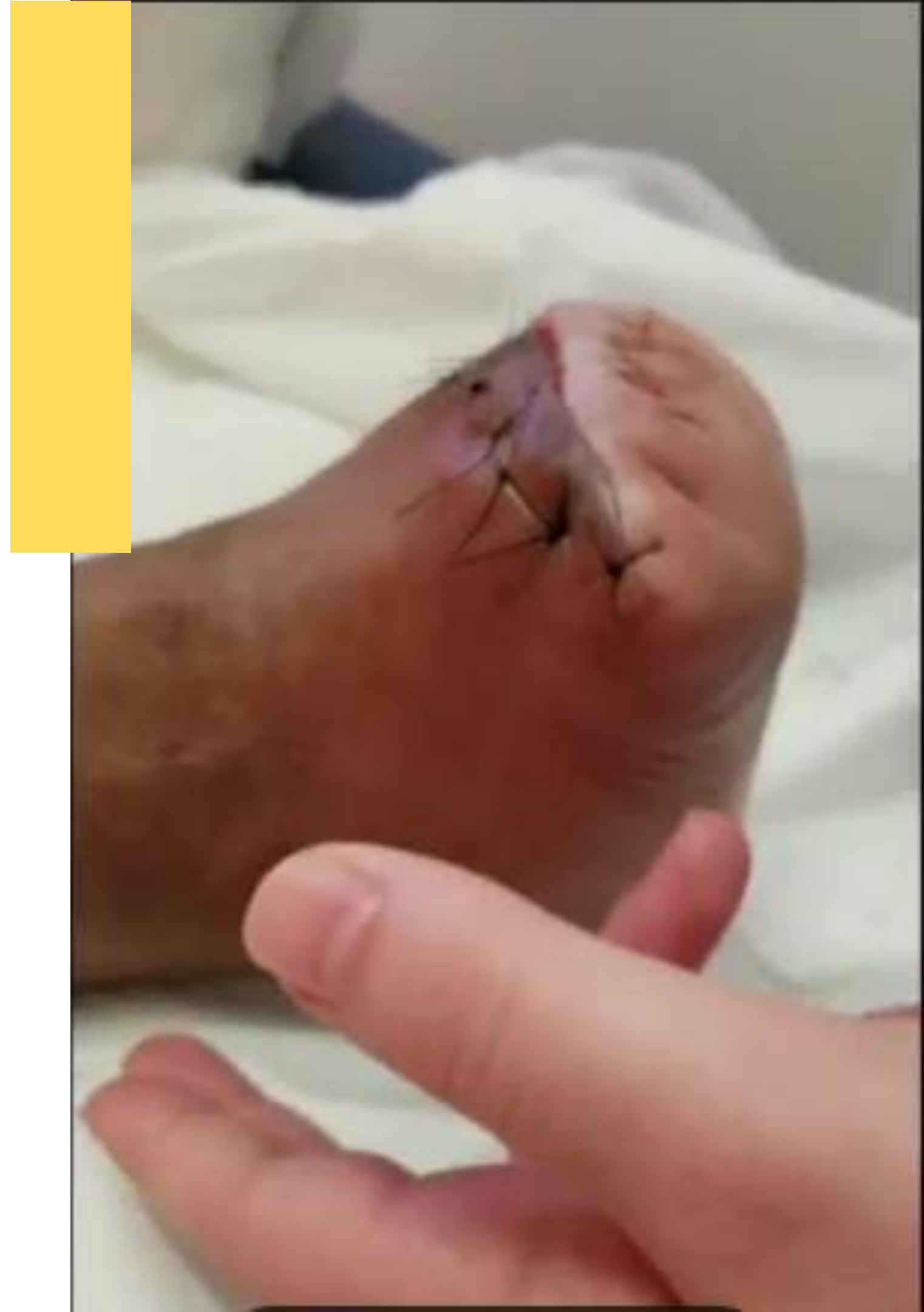
Presenting Complaint: Foot not healing x 5 months

PMH: Type II DM

Laboratory Findings:

HbA1c - 9.6%

CRP - 47 mg/dL



Microvascular

- Diabetic Retinopathy
- Diabetic Nephropathy
- Diabetic Neuropathy

Macrovascular

- Cardiovascular Disease
- Cerebrovascular Disease
- Peripheral Vascular Disease
(Our patient here)



— “ —

"Stories are all around us. We may not recognize them, but they're there - just waiting to be found, shaped and shared".

