



# China User Testing

Eric Stoltz, UX Design Lead

May 3, 2019



Visited six hospitals  
April 15-19







医学美容 北京華信醫院  
清华大学第一附属医院

清华大学第一附属医院

西南门

快递

First Hospital of Tsinghua University, Beijing





Children's Hospital of Hebei Province, Shijiazhuang





Fourth Hospital of Hebei Medical University, Shijiazhuang





Qilu Hospital of Shandong Province, Jinan





Qianfoshan Hospital, Jinan

敬业 严谨 慈和 创

North Gate Exit





Jinan Central Hospital, Jinan

# Methodology: Instrument

## Lab setup

### English

First, let's take a look at a user interface we might use to set up a lab. For this task, imagine you have just opened the software for the first time.

Ready to start?

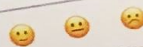
[show first screen]

### 中文

首先，让我们看看用来设置实验室的用户界面。假设您现在第一次打开这个软件。

准备好了？

[显示第一个屏幕]



### English

1 What would you do on this first screen?

### 中文

你会在第一个屏幕上做什么？

2

What do you think is meant by tracking reagent and calibrator lots?

你认为“通过您的试剂和校准品批号跟踪结果”什么意思？

请添加一个地点。



# Methodology: Prototype

BIO-RAD Unity

王小明

中华医疗集团



中华医疗中心 / 化学 / AU680

← Liquichek™ 非定值生化质控品



高密度脂蛋白胆固醇



白蛋白

丙氨酸氨基转移酶

淀粉酶

对乙酰氨基酚

二氧化碳

钙

高密度脂蛋白胆固醇

碱性磷酸酶

肌酐

肌酸激酶

氯化物



Levey-Jennings



统计摘要

级别 ☒ 1 ☒ 2 ☒ 3 ☐ 4



级别 1

数值 Z值 原因

级别 2

数值 Z值 原因

级别 3

数值 Z值 原因

级别 4

数值 Z值 原因

1月 16日

14:00

数值

数值

数值


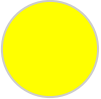

数值

添加功能或注解 | 更改批号 | 添加过去数据

取消

提交数据

# Methodology: Scale of success

-  Easily able to complete step/identify action
-  Able to complete step/identify action with hesitation
-  Unable to complete step/identify action





# Findings


Watch your language!





# Lab setup discovery

- Is it clear why the user has landed on this screen?
- Is the workflow self-apparent?
- Are important features findable?
- Is the setup sufficiently customizable?
- Are next steps clear?



## Hello, Brenda!

Let's set up some basic information. You can always change these defaults in Settings.

What is your preferred data entry mode?

☒ Summary ☐ Point

How are your instruments grouped?

☒ By department ☐ By location

Unity can now track results by your reagent and calibrator lot numbers for more precise analysis and troubleshooting. Would you like to track this information?

☒ Yes ☐ No

**LET'S GO!**

Understood purpose of this screen




Understood significance of tracking reagent/calibrator lots





Understood how to add location





Let's set up your first location.

Location name  
Gotham Memorial Medical Center

---

Contact name  
Brenda Hernández

---

Contact phone number (optional)

---

Country  
United States ▼

---

Address  
1234 Main St

---

Address line 2 (optional)

---

City  
Santa Barbara

---

State  
CA ▼

ZIP code  
93101

---

BACK
ADD LOCATION

BIO-RAD

Unity

Brenda Hernández

Memorial System

Arkham General

Gotham Memorial Medical Center

What departments are in Gotham Memorial Medical Center?

☐ Don't add departments

Department name

Department name

Department name

Department name

Add another department

CANCEL

ADD DEPARTMENTS

Setup progress

✓ Location

Department

Instrument

Control

Test

Understood how to add an additional department

18

BIO-RAD



Chemistry

Immunology

Microbiology

Hematology

Pathology

Immunology

Add instruments to Immunology.

Instrument manufacturer

Beckman Coulter

Instrument model

AU680

Custom name (optional)

Helpful if you have more than one of this instrument

Serial number (optional)

Manufacturer name

Manufacturer name

Manufacturer name

Add another instrument

Don't see your instrument?

