

# CCNA LORIS – Quality Control



Oct. 26th Workshop

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**CCNA**  
Canadian Consortium  
on Neurodegeneration  
in Aging



**CCNV**  
Consortium canadien en  
neurodégénérescence  
associée au vieillissement

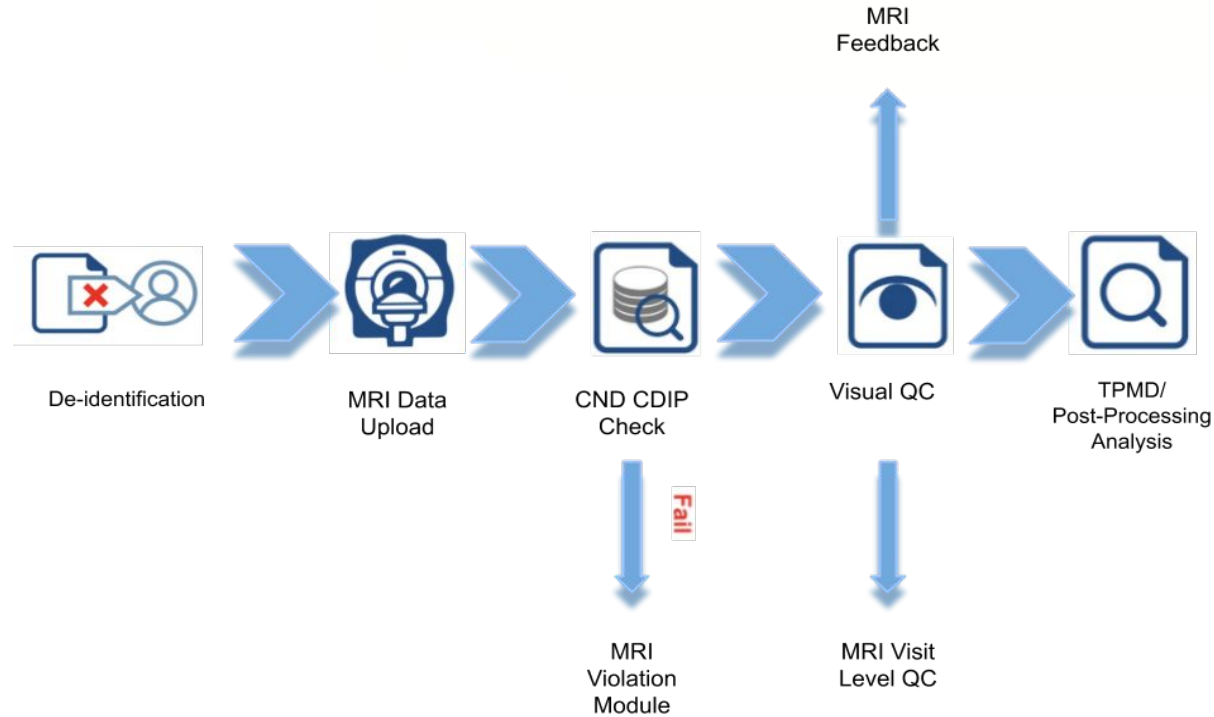