Rob Biesenbach- Unleash the Power of Storytelling

” —

— “ —

"Case studies are stories that are used as a teaching tool to show the application of a theory or concept to real situations."

Louis Barnes - Teaching and the Case Method

” —

Active

Instructor



Learner

Instructor



Learner

Passive



Benefits of Active Learning

- Risk of student failure is 1.5 X less than passive learning techniques.
- Students have improved performance on exams and assessments (think BOC!)
- Increased classroom Inclusivity



Active Learning Strategies

Reflection (written or verbal)

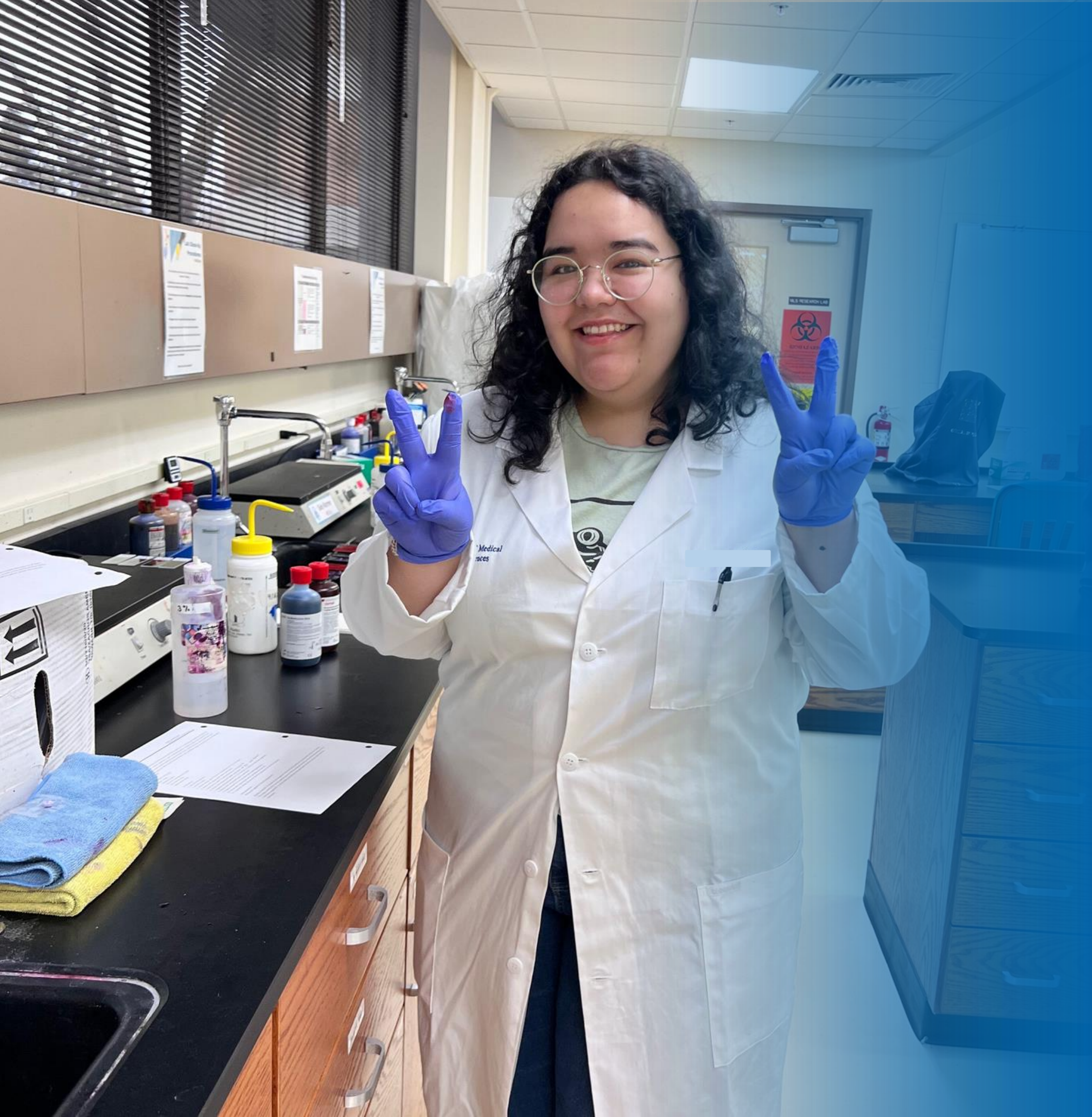
Peer - Quizzing

Experiential Learning (Clinicals)

