FUTURE GB – Brainlab Imaging Manual

V1.0 26Oct2021

Contents

BRAINLAB WORKFLOW DIAGRAM

USB or Hospital Internet

INTRAOP - Using the Navigation in Theatre:

1. Acquire Intraop DTI Data Points (ONLY for awake cases or cases with neurophysiology)

2. Record Videos on BK Medical (In 2 Planes).

3. When resection Cavity Wall biopsy - Simultaneous USG picture and acquire MRI/DTI data point

(Video 2)

PRE OP Planning ON BRAINLAB ELEMENTS:
Plan the DTI tracts with Elements Software
(Video 1)

POST OP MRI scan -
Export post op MRI (T1 pre and post contrast).

EXPORT DATA TO QUENTRY:

QUENTRY CLOUD SERVICES
The cloud service for healthcare professionals.
BRAINLAB

1. Pre Op T1 contrast with DTI Planned

2. Intra Op Imaging: DTI screenshots and US Videos

3. Post Op MRI

(PDF)

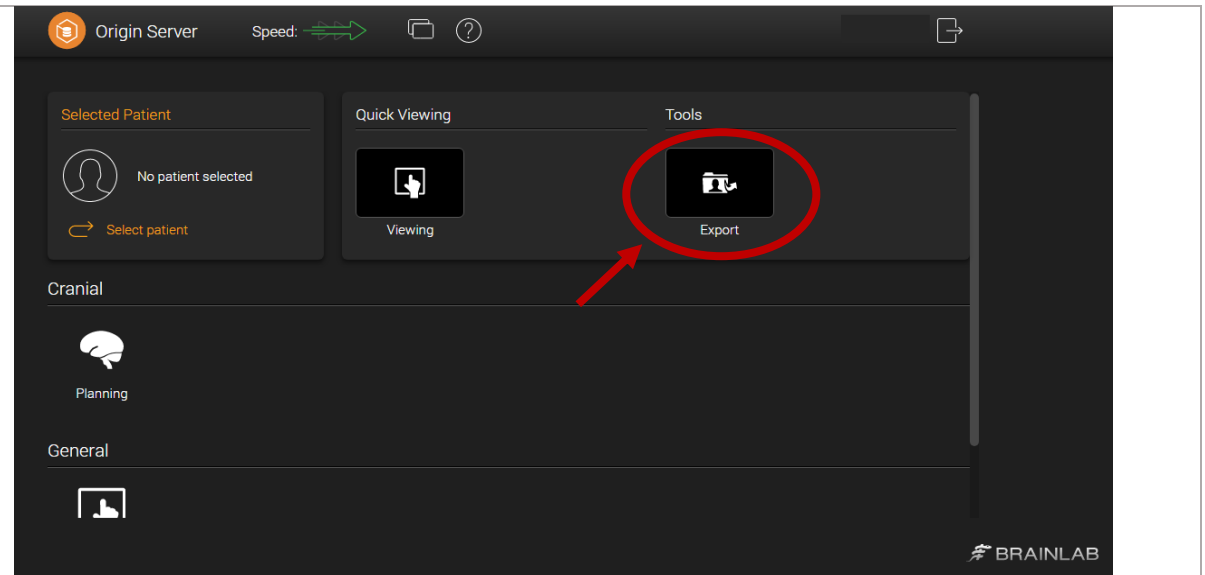# UPLOADING PRE-OPERATIVE MRI WITH DTI TRACTS PLANNED FROM ELEMENTS TO QUENTRY

1. Open Brainlab elements (using connection to hospital internet) & complete tractography making sure to plan & label all the tracts:
   - Corticospinal
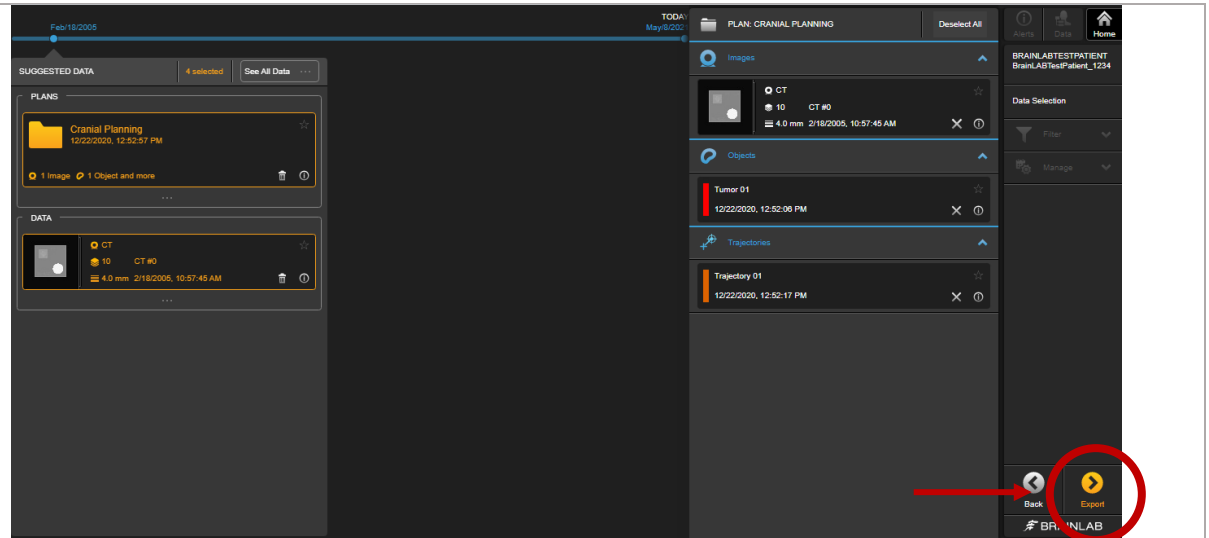   - Optic
   - SLF
   - IFOF
   - ILF
2. Save your session
3. Follow the instructions below to export images to Quentry
4. Click on **Export**

5. Select and highlight all the images and objects you wish to export and click (if you select your planning session that you saved it will automatically highlight all the sequences used to complete this) on **Export** (bottom right-hand corner)
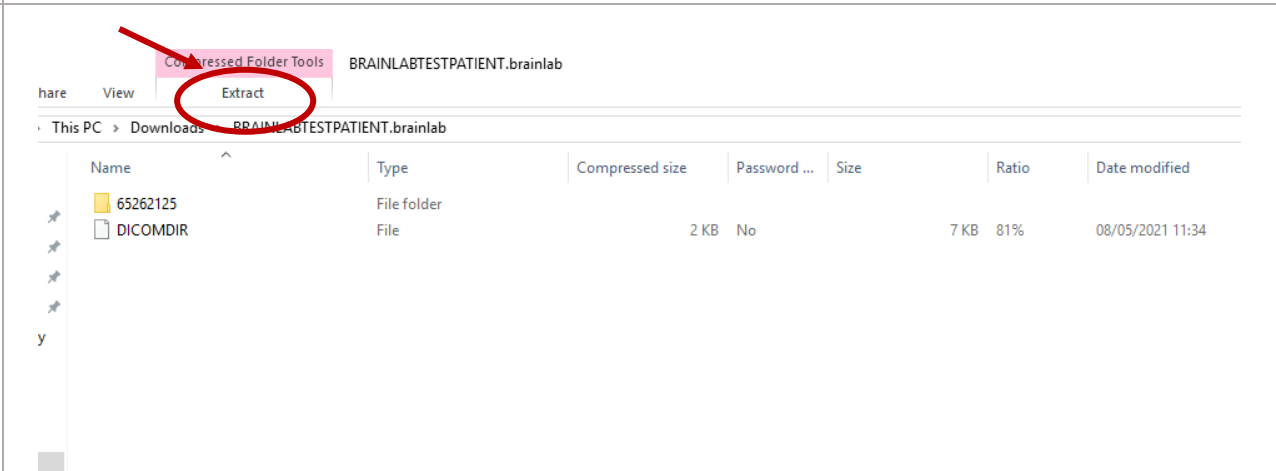