# Quality Control – Overview

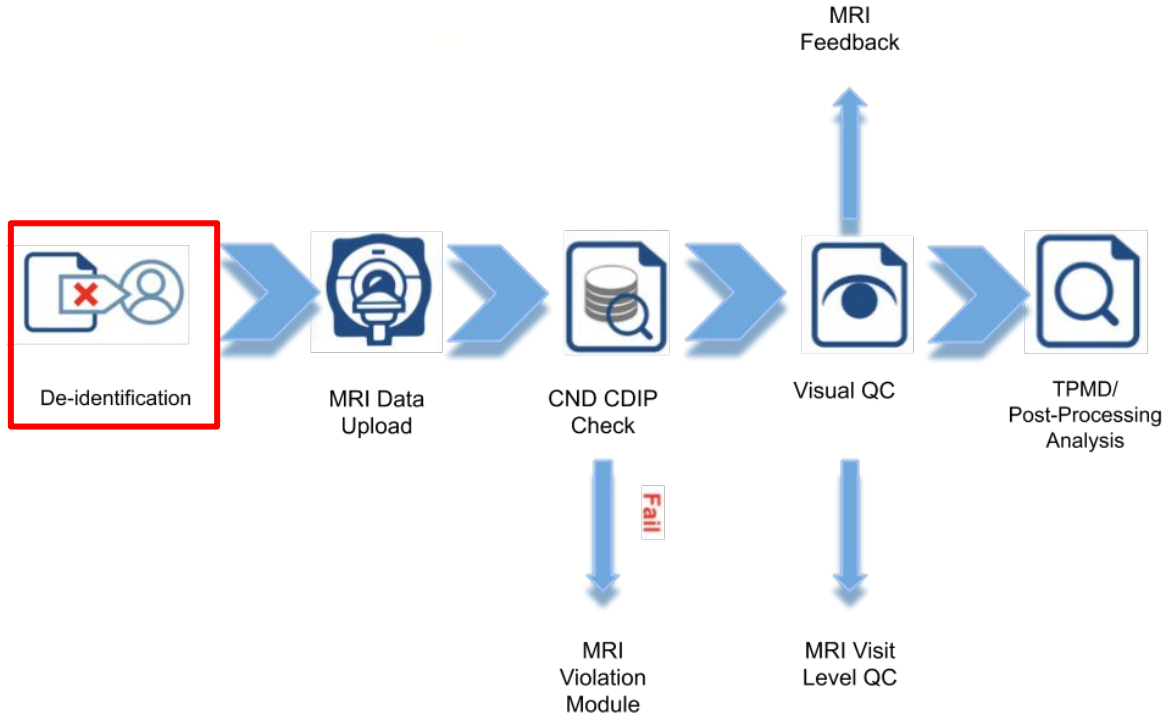


- **Intro to QC Validation**
- **Imaging data QC**
  - **Anonymization**
  - **MRI upload validation**
  - **CND CDIP Checks**
  - **Visual QC**
- **BVL QC**
  - **Validation/QC during coding**
  - **Validation/QC during data entry**
  - **Post-data entry QC**