Debating / Discussions

Games

Case Studies

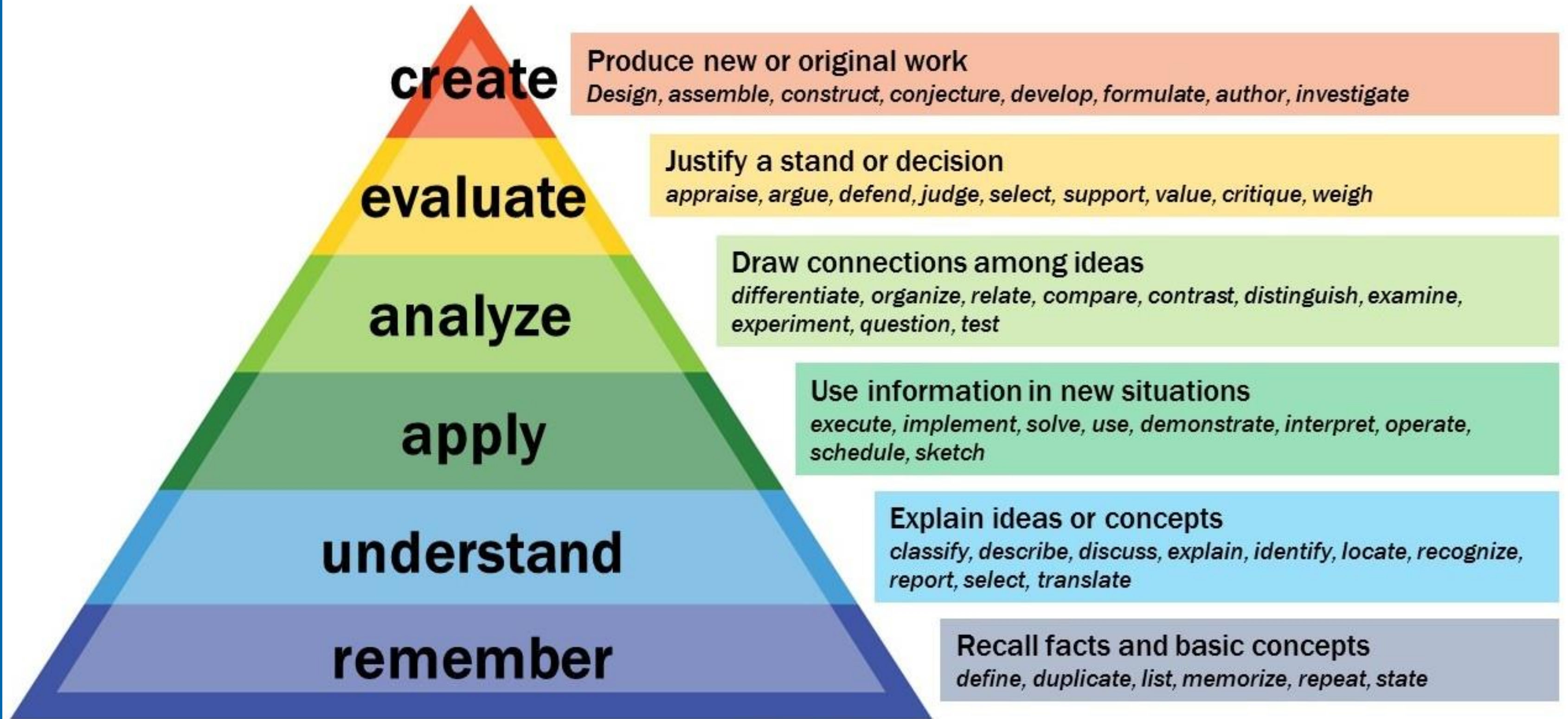


Overcoming Student Resistance

- Emphasize the benefits (we want them to buy-in)
- Give them a free 'out'
- Make some of it low-stakes
- Let them tell you what works and what doesn't



Bloom's Taxonomy



Back to the Case...

Name: O. Mye

Age: 22 years

Sex: Female

Presenting Complaint: Foot not healing x 5 months

PMH: Type II DM

Laboratory Findings:

HbA1c - 9.6%

