

# University of Manitoba PGY2 Ultrasound Curriculum – Learner Guide

## Contents

Summary .....	2
Setting Up Your Phone or Tablet .....	3
Scanning .....	5
Validating Your Scans.....	17
Scanning Outside of the Family Medicine Context or on non-Butterfly IQ devices.....	17
Tips .....	17
AAA Scan .....	17
1 <sup>st</sup> Trimester Obstetrics Scan .....	18
Pulmonary Scan .....	18
Skin and Soft Tissue .....	19

# University of Manitoba PGY2 Ultrasound Curriculum – Learner Guide

## Summary

Welcome to the second-year of the University of Manitoba Ultrasound Curriculum! This year, we will ask you to practice the skills that you learned in your first year in your own clinical context.

Your teaching clinics have been equipped with Butterfly IQ+ devices. These devices plug into your cell phone or tablet with images being transmitted directly to your phone or tablet using the Butterfly app.

Your goal over the course of your PGY2 academic year is to capture 2 determinate images/videos (one in each half of the academic year) for each of our defined competencies outlined in our objectives. These include:

- First Trimester Obstetrical Scan – To identify an intra-uterine pregnancy with fetal pole. Ideally a live intra-uterine pregnancy should be seen with Crown-Rump Length measurement used for pregnancy dating.
  - o *Must confirm criteria for intra-uterine pregnancy including...*
    1. *Bladder-uterine juxtaposition*
    2. *Uterine vaginal continuity*
    3. *Gestational sac*
    4. *Decidual reaction*
    5. *Yolk sac or fetal pole (+/- cardiac activity)*
    6. *Myometrial mantle thickness >1cm*
- Skin and Soft Tissue – Identification of cellulitis or an abscess
  - o *Before performing an I&D it would be prudent to consider if the abscess is a pseudoaneurysm or solid tissue mass. To differentiate this, color doppler is required to assess for blood flow which was not covered in the PGY1 curriculum. Contact your local site lead*
- Aorta Scan for AAA Screening
  - o *A video from subxiphoid space to the aortic bifurcation is preferred*
  - o *If taking images of the aorta, please label them as proximal, middle, or distal aorta. Labels can be applied in the Butterfly app*
- Lung Scan – Ideally, we would like to see identification of B-Lines, a pleural effusion or hepatization indicative of pneumonia.
  - o *Please label left or right lung. Labels can be applied in the Butterfly app*

See the Tips section for more details!

## University of Manitoba PGY2 Ultrasound Curriculum – Learner Guide

Once you have scanned your patient (obtaining appropriate consent), you can save your image or video *without* any identifying data, but you can include clinical context if you deem it relevant. This scan will then be reviewed by a designated ultrasound lead who will mark your scan as “pass” or provide feedback for you on how to better obtain a definitive image.

Your local site lead may arrange for an in-person scanning session using the Butterfly IQ+ or any other point-of-care ultrasound device that can be directly supervised is also strongly encouraged. A supervised in-person determinate scan would also be acceptable.

### Setting Up Your Phone or Tablet

1. Create an account: You will receive an e-mail from one of our program administrators inviting you to ‘University of Manitoba – Family Medicine POCUS’ Butterfly IQ ultrasound group on the Butterfly Cloud. Accept the invitation and setup an account.
2. Attach the cable to your phone or tablet: The majority of the University of Manitoba Butterfly IQ+ devices should come with two cables – a lightening cable for iPhone users and a USB-C for Android and other devices. Please be extremely cautious when removing and storing the cables.

**\*\*NOTE:** Some clinics have indicated that they previously had a device available. Some of these older devices (such as the original Butterfly IQ) may not have a removable cable. If this probe does not belong to the University of Manitoba, please check with the owner prior to attempting to remove the cable.

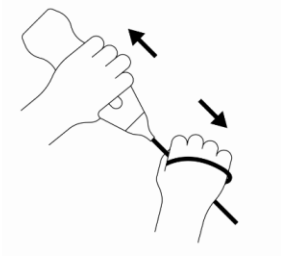
Please see the below image of how to remove and install a new cable:



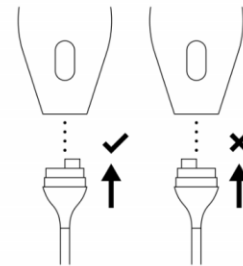
## University of Manitoba PGY2 Ultrasound Curriculum – Learner Guide

### To replace the Butterfly iQ+ cable:

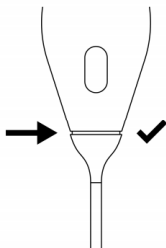
1. Remove the existing cable from the Butterfly iQ+/iQ+ Vet probe. Wrap the probe cable around your wrist while holding the probe firmly in the other hand. Pull the two apart. Do not use tools to grab the strain relief or the cord, as doing so might damage the cable.