6. Select **Download to Client** (you do not need to anonymize at this point)
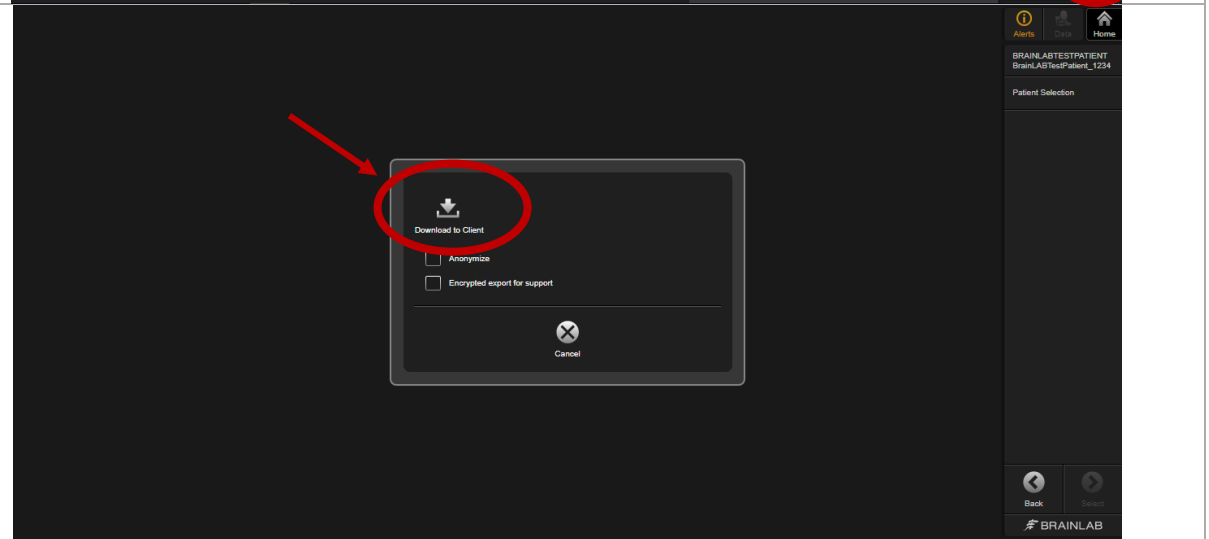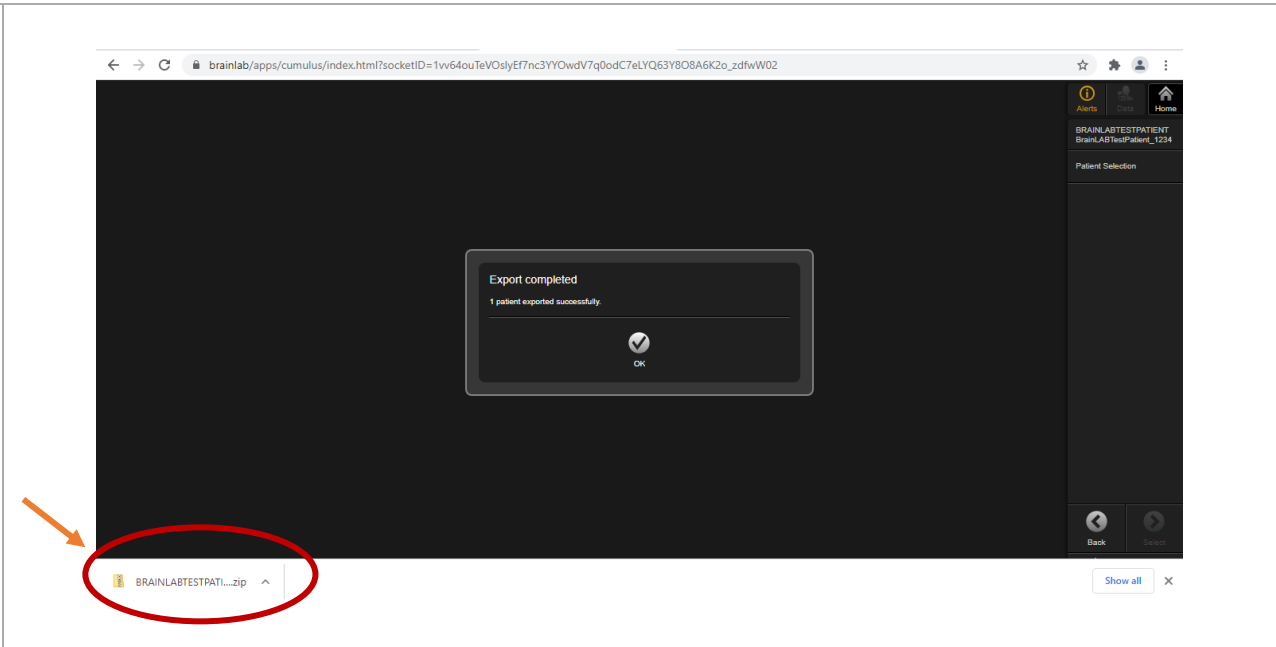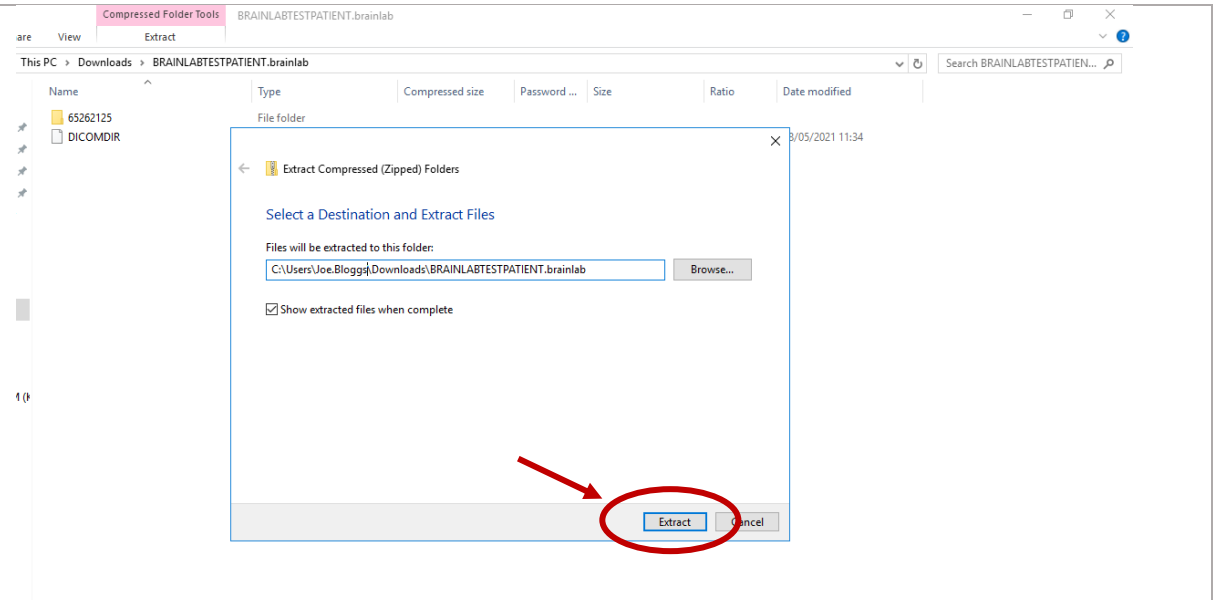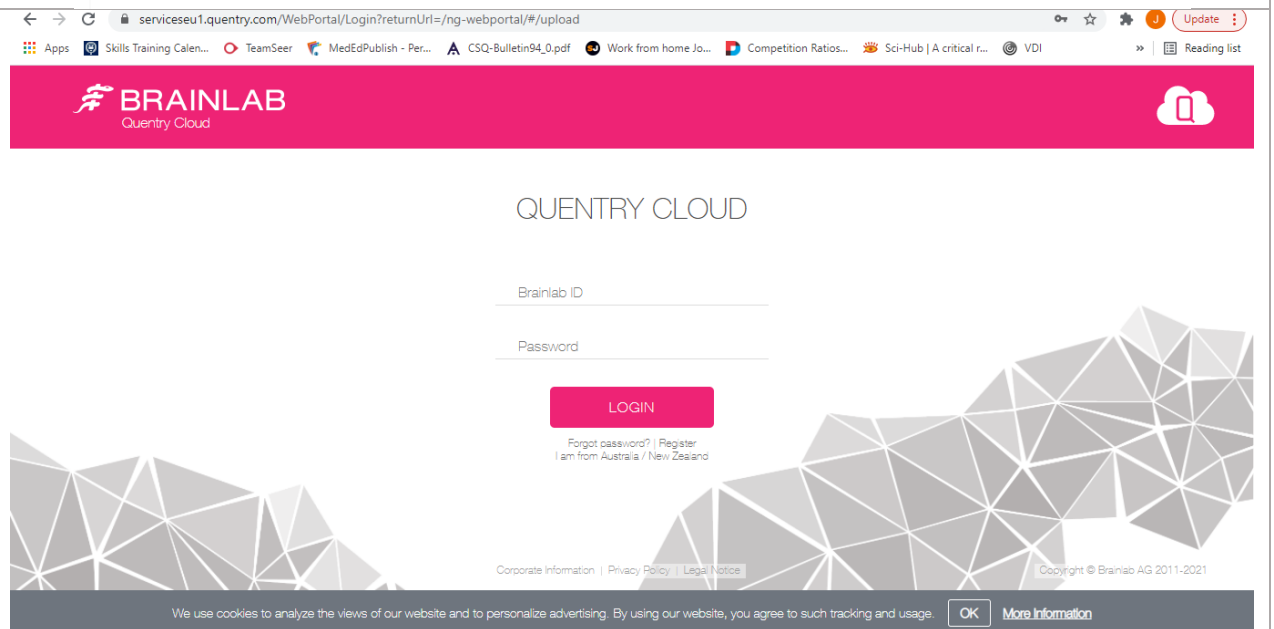
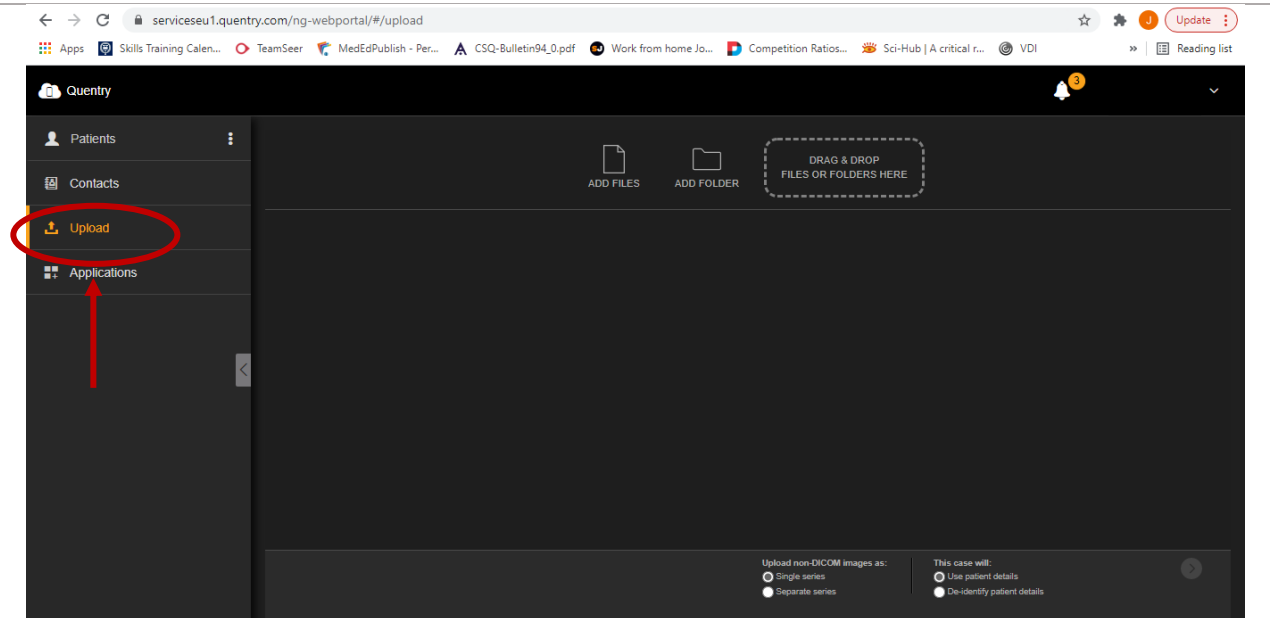| 7. Open the downloaded zip file	
8. Click on **Extract** along the top bar and then **Extract All**	

9. Click on **Extract** and a folder with the unzipped files will appear
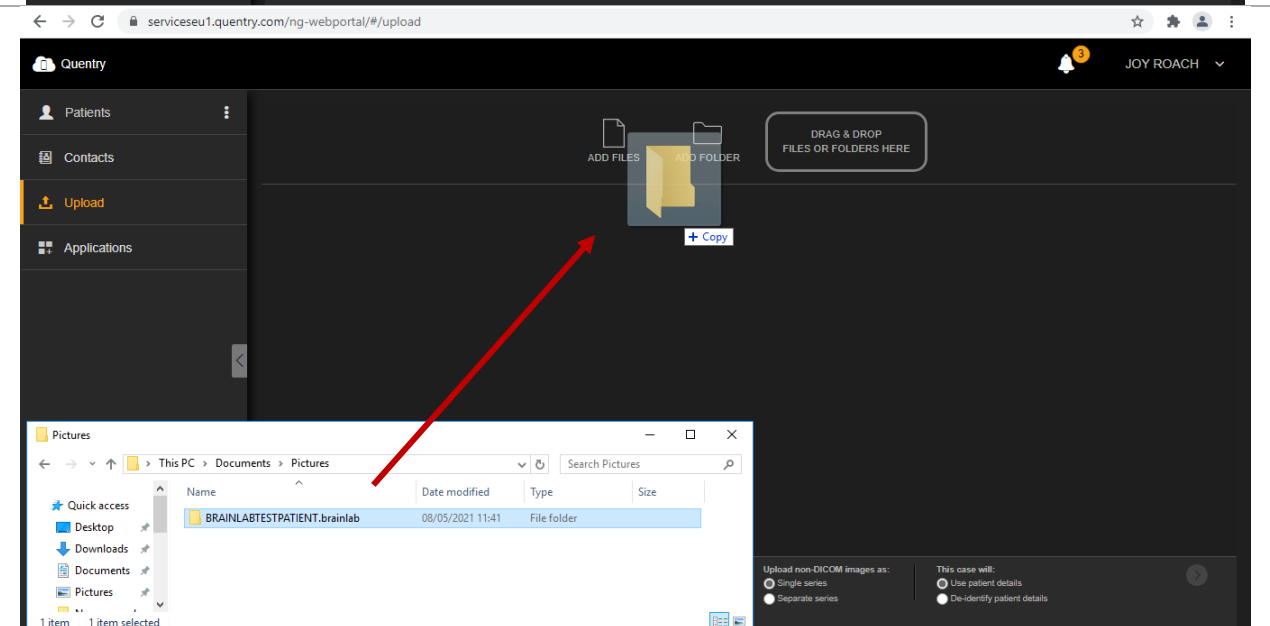

10. Open Quentry webpage and login to your Quentry Cloud account
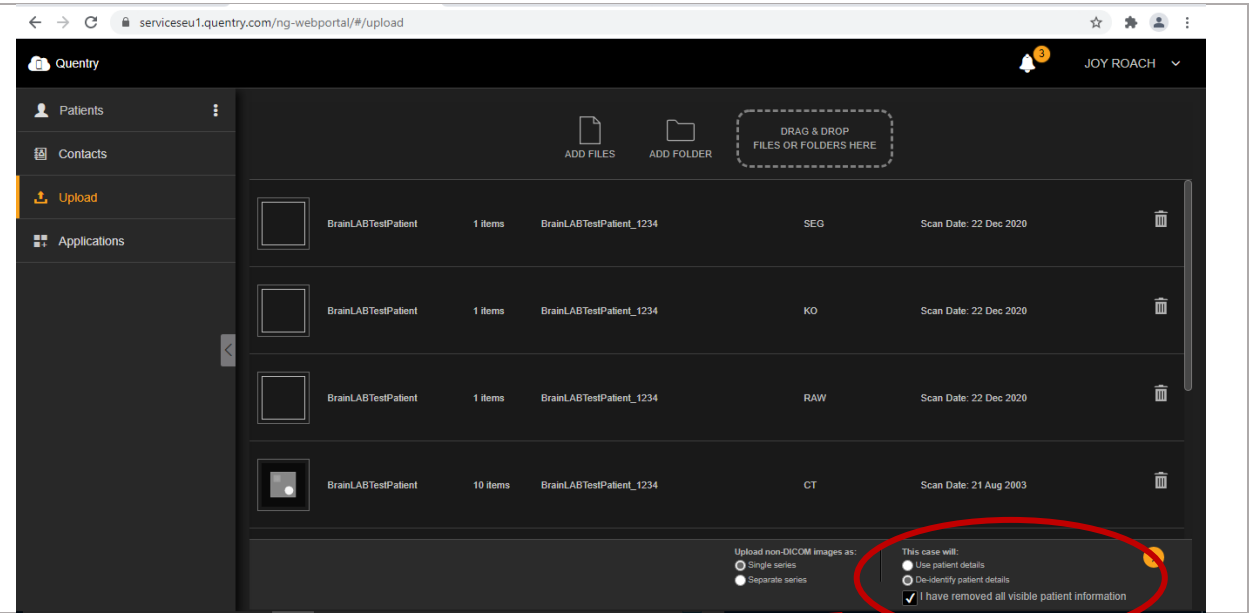
11. Select **Upload** on the left-hand side

12. Drag the downloaded unzipped folder onto the bar where it says **'Drag & Drop'**

13. Select '**De-identify patient details**' and tick the box 'I have removed all visible patient information before selecting the arrow to move to the next page

14. Select New Patient Folder (if no images uploaded for this patient before) and upload to your local FUTURE-GB site

15. Please use Study ID generated by REDCap on registration for patient name and ID. This will be in the format: **FGBI-ABC-1001**

