

1. Introduction: Real Time Quality Assurance: Critical View of Safety

1.1 Purpose: This application uses crowdsourcing to teach and evaluate the surgical endpoint of The Critical View of Safety

- Welcome to Live QA, CVS phone application: WE have designed this software to give quality live feedback to surgeons on their dissections of the Critical View of Safety. In addition it is a teaching tool to learn the Critical View of Safety
- Brief description of the software:

- In Quality mode: This Application uses a smart phone to acquire images of a completed surgical dissection. The images are shared with a group of expert evaluators. The evaluators grade the images and return the grades to the operative surgeon. The images are automatically databased along with the grades.
- In learning Mode: The databased images and grades are used as a teaching tool. Learners view and grade existing images and view their performance as compared to experts, so that their understanding of proper surgical end points improve.

- Intended audience. The intended audience is anyone who performs or is learning to perform cholecystectomy or anyone learning about cholecystectomy. The audience is also anyone interested in the quality of cholecystectomies done in a health system or provider group.
- Overview of manual contents: this manual is intended to act as a reference for using the critical view of safety assessment software.

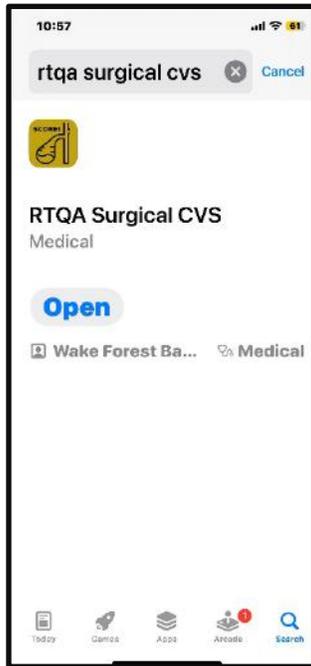
1.2 System Requirements

- Hardware requirements: iPhone 12 or newer
- Software requirements: The latest Mac OS operating system
- Network requirements: Wifi or 3g or better

1.3 Installation

- Pre-installation steps:

- Installation guide: visit the App Store and search for "RTQA" There is an application the icon appears as a gallbladder with the word(s) "score" : on it. Down load and install on your device.



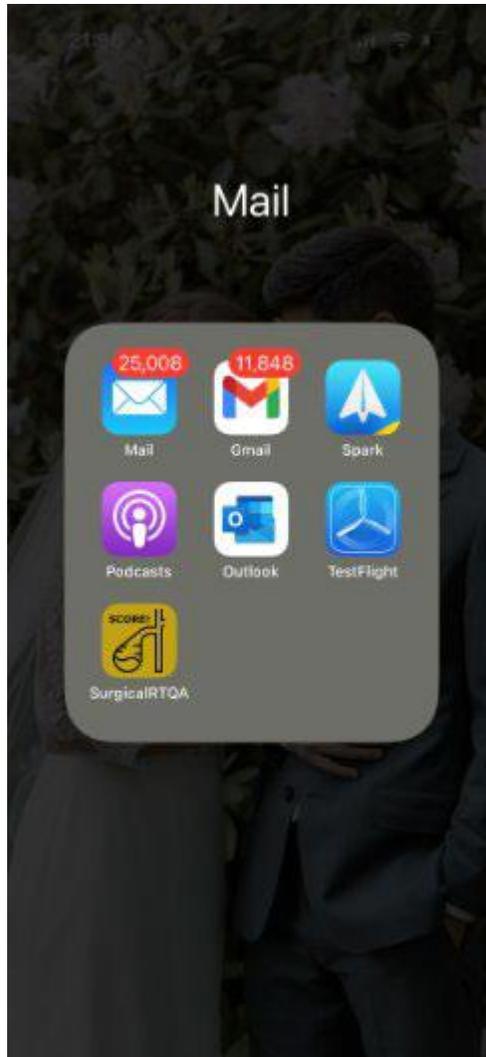
- how the RTQA application appears in the app store

- Post-installation steps: please fill in the pre use survey. It is demographics about our users your information is saved for research and for communication with you . We will not share or sell to any other party.