2. Align the connector and the probe prior to installation using the diagram below.



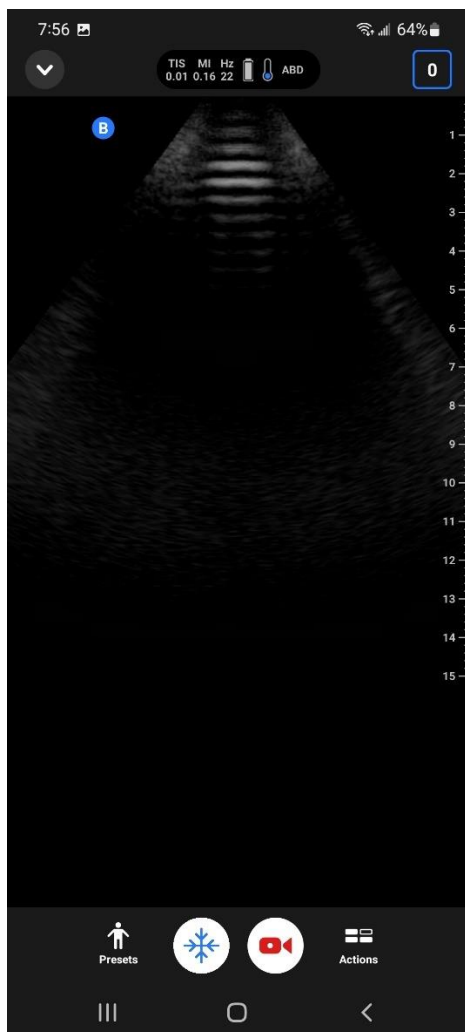
3. Push the cable firmly into the probe body. When the cable is fully installed, it should be expected that there will be a small gap between the strain relief and the probe body.



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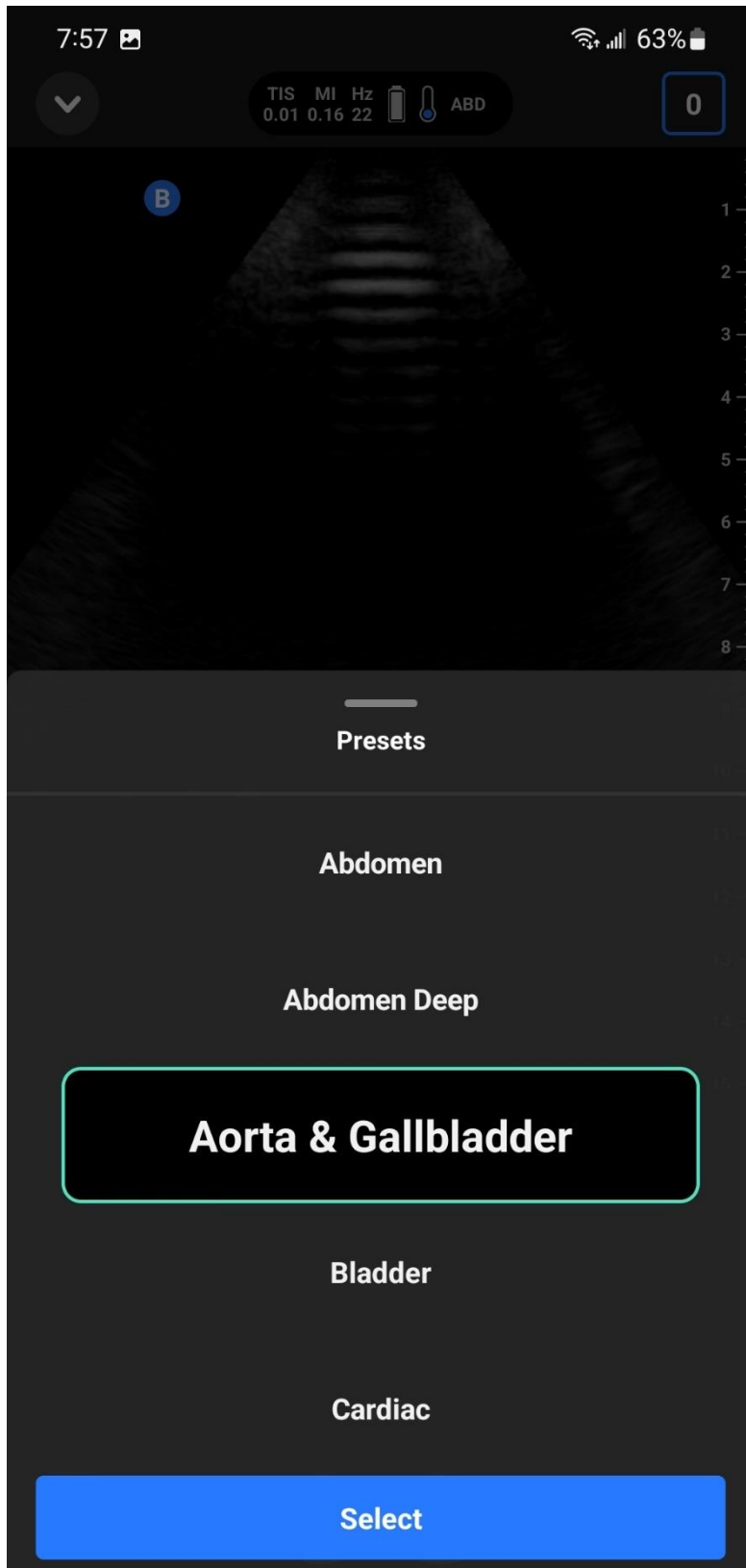
### Scanning