16. Use 01.01.2000 as the DOB (Not the patients actual DOB)

17. Tick that you have the patient consent and select **Finish and Upload** to move on.
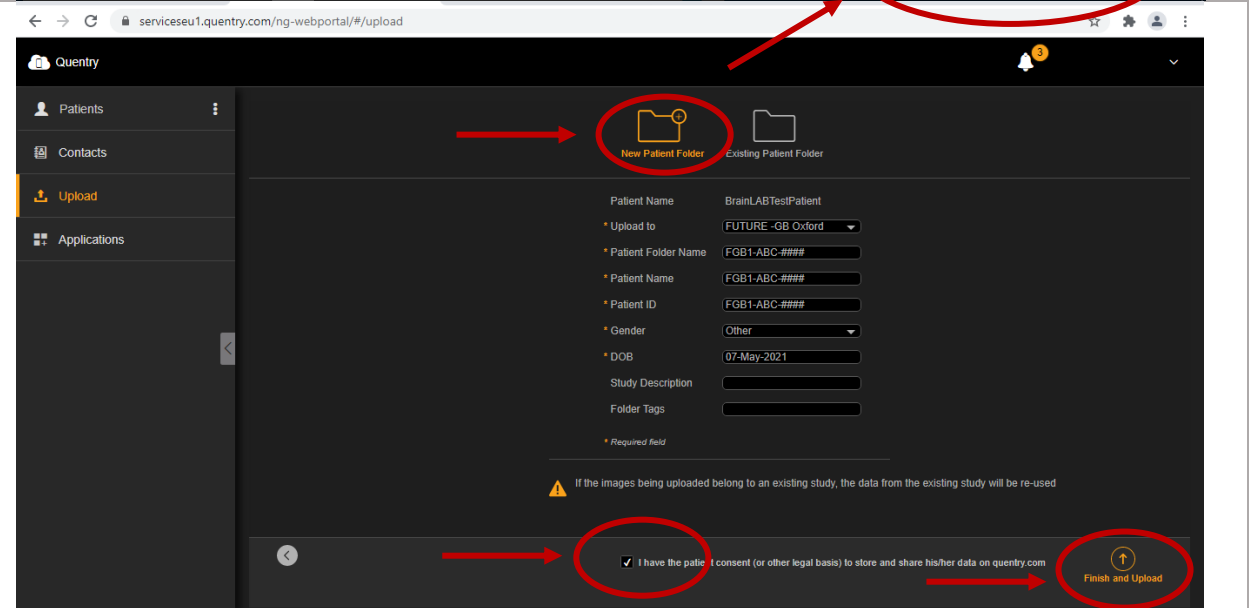
INTRA OPERATIVE

RECORDING INTRA OPERATIVE DTI DATA POINTS (ONLY AWAKE OR NEUROPHYSIOLOGY CASES)

*For patients operated **awake with subcortical stimulation**:*

- Record every site where subcortical *stimulation of DTI tract caused a response*, using the neuronavigation pointer to indicate where the response was seen, and clicking on "**Acquire**" on neuronavigation screen side-bar

- For every point recorded, give it a name, by clicking on "Data", selecting the point just captured (under Objects section), and using a standard naming format: "[method]_[tract]_[finding]_[setting]" (e.g. "stim_CST_positive_5mA).

- If a DTI tract was expected anatomically, but *repeated stimulation does not identify the tract*, use the pointer to identify the location where the tract was expected, capture this location as above, and label this "[method]_[tract]_neg_[maximum stimulation tested]"; for example "stim_ILF_neg_4ma".

For patients operated *awake and behavioural change seen without subcortical stimulation*

- Record DTI tract site where a relevant (resection-related) behavioural change was seen.

- Name point recorded, for example "[method]_[general behaviour affected]_[detail of change]", e.g. "behaviour_motor_Lhandweakness" or "behaviour_speech_arrest"

**For patients operated with *electrophysiological monitoring*:**

- Record anatomical subcortical location where physiological monitoring (e.g. MEP/SSEP/EMG/VEP) identified the corticospinal tract / optic radiation.

- Name every point e.g. "[method]_[response seen]_[finding]_[setting]", e.g. "MEP_leftleg_positive_5mA.

- When a *DTI tract was expected but not found with intraoperative electrophysiology*, capture the location where the tract was expected, and label this as "[method]_[tract]_neg_[maximum stimulation tested]; e.g. MEP_CST_neg_6mA

*For patients **where Tumour resection cavity wall biopsies taken***:

- Record simultaneous USG wall biopsy site and "acquire" point on navigation system.
- Name biopsy site as *"StudyID_Fluorescent negative_US Biopsy"*.

ACQUIRING INTRA OPERATIVE DTI DATA POINTS

- ONLY AWAKE OR NEUROPHYSIOLOGY CASES and
- Where you take tumour resection cavity wall Biopsies (simultaneous with USG picture).

1. On navigation screen, touch "**Acquire**" to mark locations of interest (stimulation/electrophysiological or behavioural change during surgery)
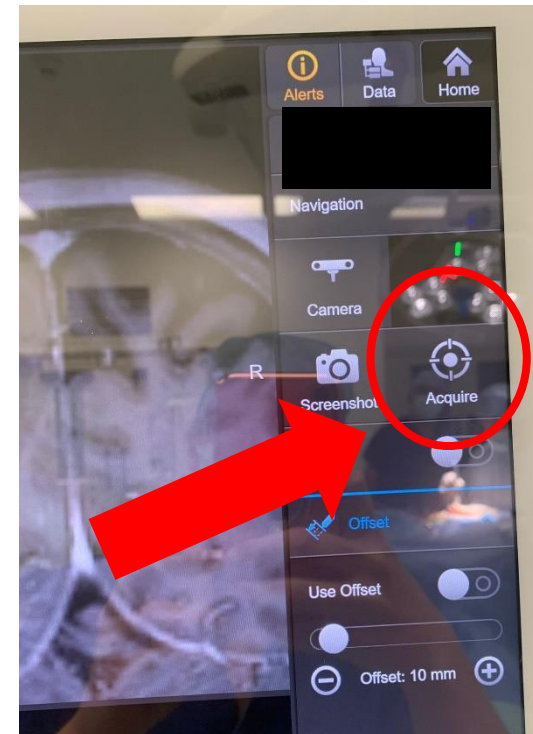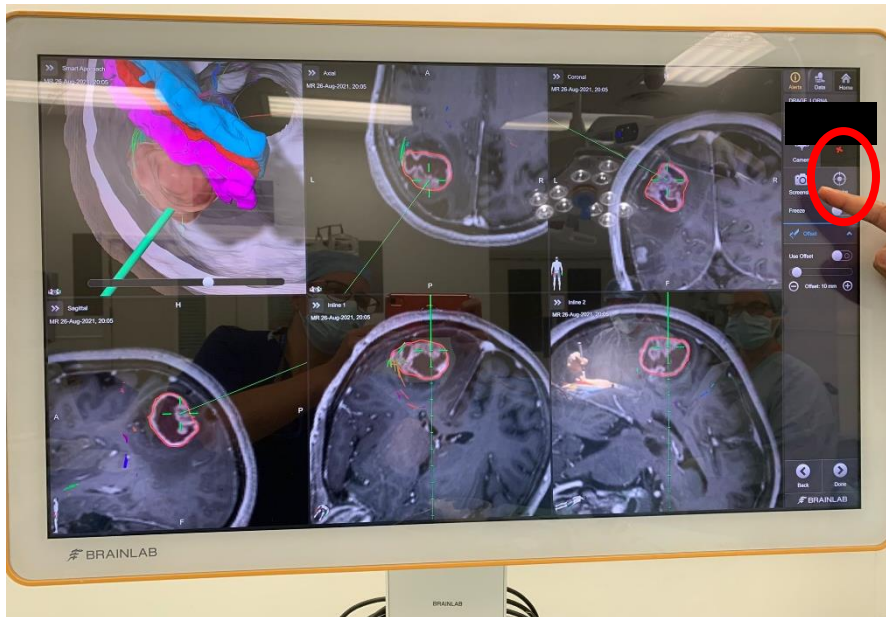
2. Name each object captured. To do this touch "Data" at the top right of the screen then scroll down to "Points" and expand by touching the arrow. Touch inside the name box, delete the default name and name the object in the format [METHOD]_[TRACT]_[SETTING]_[FINDING]. Repeat for all objects

STIM-CST-4MA-POS
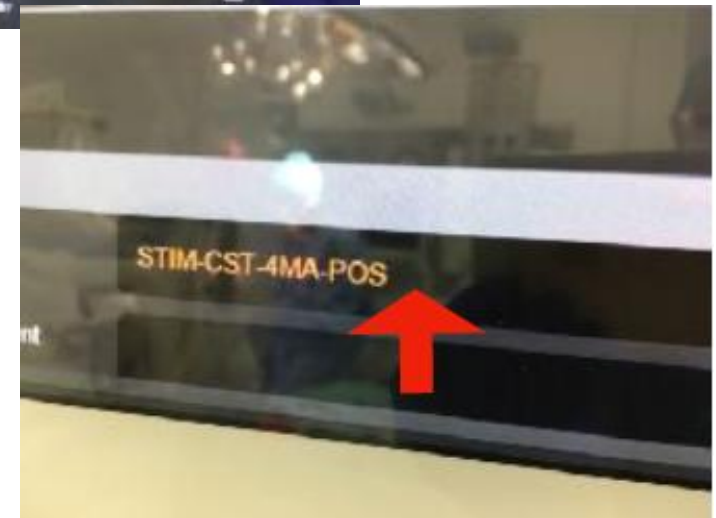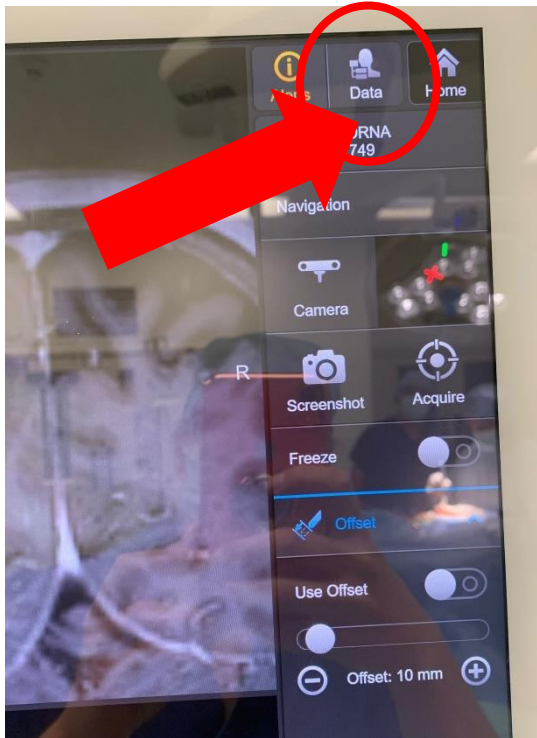
UPLOADING INTRA OPERATIVE DTI DATA POINTS TO QUENTRY