CANCEL

ADD INSTRUMENTS

Setup progress

✓ Location

✓ Department

Instrument

Control

Test

Understood where to edit instrument settings later

19

BIO-RAD

Chemistry

Immunology

Microbiology

Hematology

Pathology

Immunology

Add instruments to Immunology.

Instrument manufacturer

Beckman Coulter

Instrument model

AU680

Custom name (optional)

Helpful if you have more than one of this instrument

Serial number (optional)

Manufacturer name

Manufacturer name

Manufacturer name

Add another instrument

Don't see your instrument?

CANCEL

ADD INSTRUMENTS

Setup progress

✓ Location

✓ Department

Instrument

Control

Test

Understood how to use custom name field





Chemistry

Immunology

Microbiology

Hematology

Pathology

Immunology

Add instruments to Immunology.

Instrument manufacturer

Beckman Coulter

Instrument model

AU680

Custom name (optional)

Helpful if you have more than one of this instrument

Serial number (optional)

Manufacturer name

Manufacturer name

Manufacturer name

Add another instrument

Don't see your instrument?

CANCEL

ADD INSTRUMENTS

Setup progress

✓ Location

✓ Department

Instrument

Control

Test

Understood how to add another instrument



BIO-RAD Unity

Gotham Memorial Medical Center / Immunology

← ADVIA Centaur XP

Liquichek Rheumatoid Factor

Lyphocheck Allergen sIgE

Lyphocheck Allergen sIgE

Add tests to Lyphocheck Allergen sIgE.

Levels in use ☒ 1 ☒ 2 ☒ 3 ☒ 4

☐ Select all

☐ D1 House dust mite  
Dermatophagoides pteronyssinus

☒ D2 House dust mite

☐ E1 Cat dander

☒ E3 Horse dander

☐ E5 Dog dander

☐ F1 Egg white

☐ F2 Cow milk

☐ F13 Peanut

☒ G3 Cocksfoot/Orchard Grass

☒ M6 Mold

Don't see your analyte?

CANCEL ADD TEST

Setup progress

- ✓ Location
- ✓ Department
- ✓ Instrument
- ✓ Control Test

Understood how to navigate hierarchy: instruments



*Setup progress indicator causing confusion. When it's not present, users are more easily able to use top navigation.*