2. Getting Started

2.1 Launching the Software

- How to start the application, surgicalrtqa on the cellphone interface
 - The Application will function after down load only if you are a registered user. Contact cwestcot@wakehealth.edu or ofukui@wakehealth.edu to activate your account.
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- Open the
- This is how the application appears on your phone. This user has it in the mail folder, but its location on your phone can be managed by you. .

- Login procedures

- Pick your Advocate affiliation

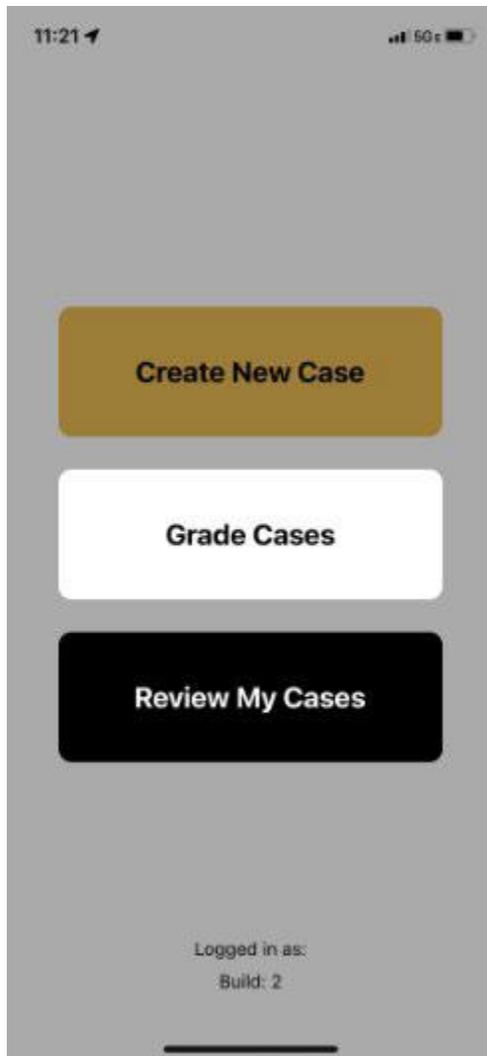
- Then use your Medical center email and password and two point verification to gain access. You will need to be granted access, if it is not allowing you to open the app, you may not be registered, contact your CVS study coordinator for help.
- You only need to enter credentials once. Then again after any updates.

- Initial setup and configuration

- Pre use questionnaire, customized for attending, resident, fellow and med student.
- Reply yes to alerts as that is how you are notified about new case postings that are in need of grading.
- You must grant camera access to the application and accept alerts from the application. That is how you will be alerted as to cases to grade.