1. Open Brainlab elements and click on **Export**	
2. Search and highlight the patient and click on **Select** (bottom right-hand corner)	
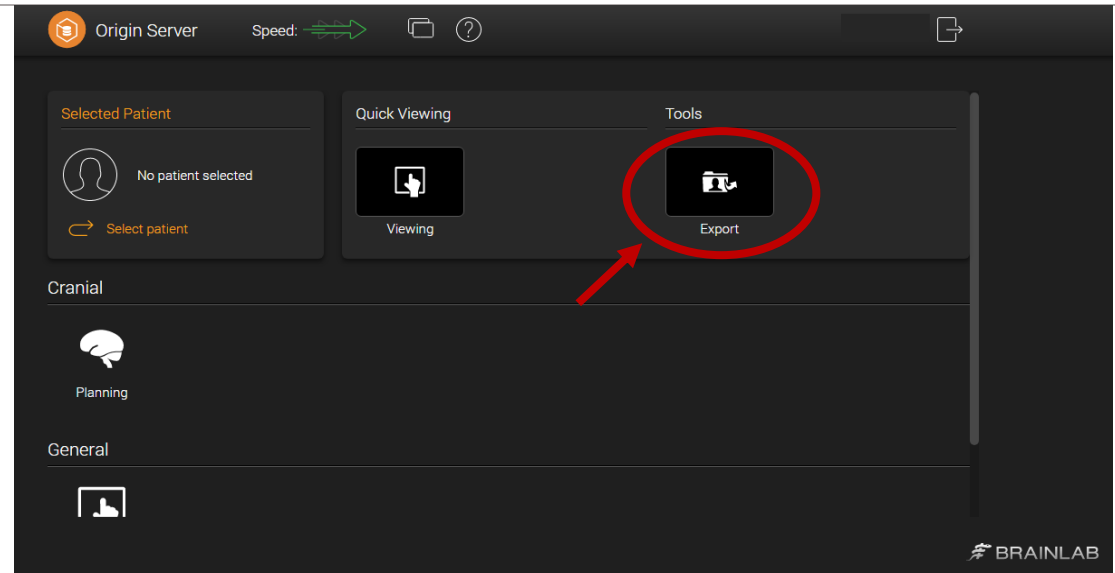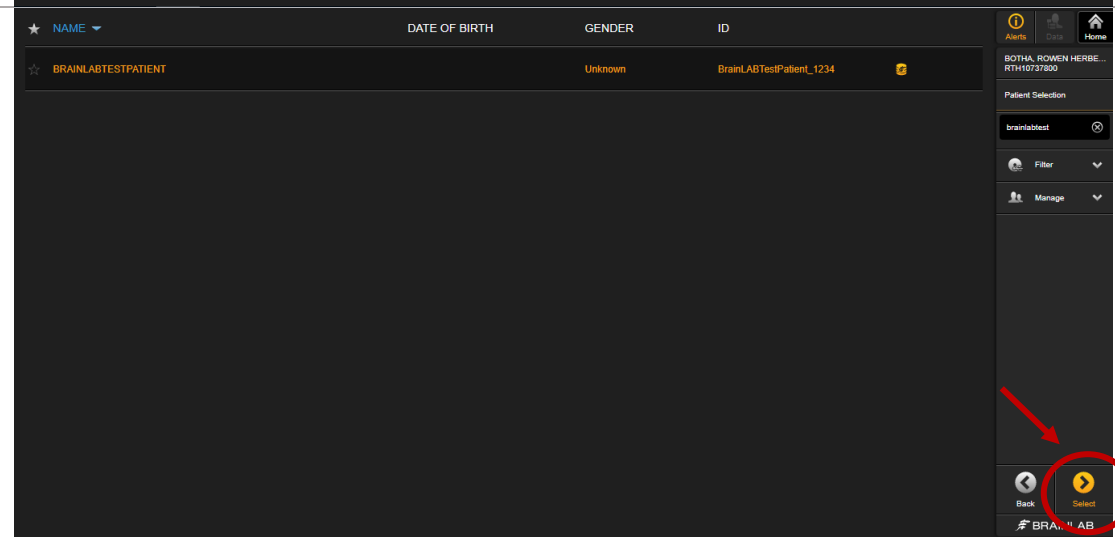
3. Select and highlight all the snapshots and objects you wish to export and click on **Export** (bottom right-hand corner)
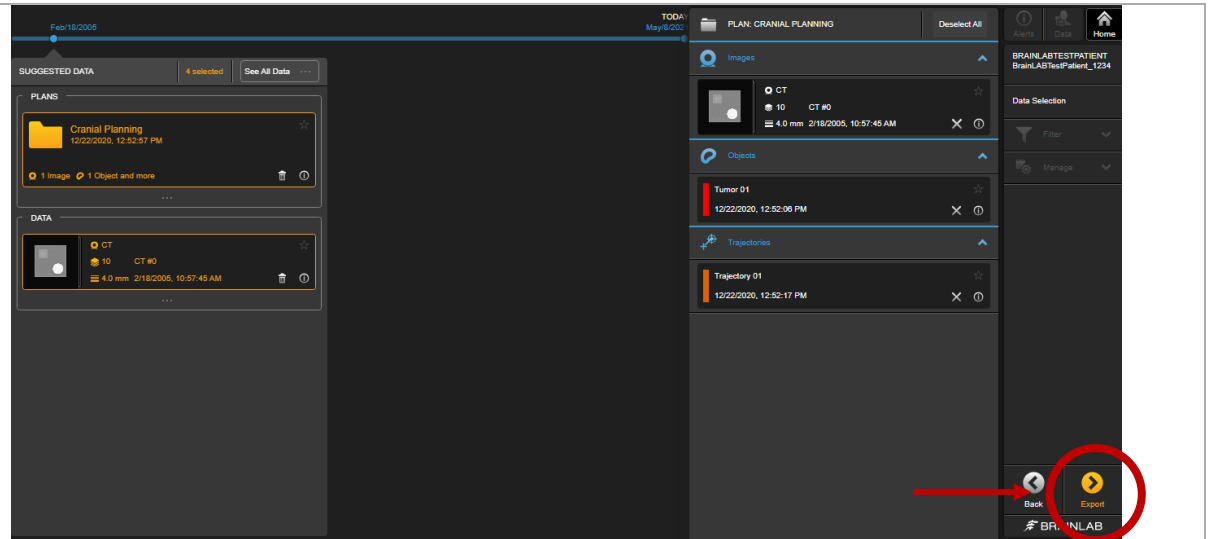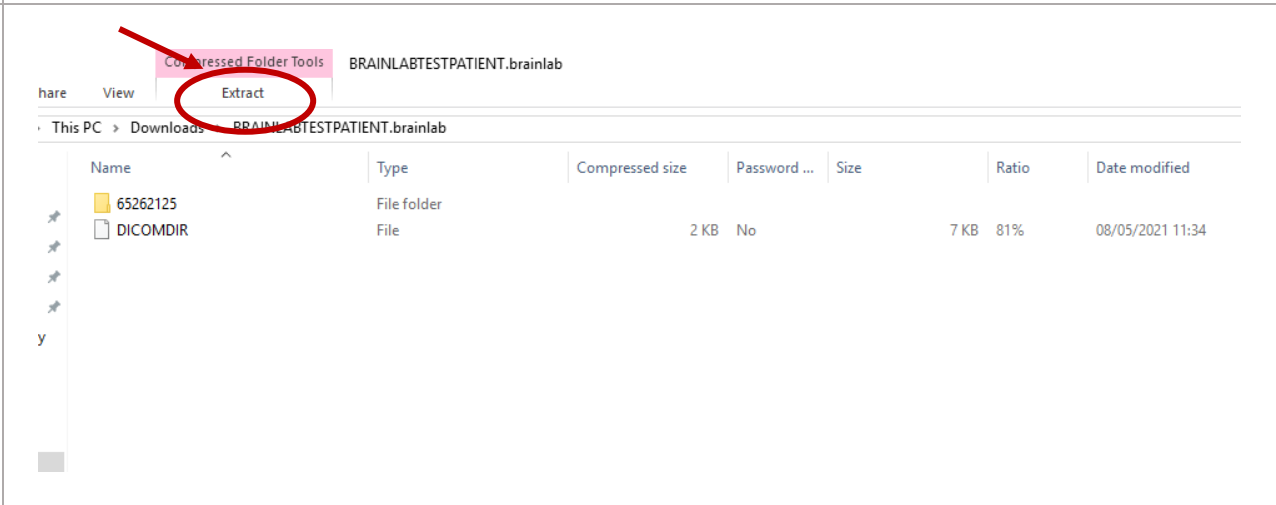

4. Select **Download to Client** (you do not need to anonymize at this point)
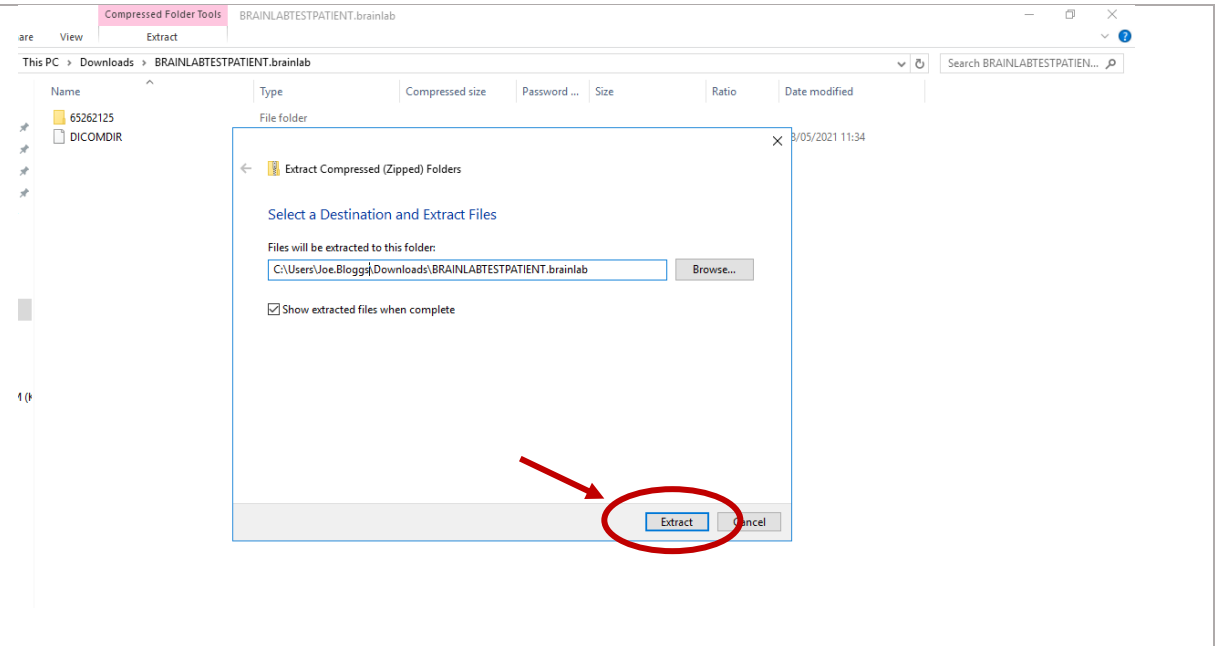
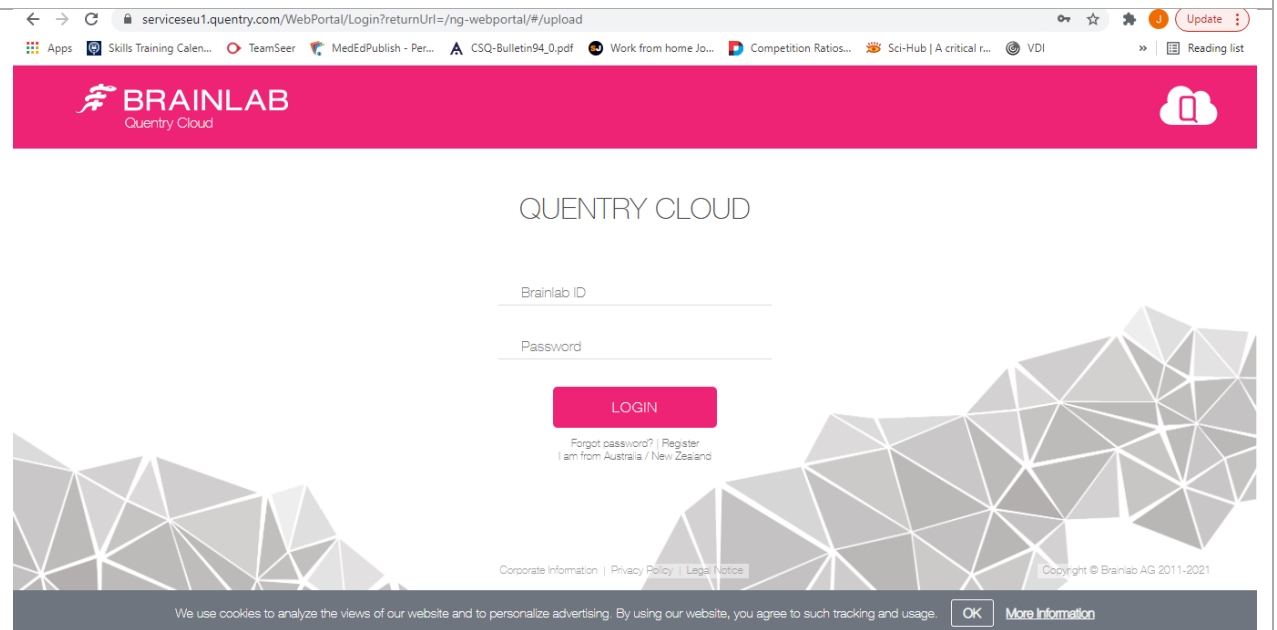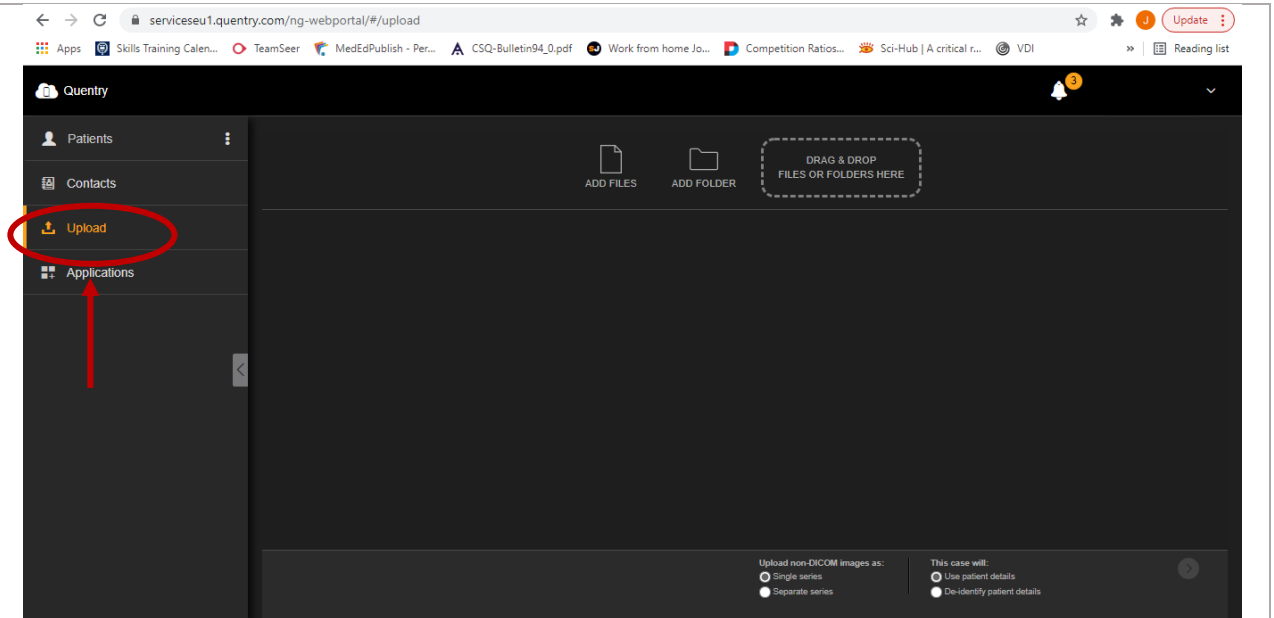|	
5. Open the downloaded zip file	
6. Click on **Extract** along the top bar and then **Extract All**	