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Back to the Case...

Name: O. Mye

Age: 22 years

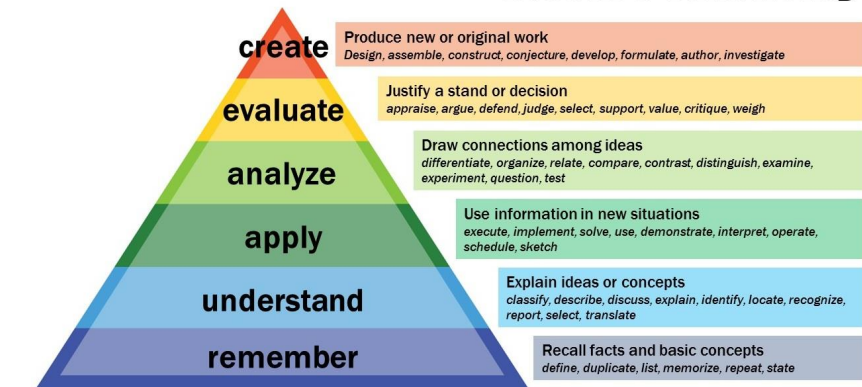
Sex: Female

Presenting Complaint: Foot not healing x 5 months

PMH: Type II DM

Question: Identify any abnormal lab results.

Bloom's Taxonomy

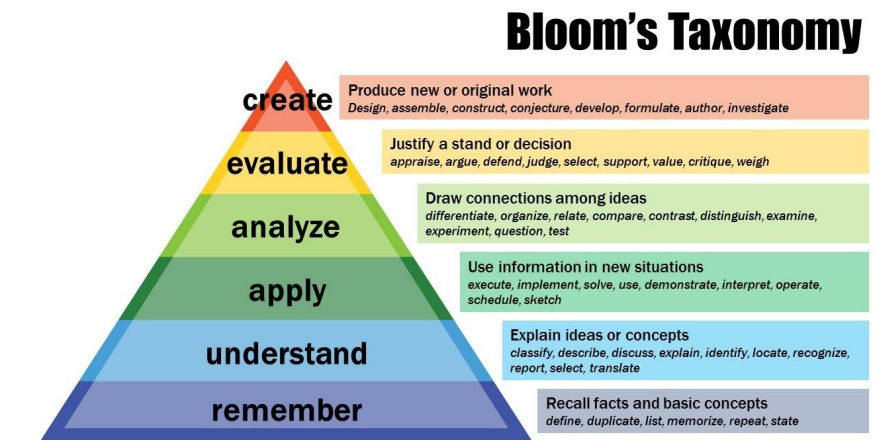


understand

Explain ideas or concepts

classify, describe, discuss, explain, identify, locate, recognize, report, select, translate

Back to the Case...