2.2 User Interface Overview

- Description of main interface components



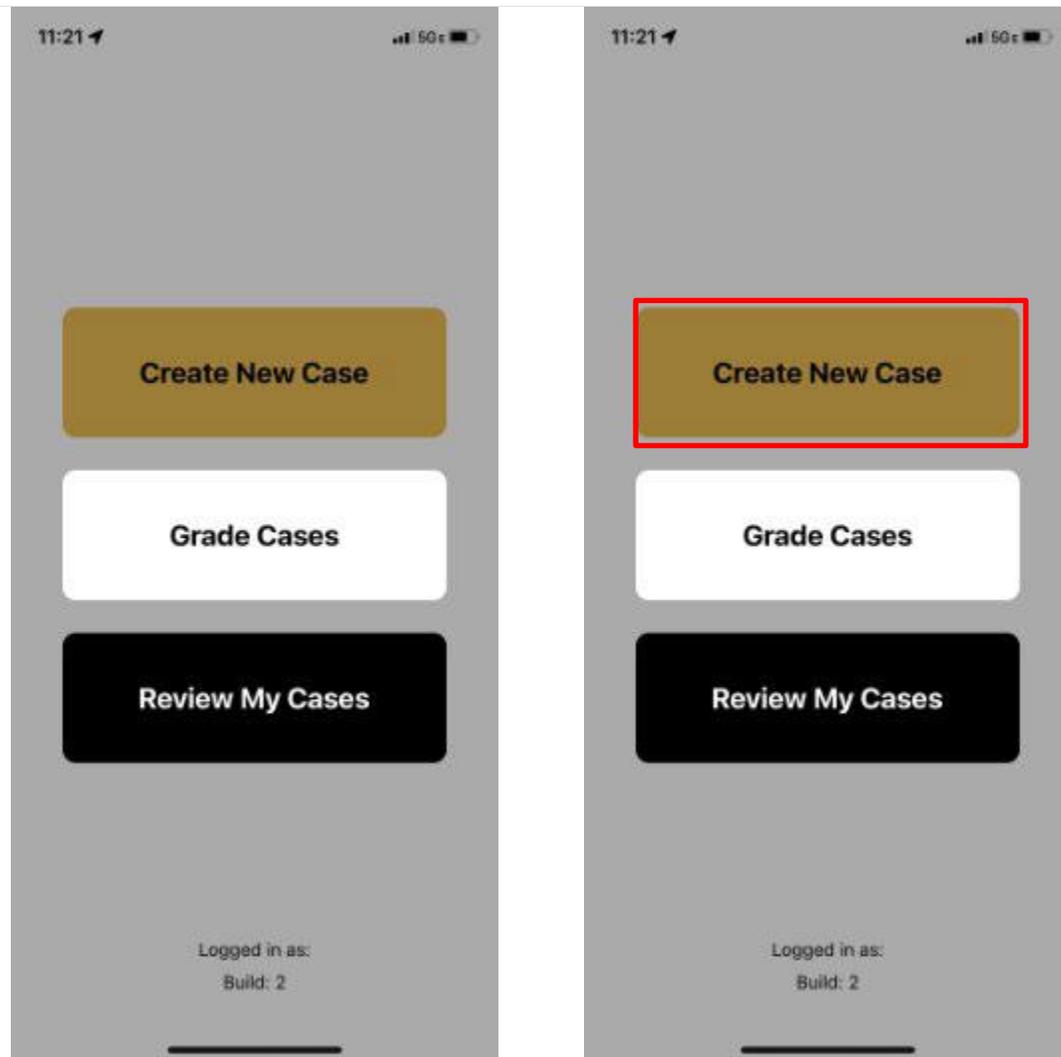
- Three button interface, create, grade or review

- Create: post a new set of images for evaluation and databasing

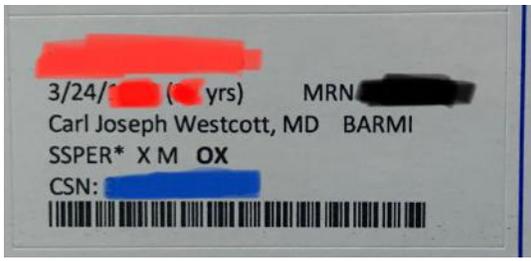
- Grade: Grade new casaes posted to your queue
- Review: See how your grades compare to experts and the crowd