7. Click on **Extract** and a folder with the unzipped files will appear
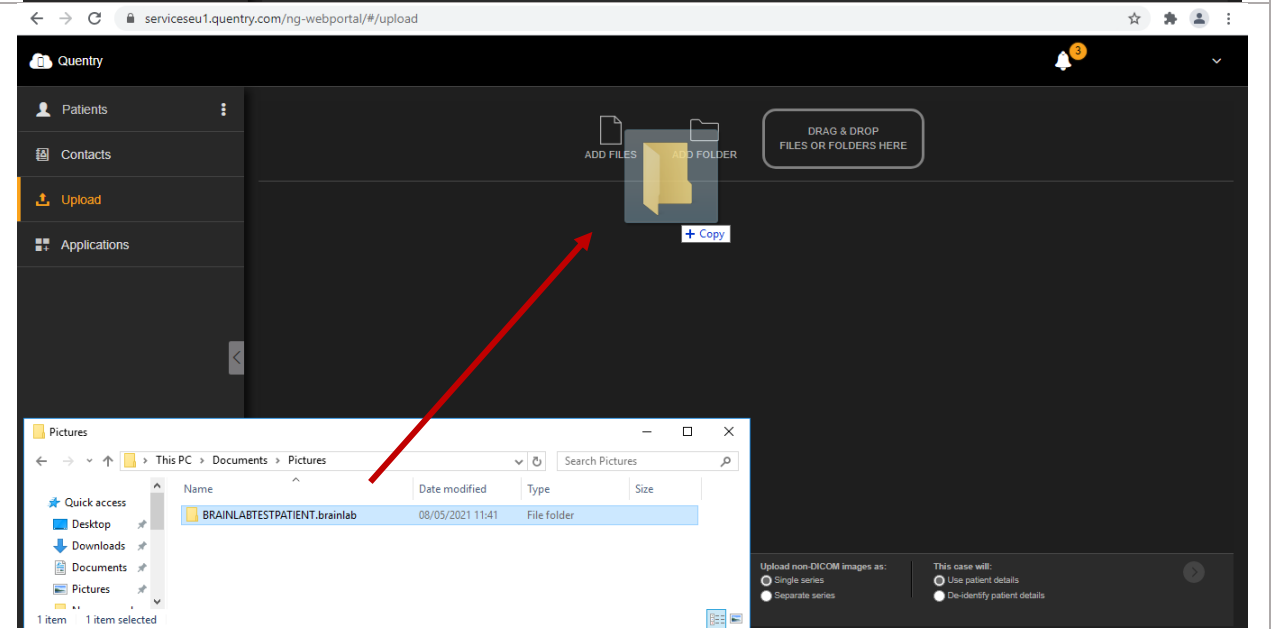
8. Open Quentry webpage and login to your Quentry Cloud account

9. Select **Upload** on the left-hand side

10. Drag the downloaded unzipped folder onto the bar where it says **'Drag & Drop'**

11. Select '**De-identify patient details**' and tick the box 'I have removed all visible patient information before selecting the arrow to move to the next page

12. To upload Ultrasound movies, they need to be in .mp4 file format. Follow the same steps from step 10 if they are on a USB stick/desktop

**Quentry is unable to anonymize screenshots or images which have the patient details on so these need to be edited or cropped out of any screenshots before uploading.

13. Select Existing Patient Folder and upload to the folder with the correct Study ID

14. Tick that you have the patient consent and select **Finish and Upload** to move on

15. Your intra-operative snapshots, ultrasounds and regions of interest should now be available to view if you click on the patient file.
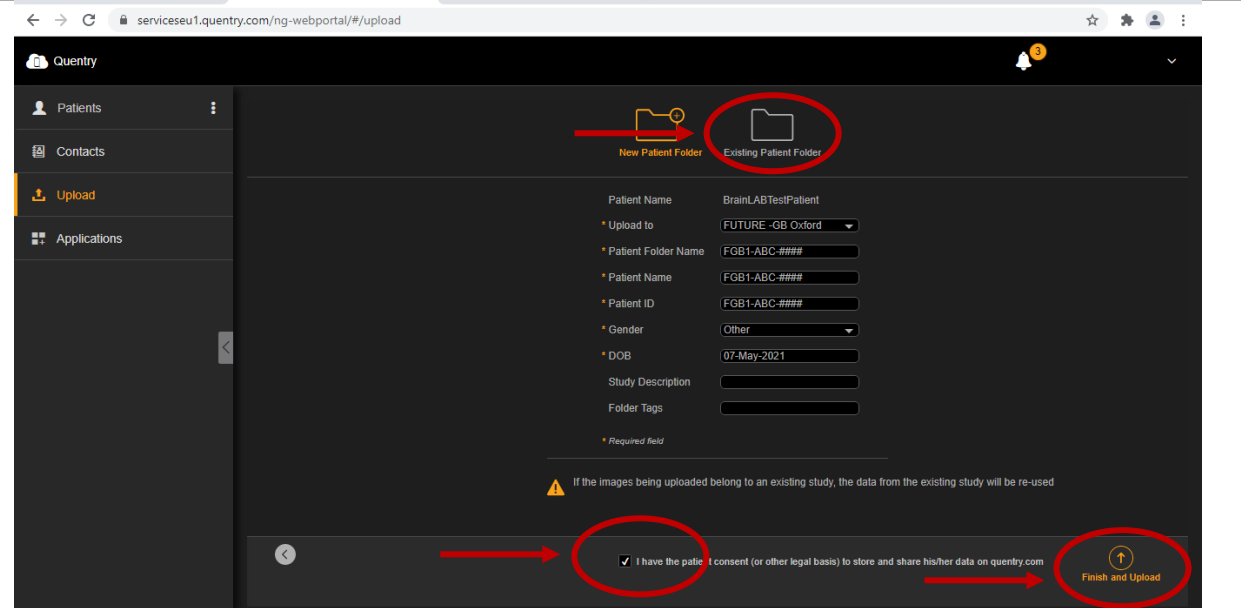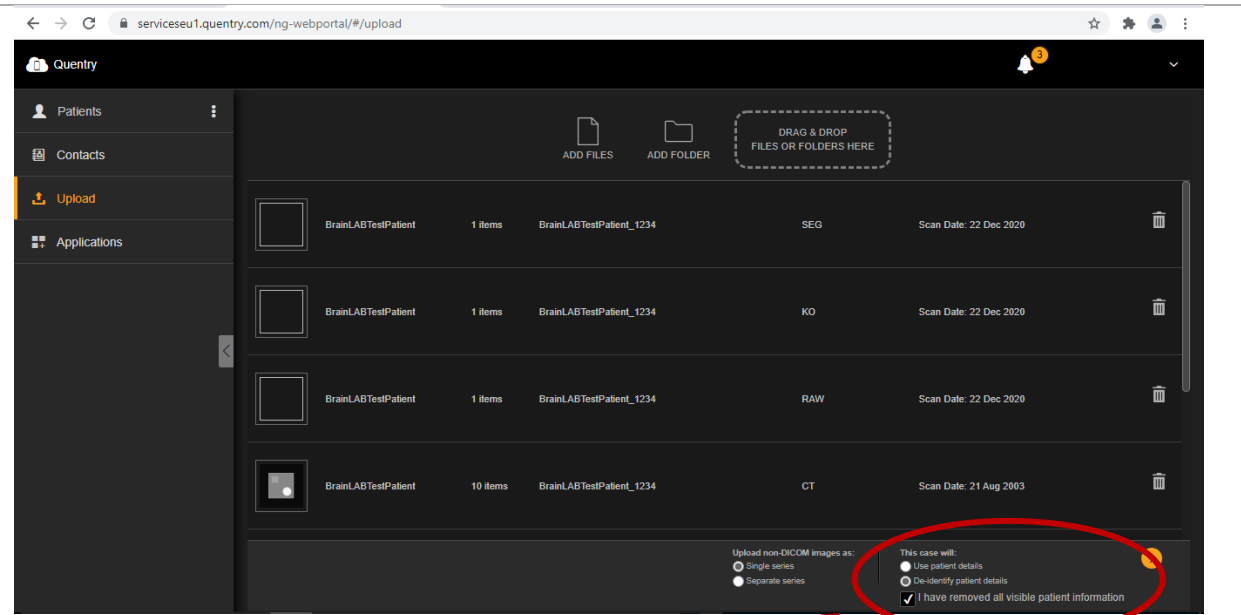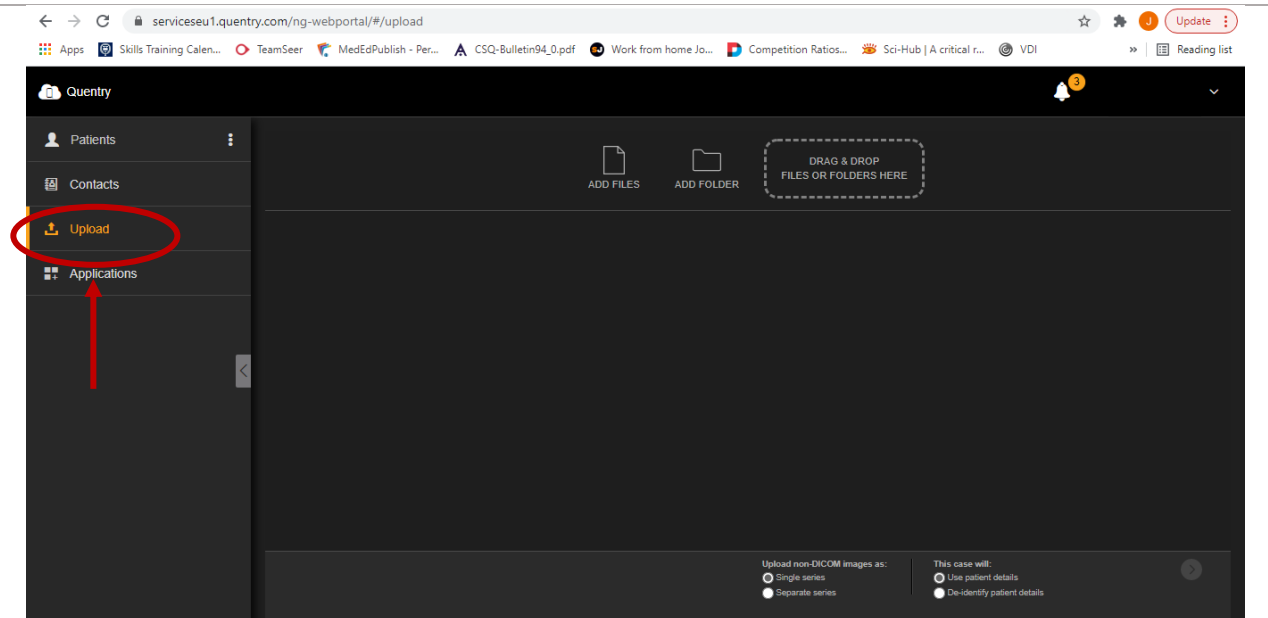
UPLOADING INTRAOPERATIVE