- 

## IMPORT MULTIPLE RESULTS



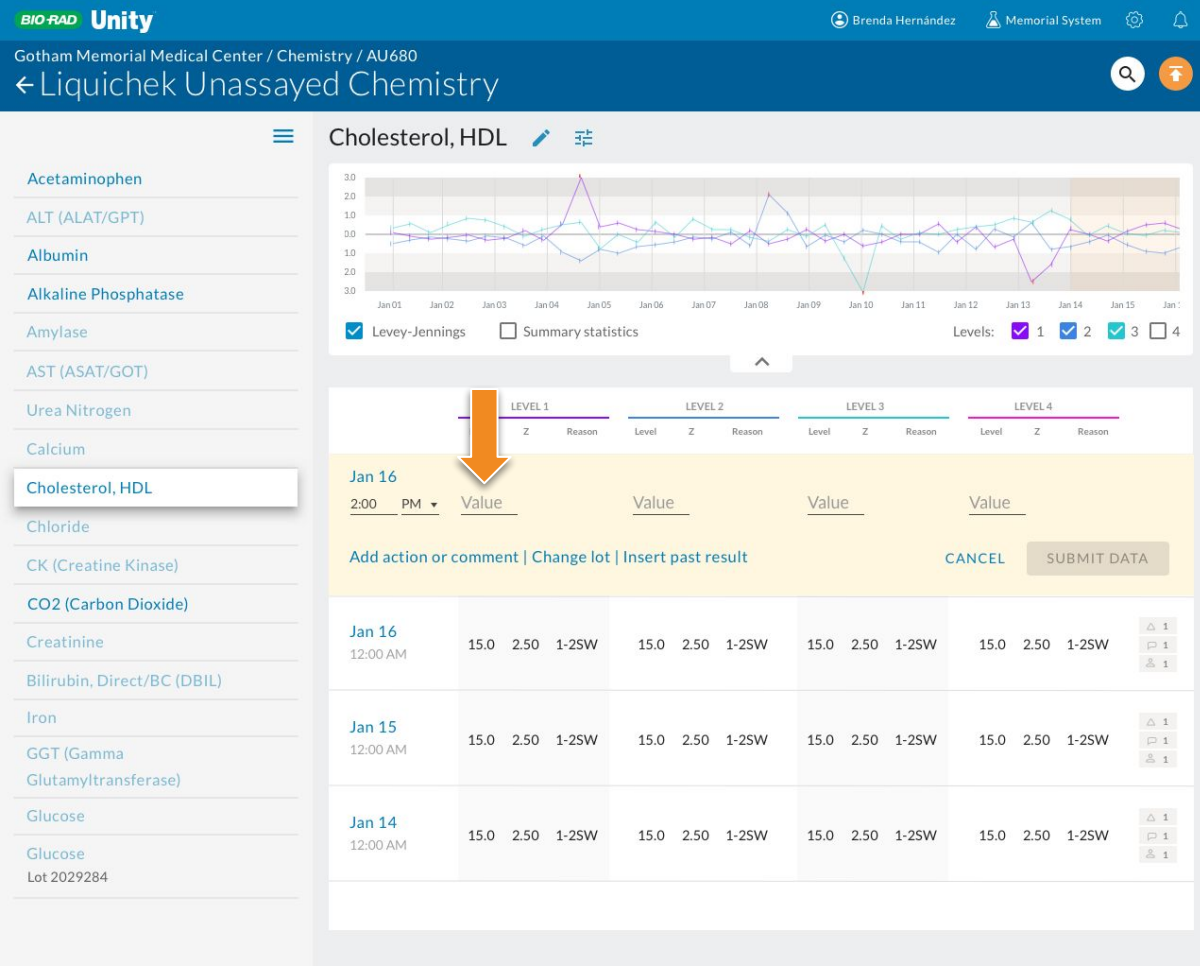
# Lab setup findings

- Overall good workflow results
- Confusion over navigation
- Rework edit/settings access
- Rethink progress indicator



# Data entry discovery

- Is the main purpose of the screen apparent?
- Is the workflow clear?
- Are additional details readily available?
- Is iconography clear?
- Are important features findable?