1. Plug in the device: Once you plug in the Butterfly IQ+ device you should see the screen below:



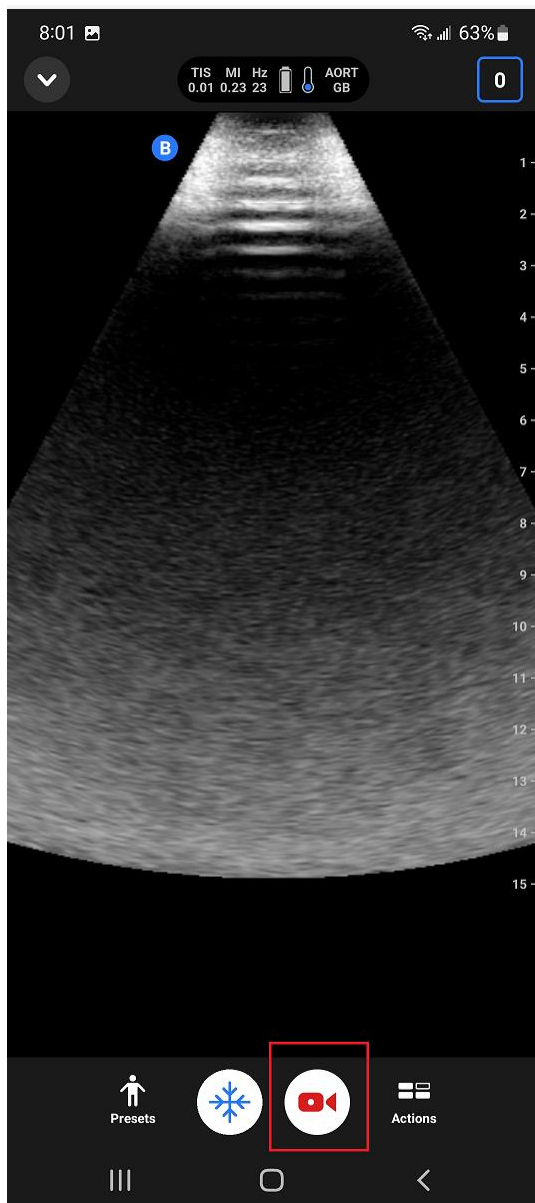
2. Select the appropriate preset – see the example below which would be appropriate for a AAA scan (you will still have to adjust the gain and depth manually).

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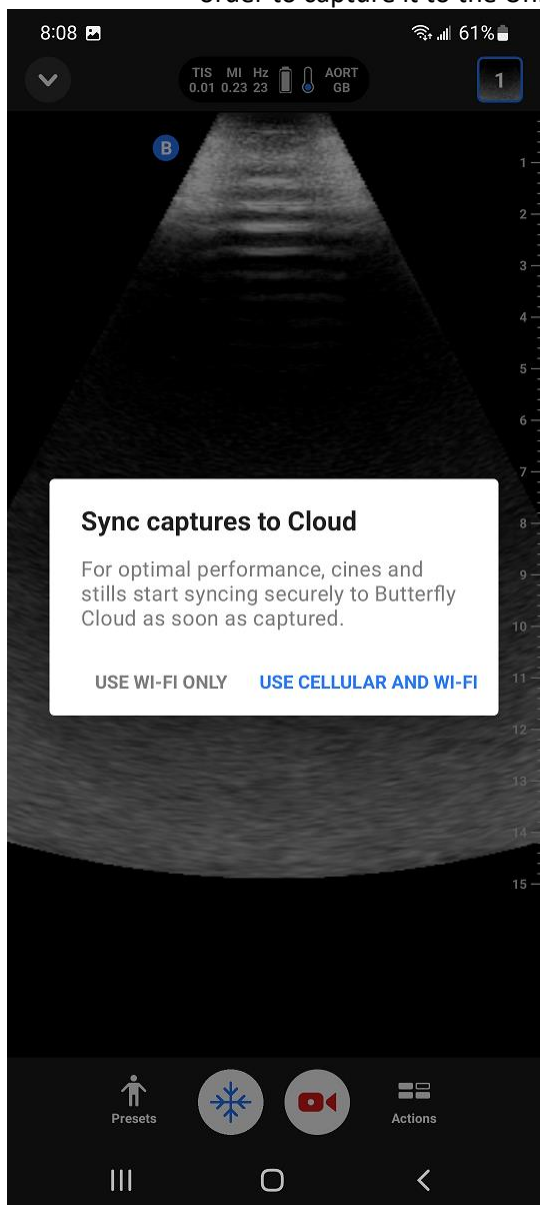
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- Record your scan: You may want to practice the scan a few times before recording the scan. However, once you feel you have a determinate scan, you can either press the round black button on the Butterfly IQ+ probe (found underneath the battery charging icon) to save an image or press the camera button (in red square on image below) to record the scan.



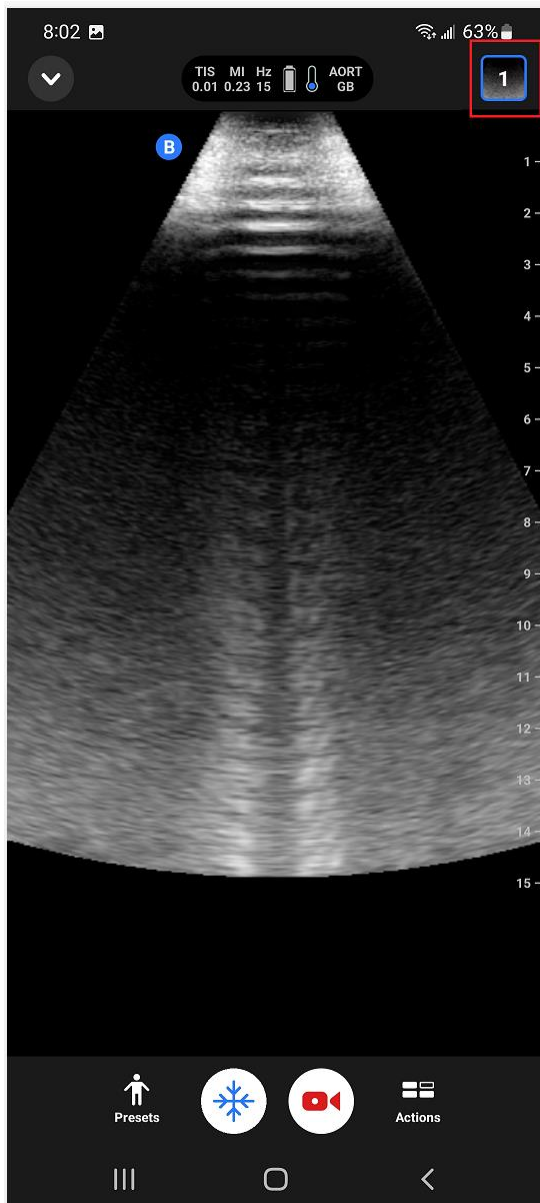
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4. Capture the scan to the cloud:
  - a. Once you've recorded your scan, you will need to access it from the top right corner in order to capture it to the University of Manitoba cloud.