- **ULTRASOUND VIDEOS TO QUENTRY**
- **ULTRASOUND PICTURE – WHERE TUMOUR RESECTION CAVITY WALL BIOPSY TAKEN.**

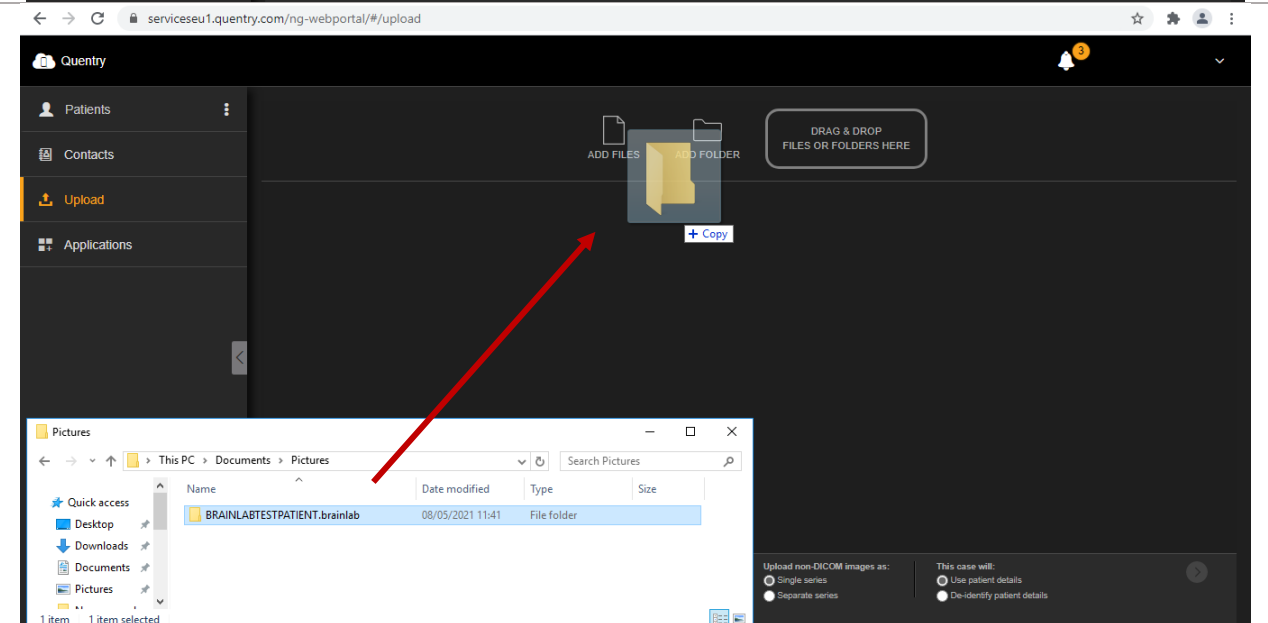1. Open Quentry webpage and login to your Quentry Cloud account
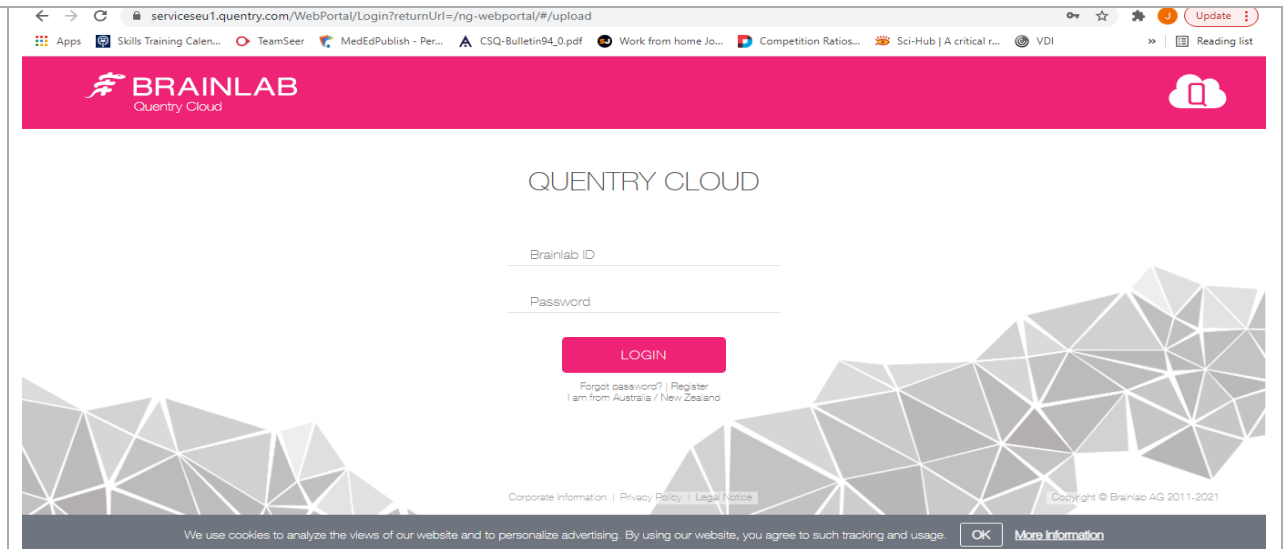
2. Select **Upload** on the left-hand side

3. Insert your USB stick with the ultrasound videos on, into your computer/laptop

4. Drag the ultrasound video files onto the bar where it says **'Drag & Drop'**

The videos need to be named i.e. pre-resection coronal or post resection axial etc AND must be mp4 file format

16. Select '**De-identify patient details**' and tick the box 'I have removed all visible patient information before selecting the arrow to move to the next page
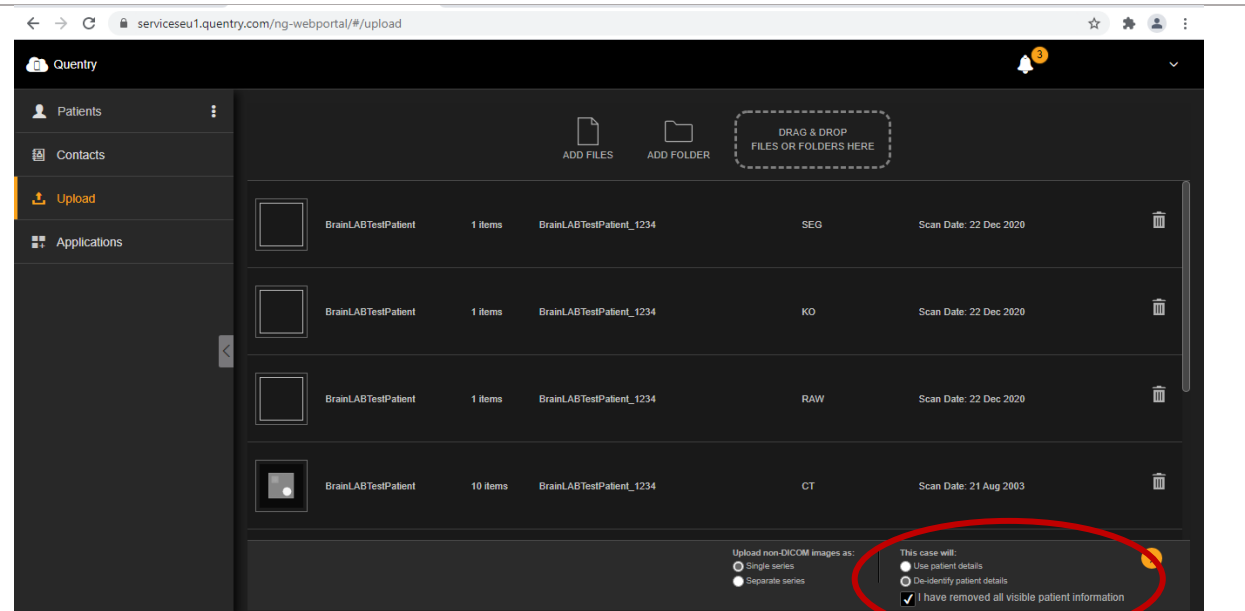
17. Select Existing Patient Folder and upload to the folder with the correct Study ID

18. Tick that you have the patient consent and select **Finish and Upload** to move on

19. Your intra-operative ultrasounds video should now be available to view if you click on the patient file
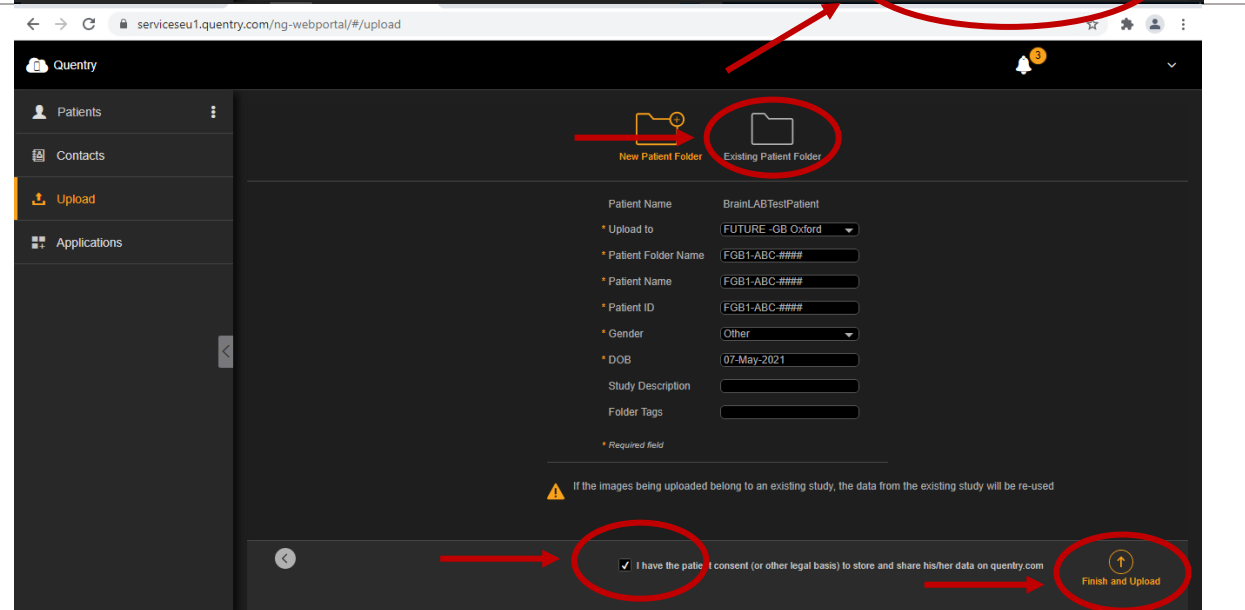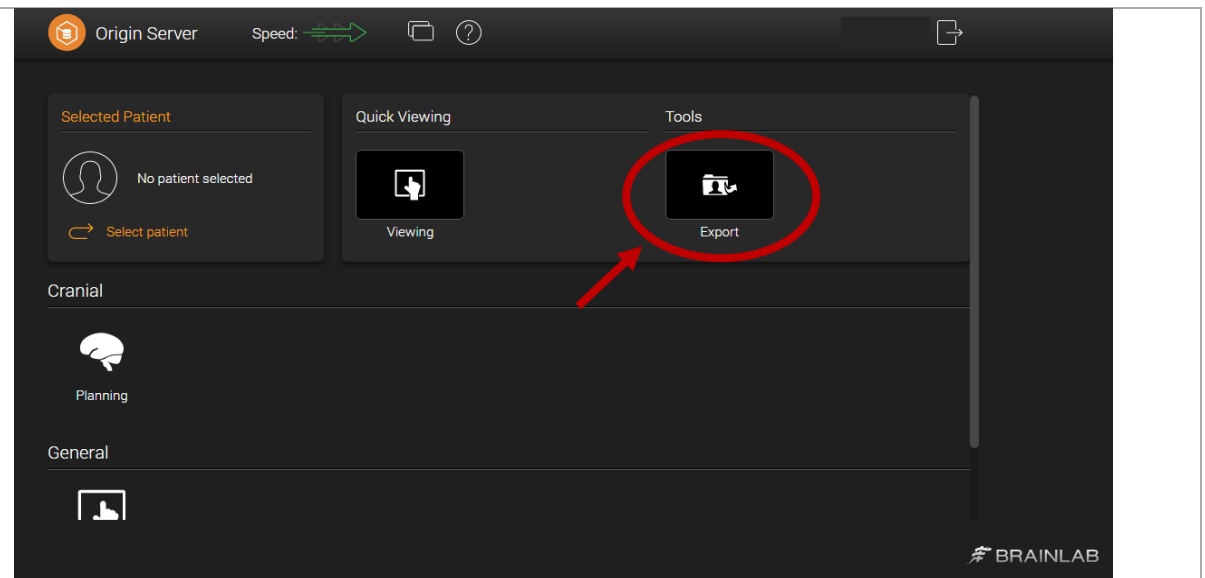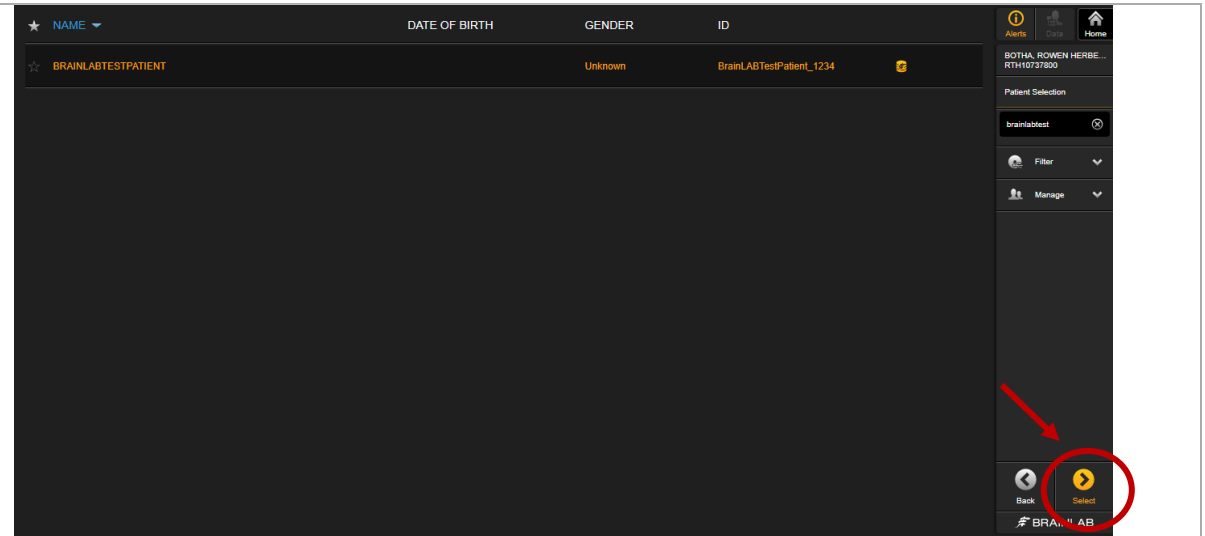
POST-OPERATIVE