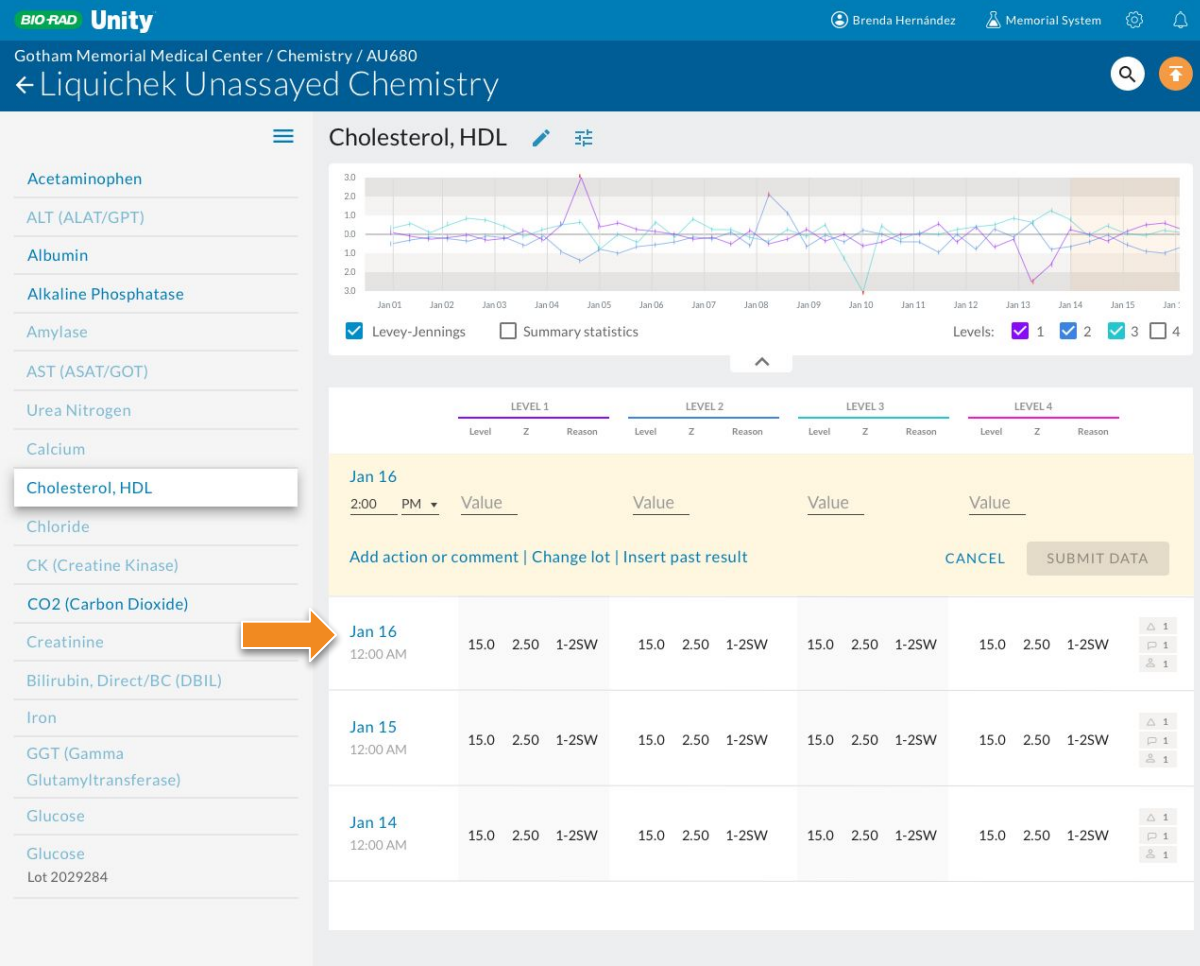
Understood purpose of this screen



*Data entry may not be the main purpose some use this screen. It's unclear how often users would really access this for analysis once there is a dashboard. LJ chart dominates and distracts users.*







Understood difference between past results and entering today's results



Some confusion caused by headers not being fixed; this is a limitation of flat files. Finished software will have pinned headers.

Could see how to view additional details on a past test run



The visual dominance of the LJ chart causes many users to think of it as a primary way to access details.



**BIO-RAD Unity**

Gotham Memorial Medical Center / Chemistry / AU680

← Liquichek Unassayed Chemistry

Cholesterol, HDL

Levey-Jennings ☒ Summary statistics ☐ Levels: ☒ 1 ☒ 2 ☒ 3 ☐ 4

LEVEL 1 LEVEL 2 LEVEL 3 LEVEL 4

Level Z Reason Level Z Reason Level Z Reason Level Z Reason

Jan 16 2:00 PM Value Value Value Value

Add action or comment | Change lot | Insert past result CANCEL SUBMIT DATA

Date/Time	Value	Z	Reason	Value	Z	Reason	Value	Z	Reason	Value	Z	Reason	Icons
Jan 16 12:00 AM	15.0	2.50	1-2SW	15.0	2.50	1-2SW	15.0	2.50	1-2SW	15.0	2.50	1-2SW	1 1 1
Jan 15 12:00 AM	15.0	2.50	1-2SW	15.0	2.50	1-2SW	15.0	2.50	1-2SW	15.0	2.50	1-2SW	1 1 1
Jan 14 12:00 AM	15.0	2.50	1-2SW	15.0	2.50	1-2SW	15.0	2.50	1-2SW	15.0	2.50	1-2SW	1 1 1

Understood iconography for changes, comments and user action history



Most users understood user and comment icons. None understood change icon.