Question: At the time of follow-up, HbA1c testing was unavailable, which other test can be used to monitor her glycemic control over a period of time?

Question: Before her next follow-up appointment, she re-presents to the emergency room with lethargy, Kussmaul respirations and altered mental status. Lab findings are as follows:

Glucose - 369 mg/dL

Serum ketones - pos

HCO₃⁻ - 14

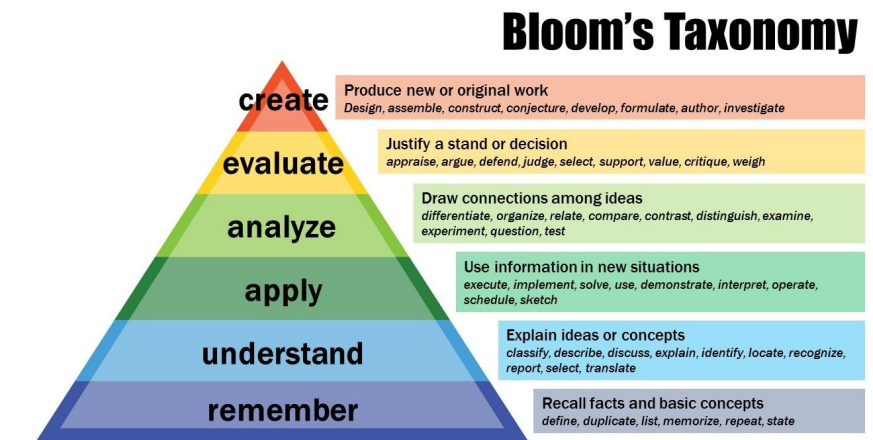
What Is the name of this complication and what is the patient's acid-base status at this time?

apply

Use information in new situations

execute, implement, solve, use, demonstrate, interpret, operate, schedule, sketch

Back to the Case...



Question: Before her next follow-up appointment, she re-presents to the emergency room with lethargy, Kussmaul respirations and altered mental status. Lab findings are as follows:

Glucose - 369 mg/dL

Serum ketones - pos

HCO₃⁻ - 14

Bicarbonate has been provided for you. Complete her ABG by filling in probable results for pH & pCO₂ now, then provide probable results for pH, pCO₂ and HCO₃⁻ for when her body has partially compensated and fully compensated.

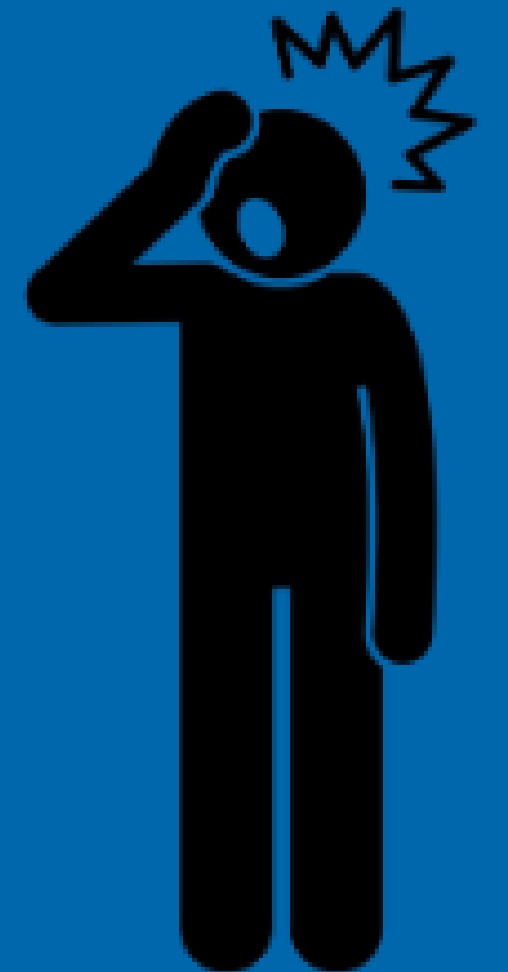


Produce new or original work

Design, assemble, construct, conjecture, develop, formulate, author, investigate

Some Things to Try...