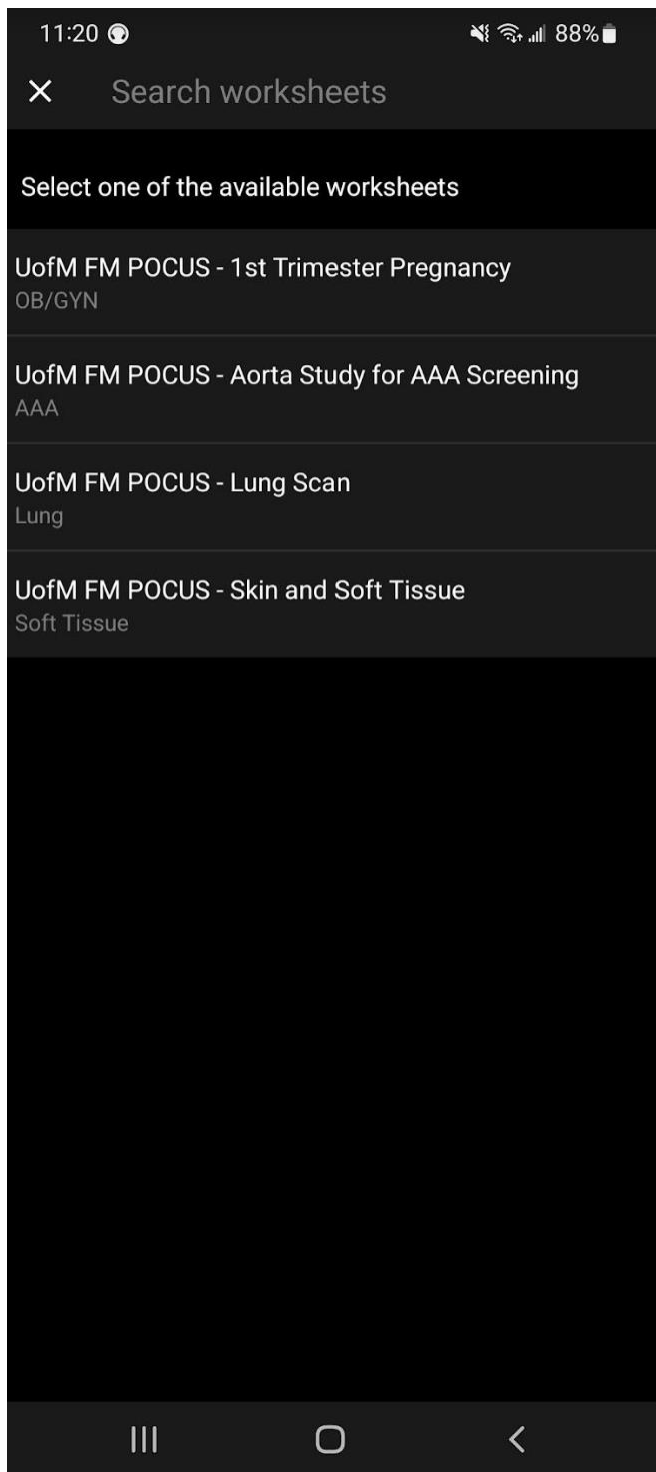
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B) Once you are in your image menu, create an archive for yourself and label it using your full name.

C) You **MUST** select a worksheet in order for a Faculty member to review your image appropriately. Select from the 4 options (AAA, Lung Scan, Skin and Soft Tissue, 1<sup>st</sup> Trimester Pregnancy) and complete the brief worksheet.

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## University of Manitoba PGY2 Ultrasound Curriculum – Learner Guide

- D) In the Notes section, please add any clinical context should you feel that it will help provide us feedback to you.

Your study sheet should look similar to the example below.