Understood how to view comments



**BIO-RAD Unity** | Brenda Hernández | Memorial System

Gotham Memorial Medical Center / Chemistry / AU680

## ← Liquichek Unassayed Chemistry

Acetaminophen

ALT (ALAT/GPT)

Albumin

Alkaline Phosphatase

Amylase

AST (ASAT/GOT)

Urea Nitrogen

Calcium

**Cholesterol, HDL**

Chloride

CK (Creatine Kinase)

CO2 (Carbon Dioxide)

Creatinine

Bilirubin, Direct/BC (DBIL)

Iron

GGT (Gamma Glutamyltransferase)

Glucose

Glucose  
Lot 2029284

### Cholesterol, HDL

☒ Levey-Jennings ☐ Summary statistics

Levels: ☒ 1 ☒ 2 ☒ 3 ☐ 4

LEVEL 1			LEVEL 2			LEVEL 3			LEVEL 4			
Level	Z	Reason	Level	Z	Reason	Level	Z	Reason	Level	Z	Reason	
<p>Jan 16 2:00 PM Value Value Value Value</p> <p>Add action or comment   Change lot   Insert past result CANCEL SUBMIT DATA</p>												
Jan 16 12:00 AM	15.0	2.50	1-2SW	15.0	2.50	1-2SW	15.0	2.50	1-2SW	15.0	2.50	1-2SW
Jan 15 12:00 AM	15.0	2.50	1-2SW	15.0	2.50	1-2SW	15.0	2.50	1-2SW	15.0	2.50	1-2SW
Jan 14 12:00 AM	15.0	2.50	1-2SW	15.0	2.50	1-2SW	15.0	2.50	1-2SW	15.0	2.50	1-2SW

Understood different treatments for analytes with/without data



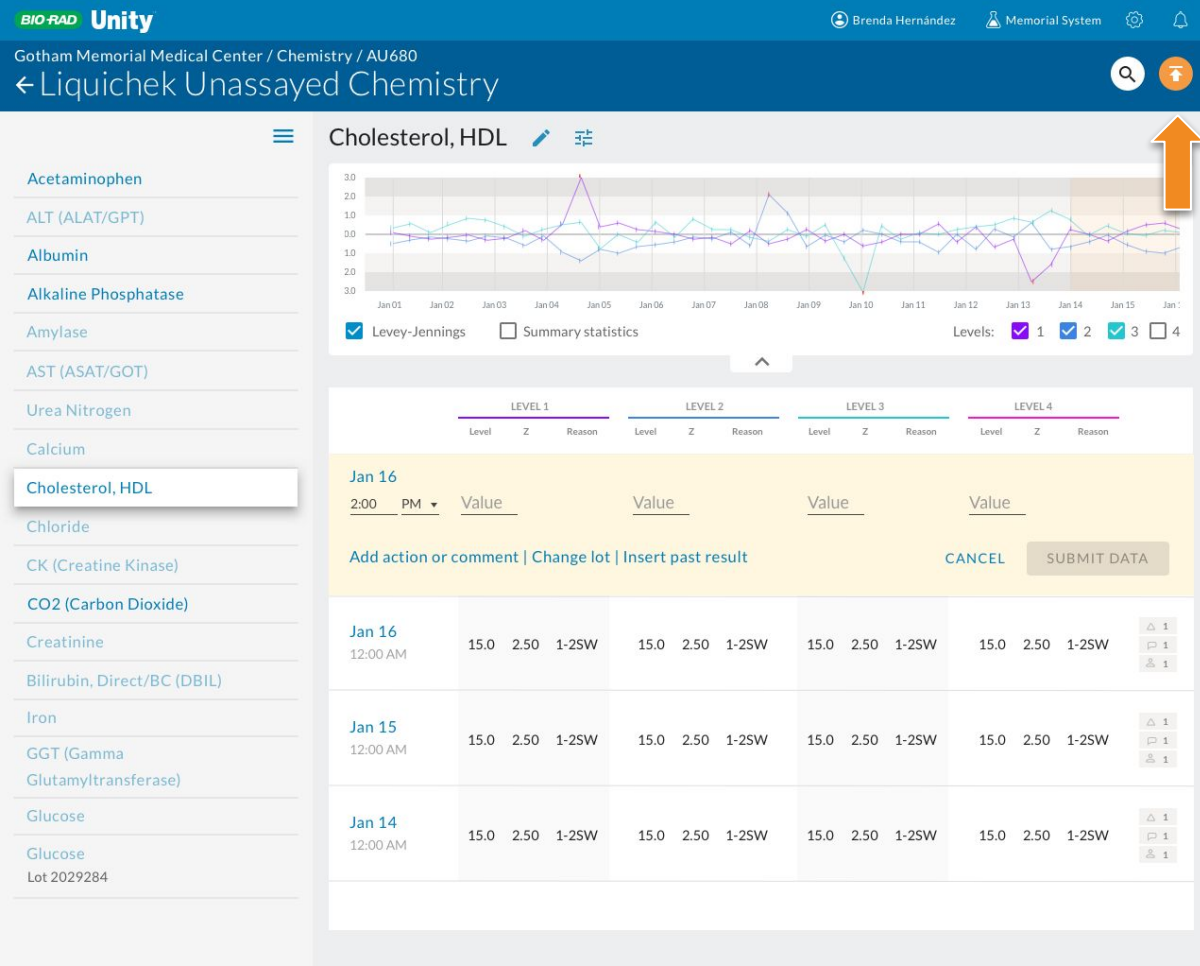
Understood where to go to change settings such as rules