- Bring your cases to life with personalities & continuity.
 - "Joe-the-Tech"
- Mix your case with a game.
 - Escape the Lab
- Russian Roulette



Joe-the-Tech

SALTY SOLUTIONS
Name: Veronica Mars
Age: 62 years
BMI: 32
PMH: Type II DM
Earlier Lab findings:
AST 11/15/22 1:32pm - normal
ALT 11/15/22 1:32pm - normal
T. Bil - normal
D. Bil - normal

SALTY SOLUTIONS
Name: Veronica Mars
Age: 62 years
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Earlier Lab findings:
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SALTY SOLUTIONS
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No Data Connected
HID/SD/DM
Please check the cable connections and the settings
of your source device.
If Press SOURCE on your remote to select
connected source device.



Patient List

Quality Control

Reference Ranges

"I CAN DO HARD THINGS".
A SOCIAL MEDIA PROVERB

"EVERYTHING IS FIGUREOUTABLE".
ANOTHER SOCIAL MEDIA PROVERB

"LOGIC IT OUT".
A MARCIA KILSBY PROVERB

"FOR I CAN DO EVERYTHING THROUGH CHRIST,
WHO GIVES ME STRENGTH".
PHILIPPIANS 4:13



History

Result Entry

Home Page

Veronica Mars

Age: 62 Years
DOB: 1/6/1960
Sex: Female
Address: 65 Pluto Drive,
Earth 12089

LIVER FUNCTION TESTS

RENAL FUNCTION TESTS

GLUCOSE

TUMOR MARKERS

ELECTROPHORESIS

BODY FLUID ANALYSIS



History

Result Entry

Home Page

Veronica Mars

Age: 62 Years
DOB: 1/6/1960
Sex: Female
Address: 65 Pluto Drive,
Earth 12089

LIVER FUNCTION TESTS

DATE: 11/14/22 11:32 AM	DATE: 11/14/22 1:32 PM	DATE: 11/15/22 11:32 AM
AST: 268 IU/L	AST: 240 IU/L	AST: 261 IU/L
ALT: 224 IU/L	ALT: 200 IU/L	ALT: 218 IU/L
GGT: 40 IU/L	GGT: 40 IU/L	GGT: 40 IU/L
ALP: 86 IU/L	ALP: 86 IU/L	ALP: 86 IU/L
Albumin: 3.7 g/dL	Albumin: 3.9 g/dL	Albumin: 3.5 g/dL
T. Bilirubin: 117 <u>umol/L</u>	T. Bilirubin: 119 <u>umol/L</u>	T. Bilirubin: 116 <u>umol/L</u>
D. Bilirubin: 48 <u>umol/L</u>	D. Bilirubin: 44 <u>umol/L</u>	D. Bilirubin: 49 <u>umol/L</u>

Back



History

Result Entry

Home Page

Veronica Mars

Age: 62 Years
DOB: 1/6/1960
Sex: Female
Address: 65 Pluto Drive,
Earth 12089

RESULT ENTRY

Group Members Names:

Results:

Diagnosis:

Cheryl Anne de Guzman, Justin Flores, Isabella Abuqan, Patrick Simatupang, Axel Habimana

Direct Bilirubin: 4.72 mg/dL
Total Bilirubin: 22.8
ALT: 39.2 IU/L

Liver Cirrhosis secondary to Hepatitis C infection mentioned in patient history.

Back



Any Questions?

References:

- Armstrong, P. (2010). Bloom's Taxonomy. Vanderbilt University Center for Teaching. Retrieved 2/12/2023 from <https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/>.
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