2.3 Basic Operations

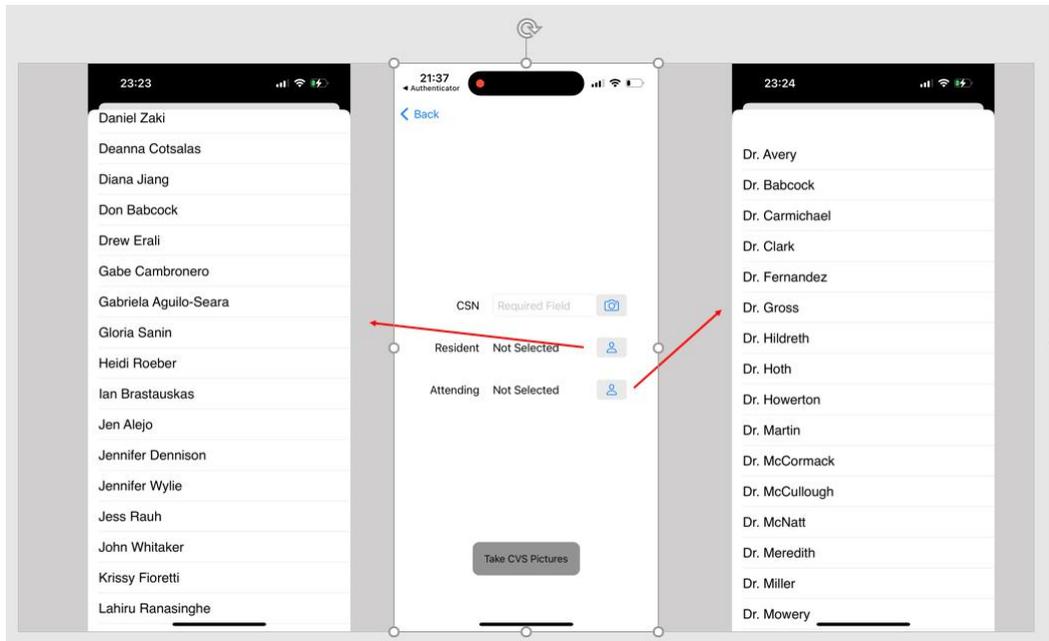
- How to **create** a new case



Select Create new case, the next screen will create a record with the case bar code



Select the camera icon and capture the case barcode with the camera function



Next select the personnel for the case attending and resident.

- Now the phone is ready to collect the CVS pictures. There is a warning screen to advise to check the picture and avoid all PHI, white boards, ect. The app gives you a 16/9 aspect red box to position the anatomy. The capture will only be in the 16/9 red box.
- The near entire gall bladder and all pertinent anatomy is required for adequate image capture for grading.
- Tips for picture acquisition

- Pick the best monitor, the newest, highest resolution monitor, some rooms will have several generations of monitors.
- Put the monitor screen perpendicular and at eye level with the camera.
- Turn the lights down in the room
- Clean the scope lens
- Focus the camera
- Include all anatomy

- Cystic plate and as much gallbladder as possible along with the gallbladder outflow tract and some of the hepato-duodenal ligament. Missing anatomy is the biggest barrier to a gradable image.

- Anterior view

- 30' 10mm scope
- Light source at 1200 to 1 o'clock
- Retract infundibulum to the right hip
- Use the right hand to accentuate the cystic plate

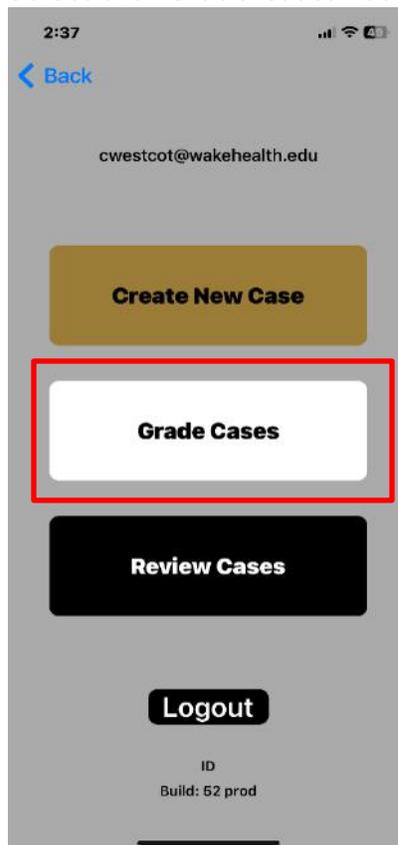
- Posterior view

- 30' 10mm scope
- Light source at 10 to 1030 o'clock
- Reflect infundibulum to the left shoulder
- Use right hand to accentuate the cystic plate and show the arterial anatomy