Understood how to navigate to another control



*The concept of hierarchy doesn't seem to be clear at first; users often want to find something by clicking on a sibling.*



Can initiate QR code process





**BIO-RAD Unity**  
Gotham Memorial Medical Center / Chemistry  
← AU680

Unity  
Brenda Hernández Memorial System

Liquichek Unassayed Chemistry Lot 29283

Run entry Level entry

Liquichek Unassayed Chemistry  
Liquichek Assayed Multiquant  
Liquichek Lipids  
Liquichek Microalbumin

LEVEL 1 LEVEL 2 LEVEL 3 LEVEL 4

Albumin

MEAN

SD

POINTS

Change lot

Albumin

MEAN

SD

POINTS

October

15.0 15.0

1.22 1.22

3 3

Alkaline Phosphatase


Value Value Value Value

Value Value Value Value

Report for  
Nov 31 2019 12:00 AM

CANCEL SUBMIT DATA

Please capture the code with your Bio-Rad mobile app.



CANCEL NEXT

Understood what to do with QR code



# Data entry findings

- Iconography issues for navigation
- LJ chart dominates viewer cognition
- Hierarchy unclear
- Confusion as to how to enter a test run

# Reports discovery

- Able to find where reports are?
- Able to generate a default report?
- Able to distinguish between different states of reports?
- Able to find an existing report?



BIO-RAD Unity

Gotham Memorial Medical Center  
← Chemistry

TEST RESULTS REPORTS

Beckman Coulter AU680

LEVEL 1 LEVEL 2 LEVEL 3 LEVEL 4

Liquichek Unassayed Chemistry

Albumin

	Value	Value	Value	Value
Add action or comment   Change lot				

Albumin

	Value	Value	Value	Value
Jan 15 12:00 AM	15.0	15.0	15.0	15.0

Alkaline Phosphatase

	Value	Value	Value	Value
Add action or comment   Change lot				

Alkaline Phosphatase

	Value	Value	Value	Value
Jan 15 12:00 AM	15.0	15.0	15.0	15.0

Jan 16 Change date 12:00 AM CANCEL SUBMIT DATA

Understands where to find reports



*User 5 did not participate in the reports section of study due to time constraints.*

**BIO-RAD Unity**

Gotham Memorial Medical Center  
← Chemistry

ADD AN INSTRUMENT

- Aeroset
- ARCHITECT ci4100
- AU680**
- UniCel DxC 800
- ADVIA Centaur XP
- BN ProSpec
- Dimension Vista
- IMMULITE 1000

TEST RESULTS | **REPORTS**

AU680

Create a report for AU680

Month: November | Year: 2018

☒ Monthly evaluation ☒ Laboratory comparison

**CREATE**

More options

No reports yet

Understands how to create a report



*Users sometimes wanted to create a report on a specific date range. Exactly how this report would be used, or the usefulness of such a report, is not immediately clear.*

Understands what happens when a report is created (comes into view)



**BIO-RAD Unity**

Gotham Memorial Medical Center  
← Chemistry

ADD AN INSTRUMENT

- Aeroset
- ARCHITECT ci4100
- AU680**
- UniCel DxC 800
- ADVIA Centaur XP
- BN ProSpec
- Dimension Vista
- IMMULITE 1000