## University of Manitoba PGY2 Ultrasound Curriculum – Learner Guide

11:26 88%

← New study

Author AJ Aaron Jattan >

Archive to AJ Aaron Jattan >

**Patient Details** + Add  
No patient details

**Exam Type** + Add  
AAA

**WORKSHEETS** + Add  
UofM FM POCUS - Aorta Study for AAA Screening

**NOTES** Edit  
Periodic health exam  
70 year old male smoker  
Screening AAA scan

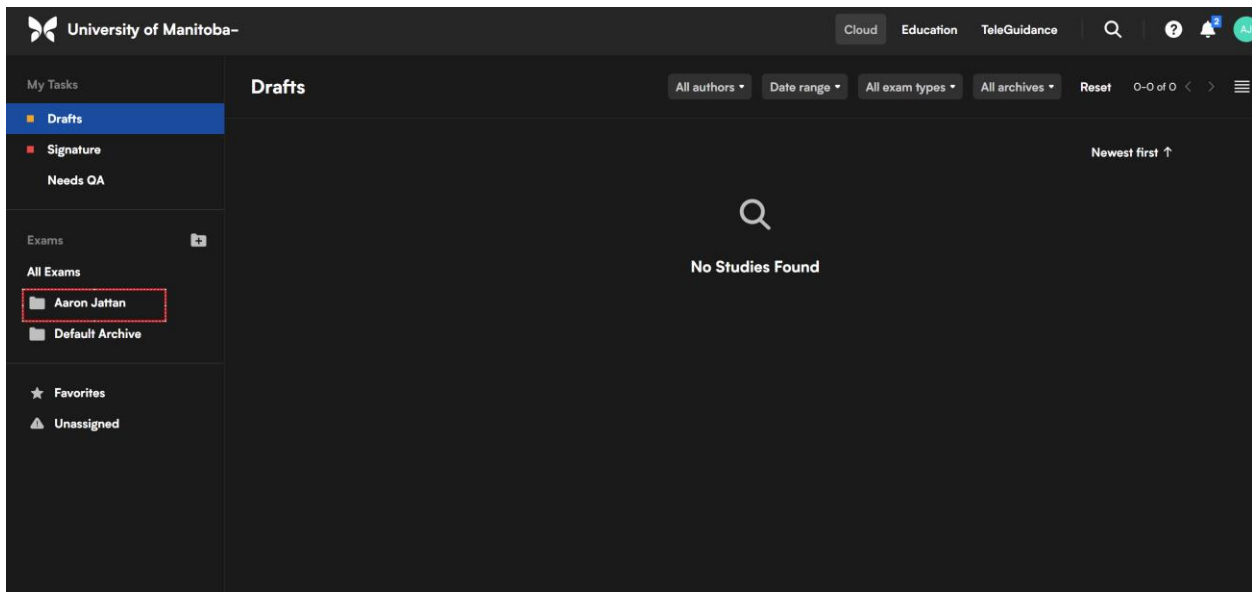
**1 capture** Edit  
Sync complete

Save study...

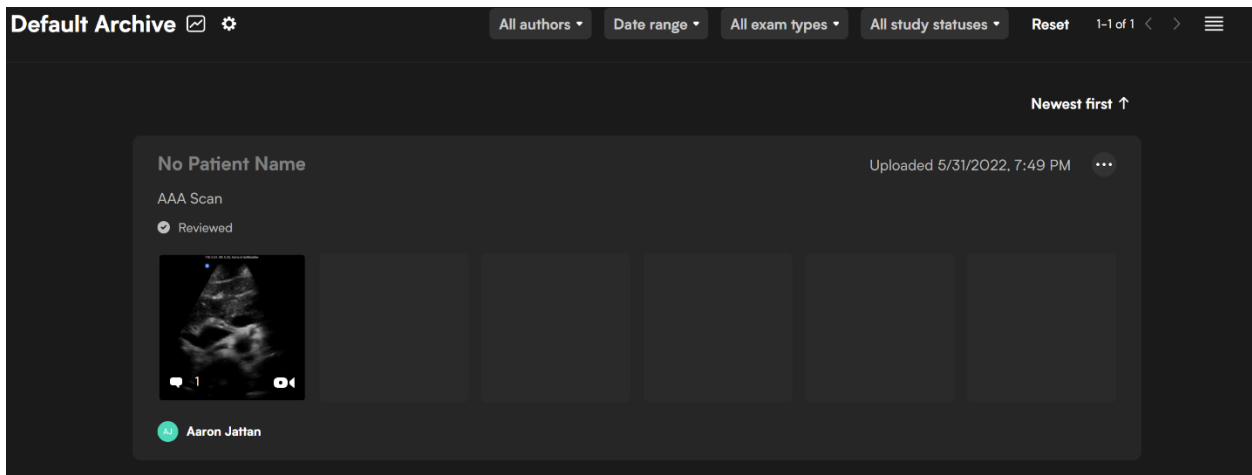
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e. Next click on save study. You **must finalize** the study when provided with the option to either sign as a draft or finalize.