- Grade cases

When a new case is posted you will receive an alert, have alerts activated for RTQA in your settings if you wish to receive alerts

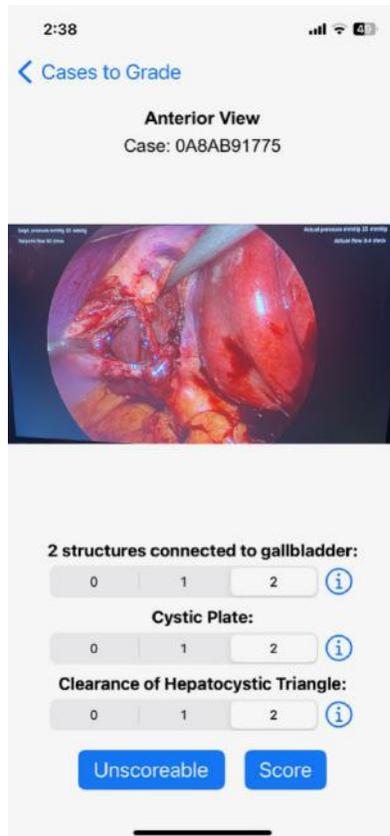
- Select the "Grade Cases" button on the initial screen



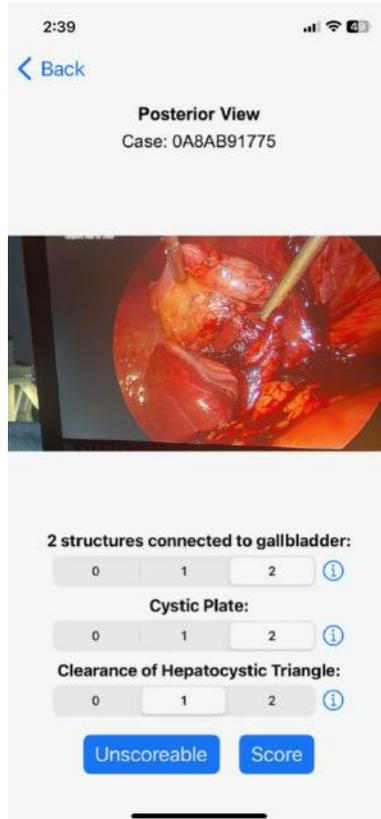
- A list of cases yet to grade will be presented. The most recent cases will be at the top of the queue. In the example that follows there is only one case to grade. If there are more the most recent is at the top of the list.



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- A "LIVE" banner will be present on all cases less than 10 minutes old. Your grades will be considered "immediate or intraoperative grading".
- Select a case to grade and the anterior image will be presented. The image can be zoomed, touch the image to zoom in and navigate through the image to be graded
- The anterior view is first, by convention the anterior is always first for grading and capture or new case creation.
- Use one of the operative monitors. The larger wall mounted plasma screens are more likely to produce interference and tiger striping on the image capture



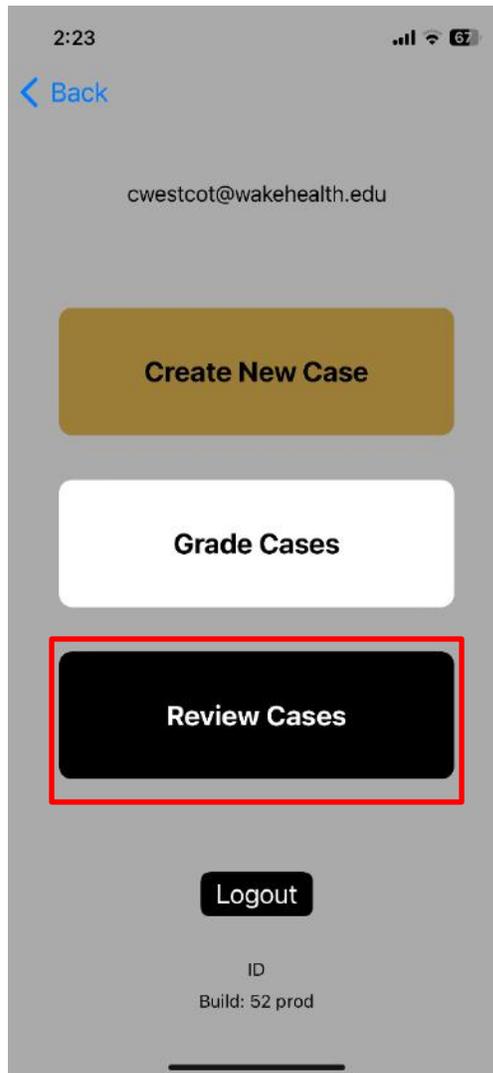
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- The grades are in radio buttons, there is a grade explanation under the *i* button
- In the example each aspect of the CVS has been given a grade of 2
- The image can be zoomed if needed.
- Next the posterior view is provided for grading\