UPLOADING POST-OPERATIVE MRI SCAN (T1 PRE AND POST CONTRAST) TO QUENTRY

The easiest way to upload post-operative MRI scans to Quentry is to upload them to Brainlab Elements first, then download them to your desktop and then upload to Quentry
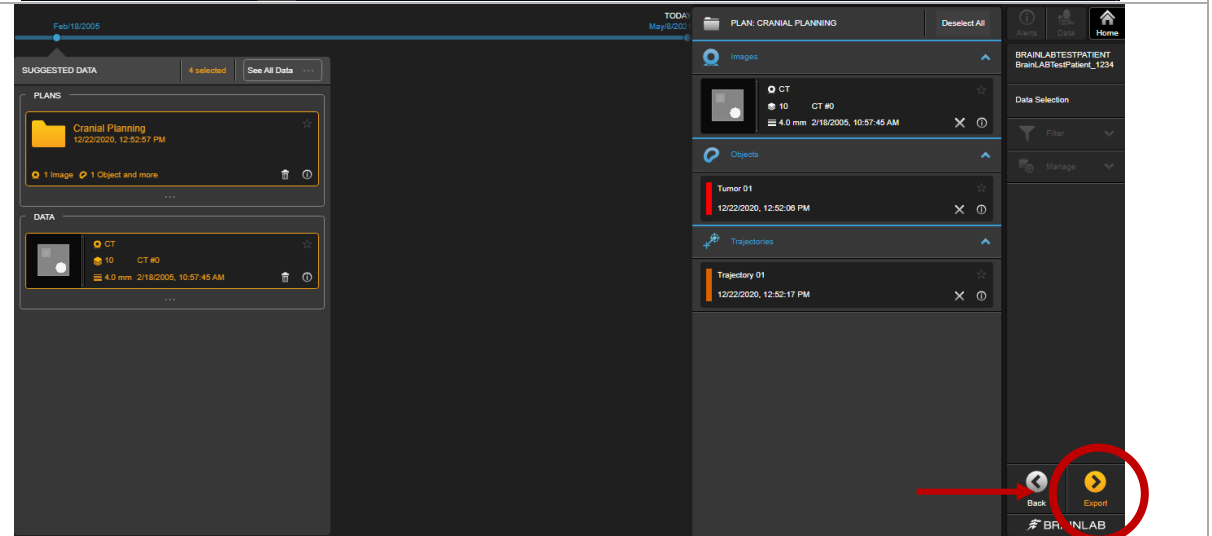
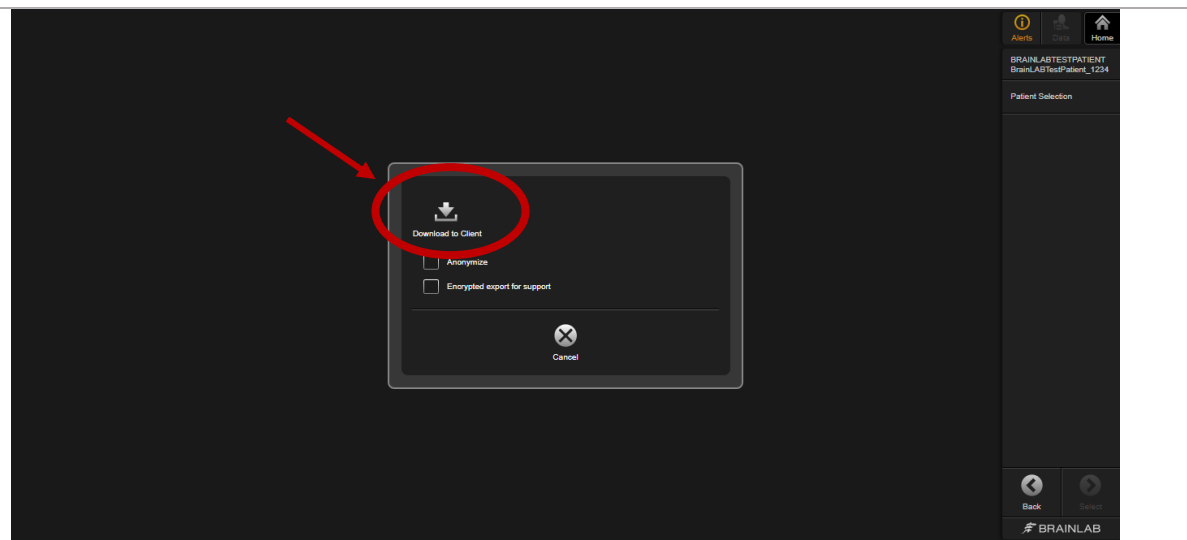1. Open Brainlab elements and click on **Export**

2. Search and highlight the patient and click on **Select** (bottom right-hand corner)
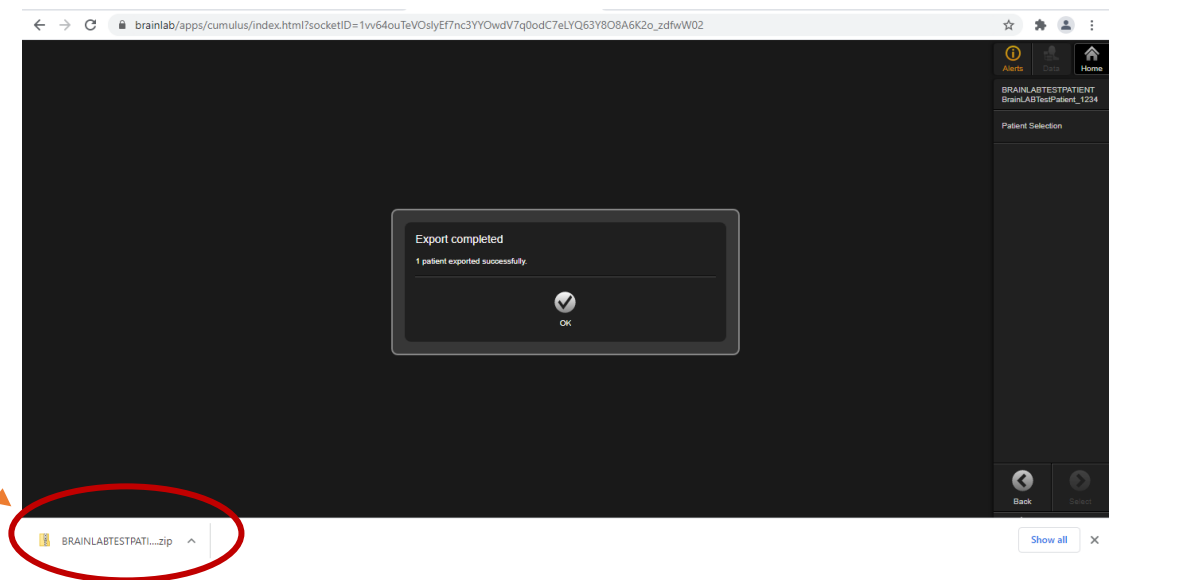

3. Select and highlight all the images and objects you wish to export and click on **Export** (bottom right-hand corner)
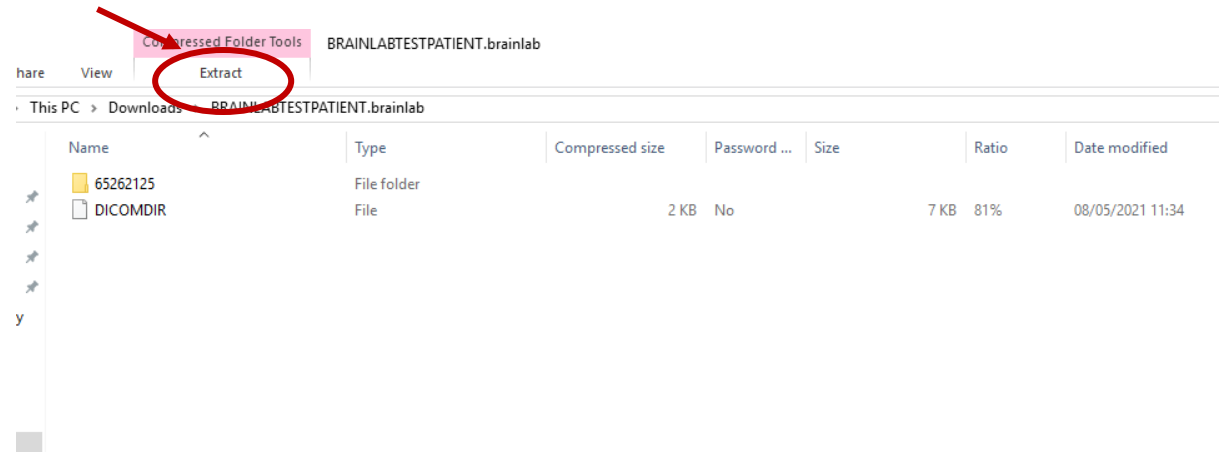
4. Select **Download to Client** (you do not need to anonymize at this point)
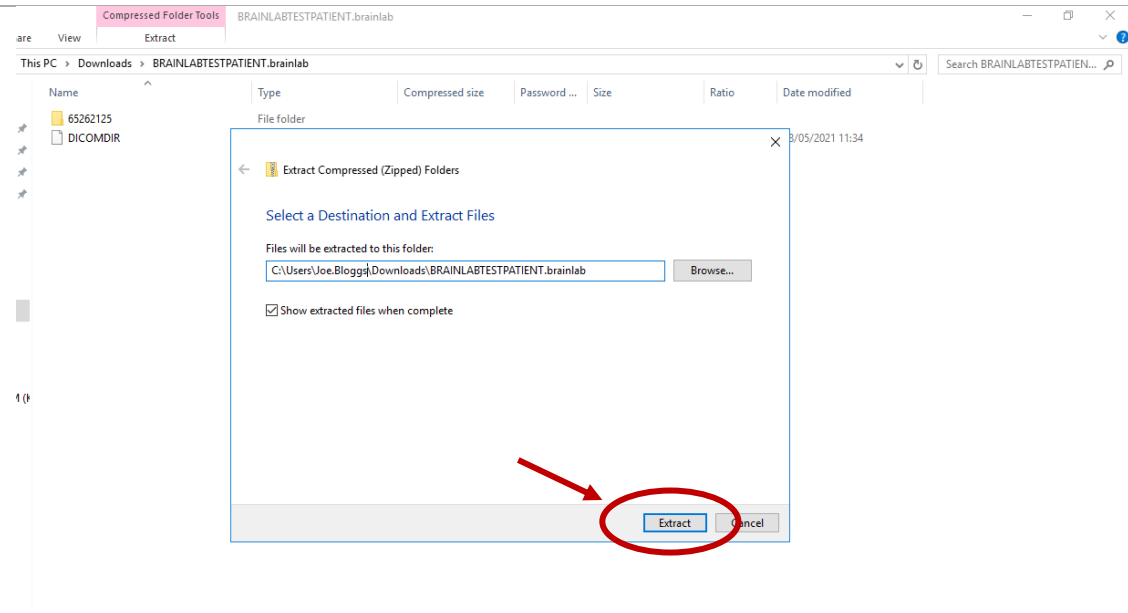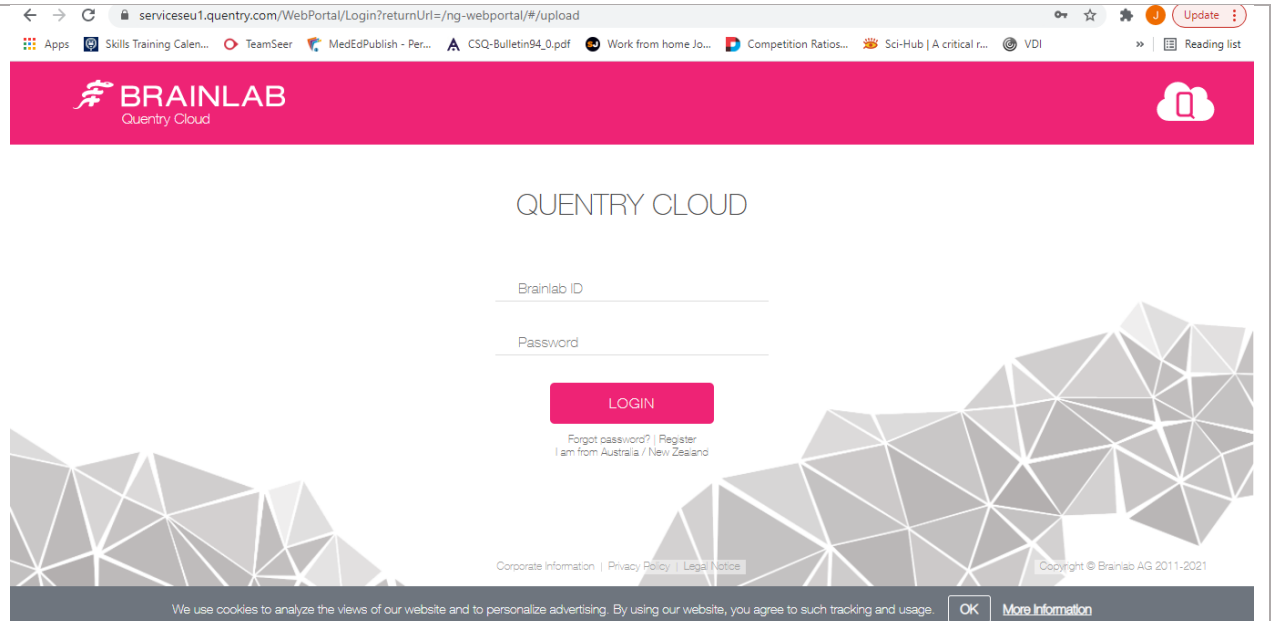