5. Ask for feedback: Login to the Butterfly Cloud on your computer at:
  - a. Click on your name under “All Exams”

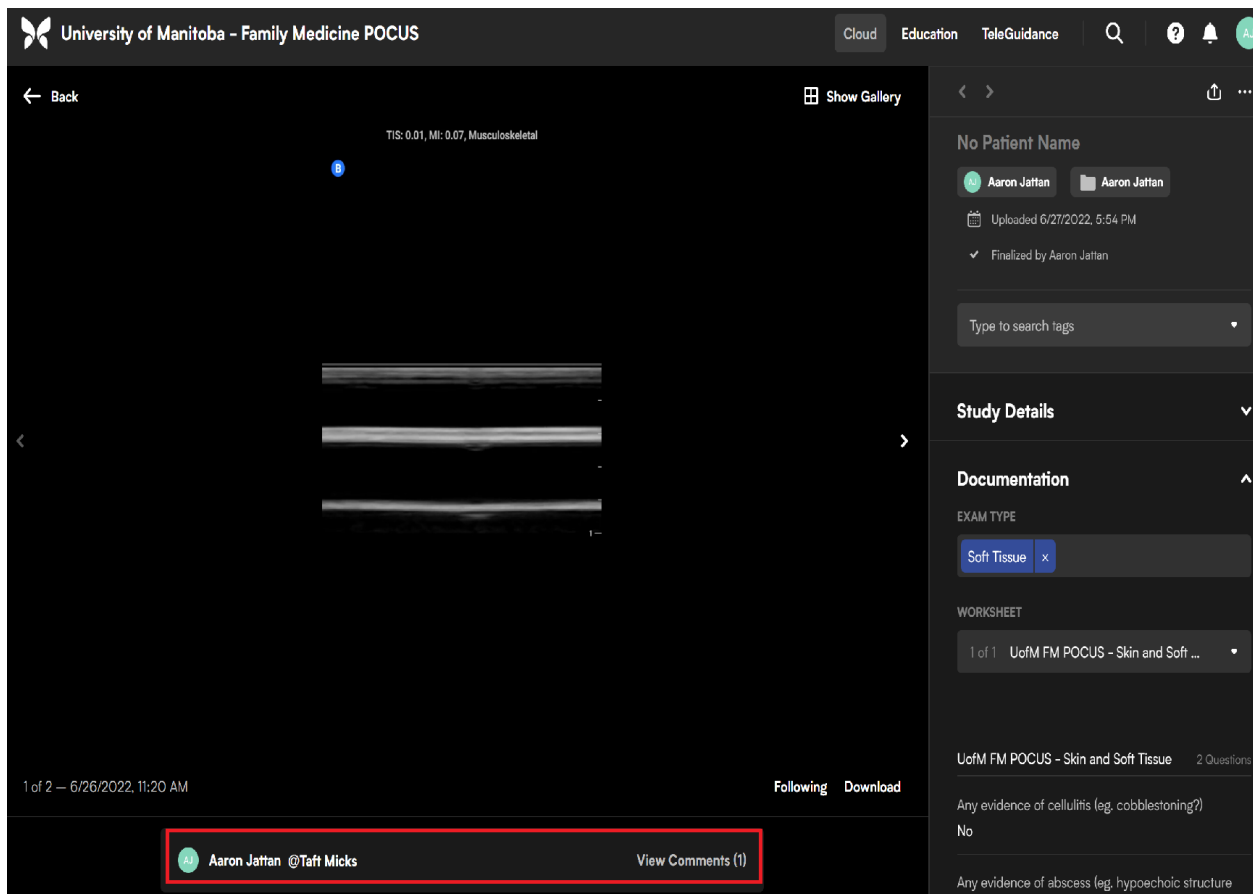


b. Select the capture for which you will be requesting feedback.



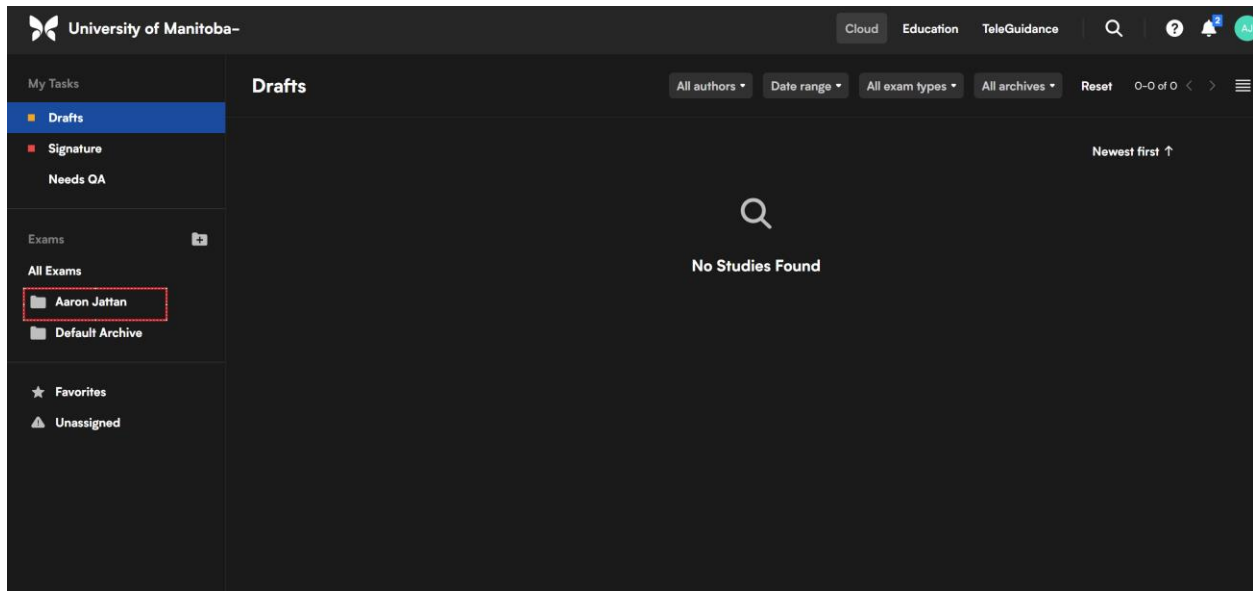
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- c. In the comment section – tag the preceptor who has been designated as your ultrasound site lead. Write @[Name] – see example below.
  - i. NOTE: If you are unsure who this is, contact the Ultrasound Faculty Lead Dr. Alexei Berdnikov (umberdni@myumanitoba.ca).