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- In the example a grade of 2/2/1 is given as the grader thought the hepatocystic triangle could have been better dissected.
- Once the grades are posted you will be taken to the REVIEW for that image.
- At any point the back button can be used to navigate to the anterior view if desired.
- After the posterior image grades are entered you will be taken to the review page for that image. If the image is brand new there may not be many grades, if so visit after allowing some time to pass for expert and crowd grades to accumulate. But this is the exception, most users will have multiple grades when they review
- On the review page is your opportunity to assess your grades and improve! Compare your grades to the crowd and the expert group. If your grade is different, reassess the picture and use the grades to adjust your definition of the CVS, also use the  button to review the grading rules.

- Review cases

- To review cases press the review cases button on the initial screen. You can pick “your cases” or “everyone’s” cases. This is to evaluate your posted cases where you were the submitting surgeon. This can be helpful to evaluate and improve picture quality and your personal dissection end points.



- The “all” cases button will show you all the cases you graded. This can be used to improve your grading skills and interpretation of the CVS against experts and the crowd in general. The “mine” button is all the cases you posted so you can evaluate your progress and quality of attaining a critical view of safety.



Select a case # to review your scoring/dissection

2:23 68

[Back](#)

Anterior View
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Average Scores:

	All	Experts	Me
2 Structures:	1.73	1.50	2
Cystic Plate:	1.53	2.00	2
Hepatocystic:	1.20	1.00	1

Total Scores: 15
Composite: 4.47
Time elapsed: 58.12 days

Posterior View
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- The anterior view is presented first as usual. The scores are divided into EM, or the scores you entered, Experts grades, and All is the entire crowd of scorers averaged and presented. In this example the experts and the crowd was less favorable than the grader on the 2 structures part of the CVS. The learner can use this assessment to change their grading . The image can be magnified put into scroll mode with the magnifying glass icon.
- Step-by-step instructions for using each feature
- Use cases and examples

5. Troubleshooting and Support

5.1 Common Issues

- List of common problems and solutions
 - App wont open: make sure you have the latest version and you ARE A REGISTERED USER.
 - Barcode wont up load: center the bar code and move in and out as far ad distance. Try a different barcode if continues to fail.
 - Tiger striping or interference in a image: Avoid the large screens on the walls of the OR, Use the high density smaller operative flat screens
- You are taking an image of an image, there are tricks to a good image acquis ion and learning the “photography” of this application has its own learning curve and nuances. Have the lights in the room as low as possible. Get as much gallbladder in the operative image as possible and use the red box to capture at least the bottom 2/3 of the gallbladder including the outflow tract and critical anatomy
- Posterior image; the posterior image is the harder of the two to capture. Use the 30 degree laparoscope to get a good viewing angle and extra infundibulum retraction toward the patients left shoulder to show your work.

5.2 Technical Support

- How to contact support: RTQA_CVS@wakehealth.edu

5.3 Updates and Maintenance

- Checking for updates, the latest version number is listed on the initiation screen.
- How to update the software: you should get a push notification to update, if in doubt, trash your existing application and download another