5. Open the downloaded zip file

6. Click on **Extract** along the top bar and then **Extract All**
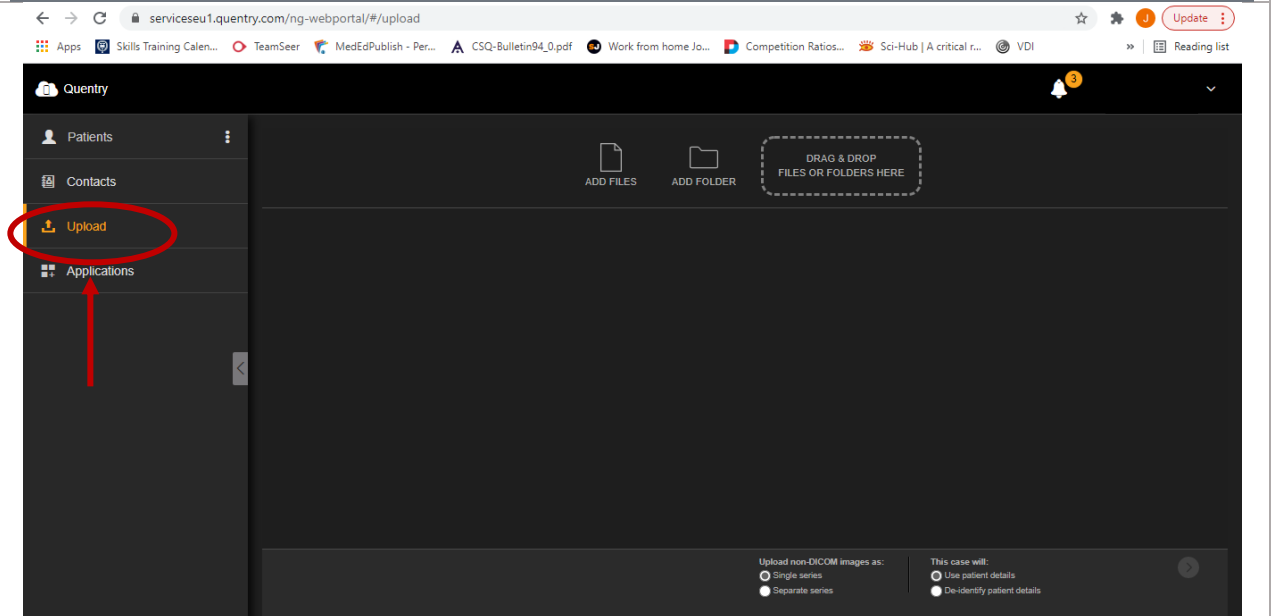

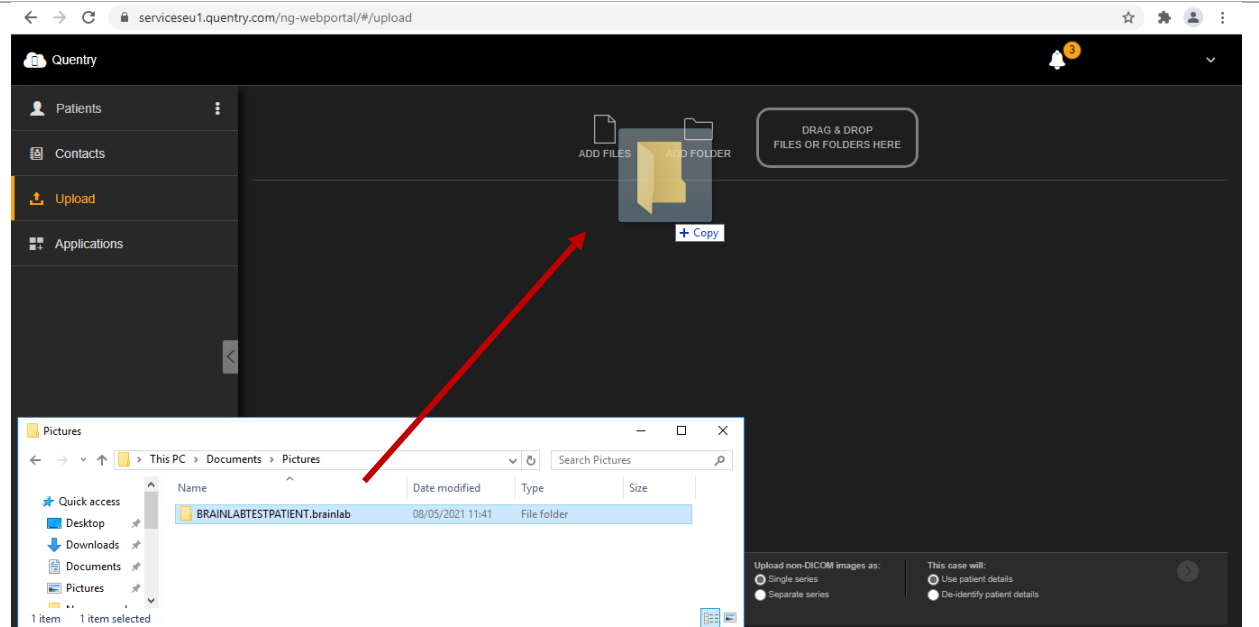7. Click on **Extract** and a folder with the unzipped files will appear

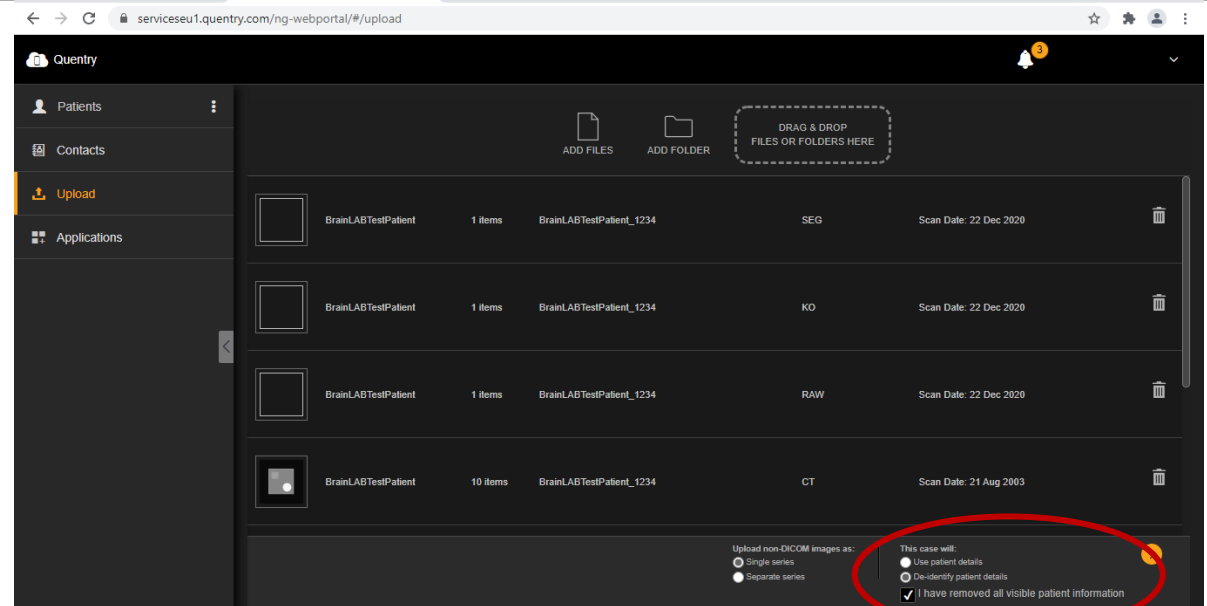8. Open Quentry webpage and login to your Quentry Cloud account


9. Select **Upload** on the left-hand side

10. Drag the downloaded unzipped folder onto the bar where it says **'Drag & Drop'**

11. Select '**De-identify patient details**' and tick the box 'I have removed all visible patient information before selecting the arrow to move to the next page

12. Select Existing Patient Folder and upload to the folder with the correct Study ID

13. Tick that you have the patient consent and select **Finish and Upload** to move on

14. Your post-operative MRI should now be available to view if you click on the patient file
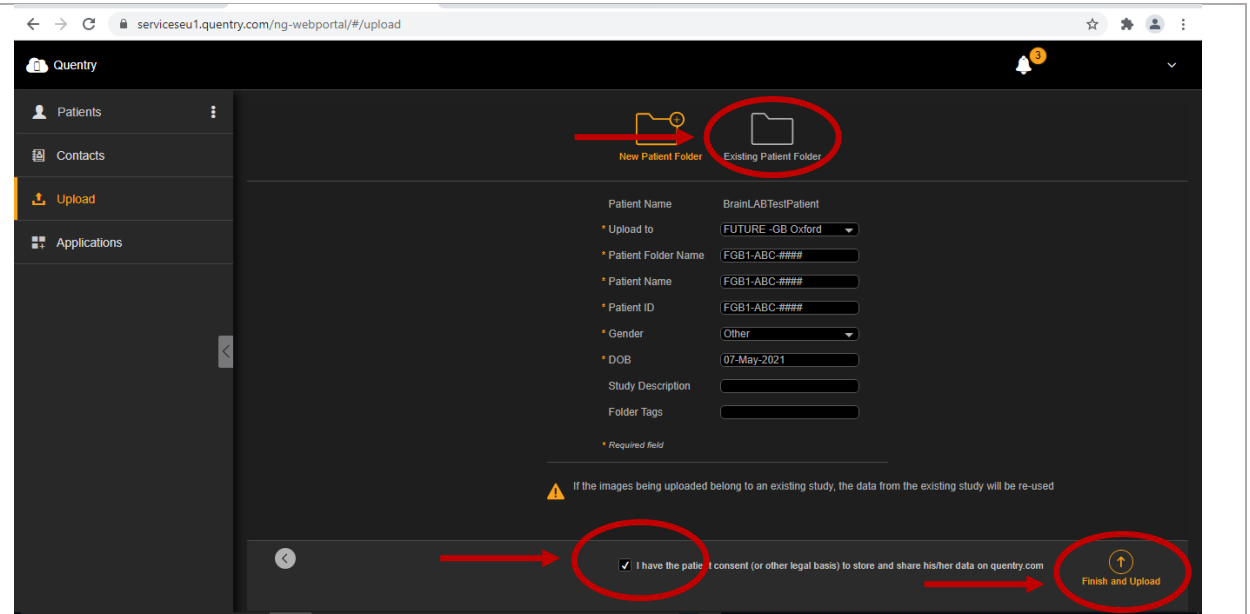
CONCLUSION

What to upload to Quentry:

Pre-op: Volume post contrast T1 MRI with 5 DTI tracts constructed (corticospinal, optic radiation, ILF, IFOF, Arcuate/SLF).

Intra-op:
- Ultrasound video – pre-resection (in 2 planes), post resection (in 2 planes).
  Each video plane 15-20 seconds please
- Ultrasound picture – Where tumour resection cavity wall biopsy taken.
- DTI screenshots on navigation system for:
    - Only awake cases or cases with neurophysiology
    - Where tumour resection cavity wall biopsy taken.

Post-op: T1 pre and post contrast MRI

HISTORY:

Version number	Date	Significant changes from previous version
V1.0	26Oct2021	Not applicable as this is the 1st issue