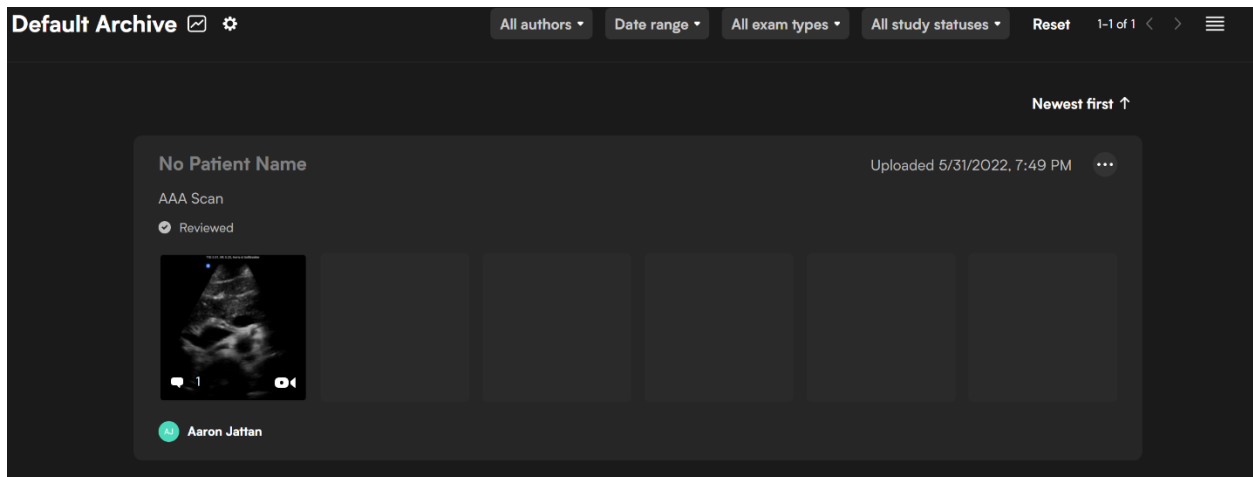


- 6. Review your feedback: You should receive an email notification once your image has been reviewed. You will need to login on your computer to the Butterfly Cloud - <https://cloud.butterflynetwork.com/>.
  - A. Once you're reached the home screen, click on your archived portfolio.

## University of Manitoba PGY2 Ultrasound Curriculum – Learner Guide

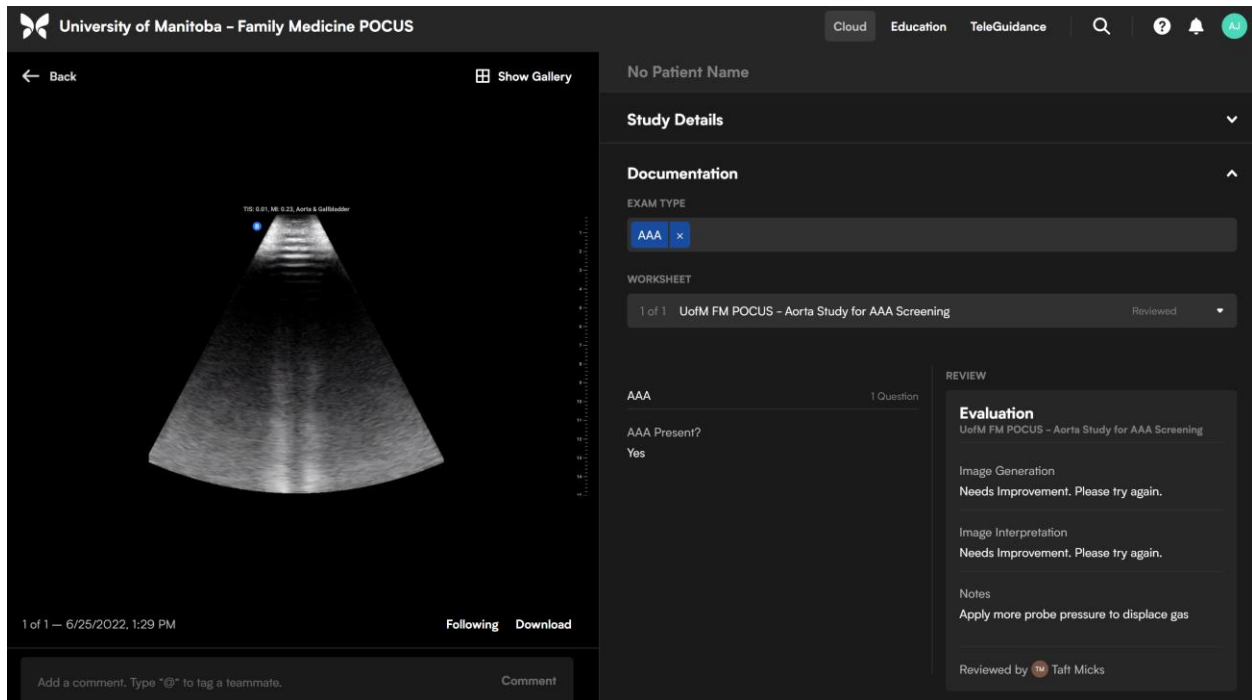


B. You should be able to select your reviewed image from the main screen. See example below.

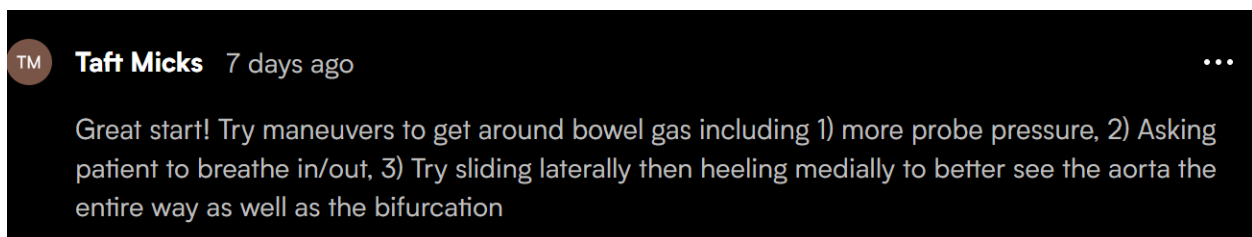


## University of Manitoba PGY2 Ultrasound Curriculum – Learner Guide

- C. Once you have selected your image you should be able to see your review. In the example below, the reviewer marks the scan based on image generation and image interpretation and informs the learner that they will need to try again.