TEST RESULTS | **REPORTS**

AU680

Create a report for AU680

Month: November | Year: 2018

☒ Monthly evaluation ☒ Laboratory comparison

**CREATE**

More options

Dec 2  
**November**  
Evaluation, comparison

Understands how to view a report





**BIO-RAD Unity**  
Gotham Memorial Medical Center  
← Chemistry

ADD AN INSTRUMENT

- Aeroset
- ARCHITECT ci4100
- AU680**
- UniCel DxC 800
- ADVIA Centaur XP
- BN ProSpec
- Dimension Vista
- IMMULITE 1000

TEST RESULTS | **REPORTS**

AU680

Create a report for AU680

Month: November | Year: 2018 | ☒ Monthly evaluation | ☒ Laboratory comparison | **CREATE**

More options

Dec 2 <b>November</b> Evaluation, comparison	Nov 12 <b>October</b> Evaluation	Oct 15 <b>October</b> Evaluation
--	--	--

Understands difference in report states



*This task was included to explore options in case we needed to differentiate between report status, e.g., approved/not approved. User assumptions were diverse. If we eventually need to differentiate report types/status, it will need to be more explicit.*

**BIO-RAD Unity**

Gotham Memorial Medical Center  
← Chemistry

ADD AN INSTRUMENT

- Aeroset
- ARCHITECT ci4100
- AU680**
- UniCel DxC 800
- ADVIA Centaur XP
- BN ProSpec
- Dimension Vista
- IMMULITE 1000

TEST RESULTS | **REPORTS**

AU680

Create a report for AU680

Month: November | Year: 2018

☒ Monthly evaluation ☒ Laboratory comparison

CREATE

More options

2019 | 2018

No reports yet for 2019

Understands how to access reports from past years



# Reports findings

- Overall users found the reports section easy to find and understand.
- Differentiation between report status/type would need expensive reworking if it becomes necessary.



# Dashboard discovery

- Can users identify general purpose of the dashboard?
- What do they expect on clicking action items?
- How would the user continue to main application functionality from the dashboard?

BIO-RAD

Unity

Brenda Hernández

Memorial System

Chemistry

Immunology

Microbiology

Hematology

Pathology

Good morning, Brenda

Expiring lots

6

TODAY

Liquichek Hematology Control

TOMORROW

Vitrol III

MONDAY

Cardiac Markers Program

JAN 23

Liquichek Immunoassay Plus Control

JAN 23

qUantify Plus Control

JAN 31

Lyphocek Immunology Plus Control

Your Unity license is about to expire

8

Days to Jan 1

Please contact Bio-Rad.

Understands basic purpose of dashboard



*User 5 did not participate in the dashboard section of study due to time constraints.*

Understands what would happen if user clicks on a link



*Users expected information about the lot's expiration. In reality, they would be able to not only get information but also act on it.*

BIO-RAD

Unity

Brenda Hernández

Memorial System

Chemistry

Immunology

Microbiology

Hematology

Pathology

Good morning, Brenda

Expiring lots

6

TODAY

Liquichek Hematology Control

TOMORROW

Virotrol III

MONDAY

Cardiac Markers Program

JAN 23

Liquichek Immunoassay Plus Control

JAN 23

qUAntify Plus Control

JAN 31

Lyphocek Immunology Plus Control

Your Unity license is about to expire

8

Days to Jan 1

Please contact Bio-Rad.

Understands meaning of license expiration

A horizontal progress bar with seven circles. The first five circles are green, the sixth is white, and the seventh is red.

Understands how to get to a data entry page from dashboard

A horizontal progress bar with seven circles. The first three circles are green, the fourth is red, the fifth is white, and the sixth is green.

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BIO-RAD

# Dashboard findings

- Users found dashboard easy to understand and use.





Next steps

# Next steps

- Revise UIs to address issues discovered
- Adapt questionnaire to allow benchmarking/tracking of progress for upcoming studies in other locales
- Develop CCL screens for testing in China
- Work with China team on localization



**Thank you!**

Eric Stoltz  
UX Design Lead

**BIO-RAD**