- D. Review comments (if applicable): You can review the comments from your reviewer by selecting them in the bottom left hand corner of this screen. See example below.





# University of Manitoba PGY2 Ultrasound Curriculum – Learner Guide

## Validating Your Scans

In order to keep track of your validated scans, we have created a google spreadsheet at the link here:

<https://docs.google.com/spreadsheets/d/1231puAJKvwTGg6ndEUb7XzkrtY96Ogz/edit?usp=sharing&oid=107653984832891837938&rtpof=true&sd=true>

Click on your name which should be found in a tab at the bottom of the screen. Record your passed and completed scans in order to confirm completion of the required competency.

## Scanning Outside of the Family Medicine Context or on non-Butterfly IQ devices.

- We will accept scans that you have completed on non-Butterfly IQ devices that may be done in other contexts (e.g. emergency department, obstetrical triage) or done through a local POCUS scanning session
- In these cases we ask that you brief your supervisor of the requirement and email the ultrasound faculty lead with your supervisor cc'd indicating which scan you completed under supervision.
- Alternatively, if you are able to record your scan, you can manually send it to the ultrasound faculty lead for review.
- Please indicate this in the excel validation spreadsheet.

## Tips

Below are some tips and tricks to help you complete the required scans. Note that the Butterfly IQ+ platform also has videos under the education tab which you can view.

### AAA Scan

- In this case we are looking for determinate AAA scans from just below the xiphoid to the bifurcation.
- Try to incorporate this scan into your Periodic Health Exams in your family medicine clinic for patients whom screening would be appropriate (e.g. one-time screening for men aged 65-80).
  - o Note that this would NOT count as an official screen.
- If you are unable to conduct this scan as part of a PHE, consider scanning a co-resident and allowing them to scan yourself.



## University of Manitoba PGY2 Ultrasound Curriculum – Learner Guide

For a review on AAA Scanning – watch this Core Ultrasound 5-minute SONO video:

<https://www.coreultrasound.com/aaa/>

### 1<sup>st</sup> Trimester Obstetrics Scan

- In this case, we are looking for you to be scanning the uterus using a transabdominal approach to identify a fetal pole
- Please note, that declaring a live intrauterine pregnancy requires a distinct set of criteria – we are not necessarily looking for you to declare this but rather be able to identify a uterus and a fetal pole (+/- cardiac activity)
- The best time to scan ideally would be a patient attending their first prenatal appointment within the first trimester.
- The scan that you upload should ideally be a longitudinal or sagittal scan. If possible, measure a Crown-Rump Length of the fetal pole for pregnancy dating.

The first video here reviews scanning technique for a 1<sup>st</sup> trimester scan:

<https://www.youtube.com/watch?v=PUADb80zF-k>

The video here from 5-minute SONO will take you through measurement of a CRL:

[https://www.coreultrasound.com/5ms\\_gestational\\_age/](https://www.coreultrasound.com/5ms_gestational_age/)

### Pulmonary Scan

- We will accept a wide array of image captures for this scan.
  - o What is important is sharing with us what the clinical indication for the scan is and your interpretation of the scan in your notes.
- Examples:
  - o CHF: If you are looking to assess for degree of decompensated heart failure, we would want to see you scanning for B-lines from cephalad to caudad to identify B-lines of pulmonary edema and you may see bilateral pleural effusions as well.
  - o Pneumonia: If you are looking for pneumonia, we would want to see you scanning for isolated B-lines, hepatization, and a possible parapneumonic pleural effusion.
  - o Pleural Effusion: If assessing for a pleural effusion, we would want to see a coronal scan visualizing the diaphragm bilaterally.
- Ideally you are performing these scans in family medicine clinic, hospital wards, or emergency department.
- However, we will accept determinate negative scans on your fellow co-residents if needed.

For a review, consider watching the following videos:

<https://www.coreultrasound.com/how-to-perform-a-pulmonary-exam/>

## University of Manitoba PGY2 Ultrasound Curriculum – Learner Guide

<https://www.coreultrasound.com/pneumothorax/>  
<https://www.coreultrasound.com/b-lines/>  
<https://www.coreultrasound.com/pleural-effusions-part-1/>  
<https://www.coreultrasound.com/pleural-effusions-part-2/>  
<https://www.coreultrasound.com/pneumonia/>

### Skin and Soft Tissue

- We will also accept a wide range of image captures for this scan
- Once again, sharing the appropriate indication in the notes and your interpretation is of importance.
- For example, if you are concerned that an area of redness is cellulitis but on examination, you scan what appears to be radiographically normal skin and subcutaneous tissue, this would be acceptable.
- As another example, if a soft tissue mass is of concern for an abscess, a scan that is a definitive negative for an abscess would also be acceptable.

For a review, consider the following video:

<https://www.coreultrasound.com/cellulitis-vs-abscess/>