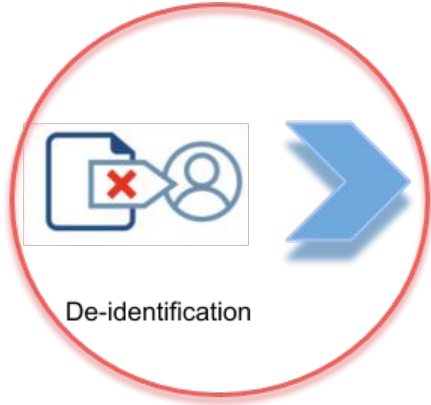
# Imaging Quality Control



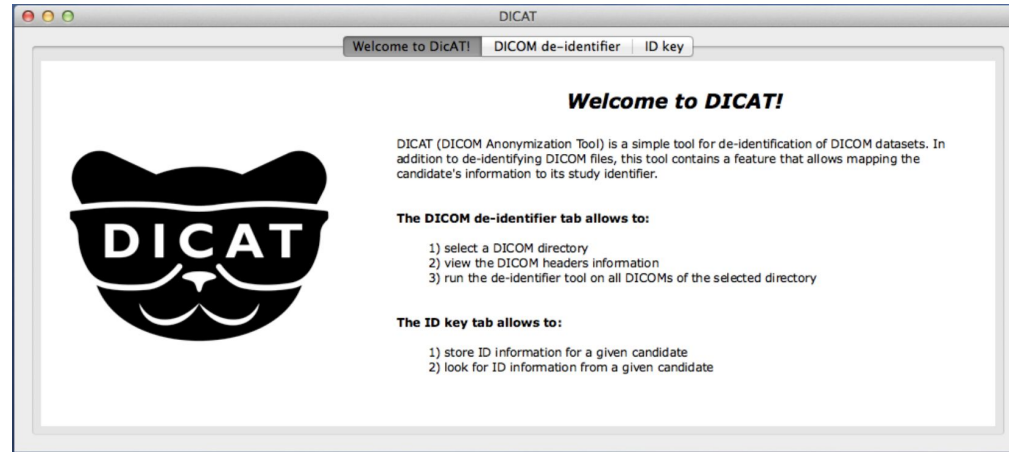
# Imaging Quality Control



## 1. Anonymization



De-identification



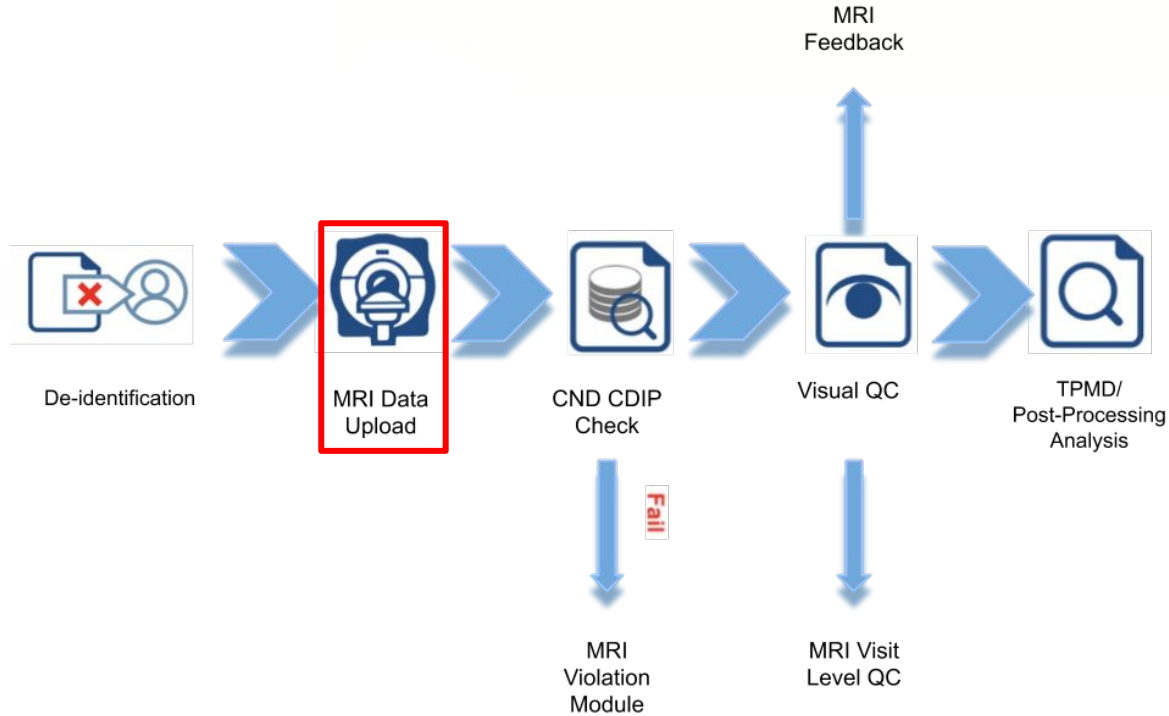
**Subject PatientName:**

PSCID\_CandID\_VisitLabel

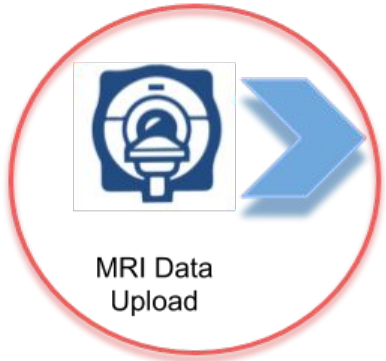
**Phantoms Patient-Name:**

lego\_phantom\_L1\_siteAbbrev\_acquisitionDate (yyyymmdd)

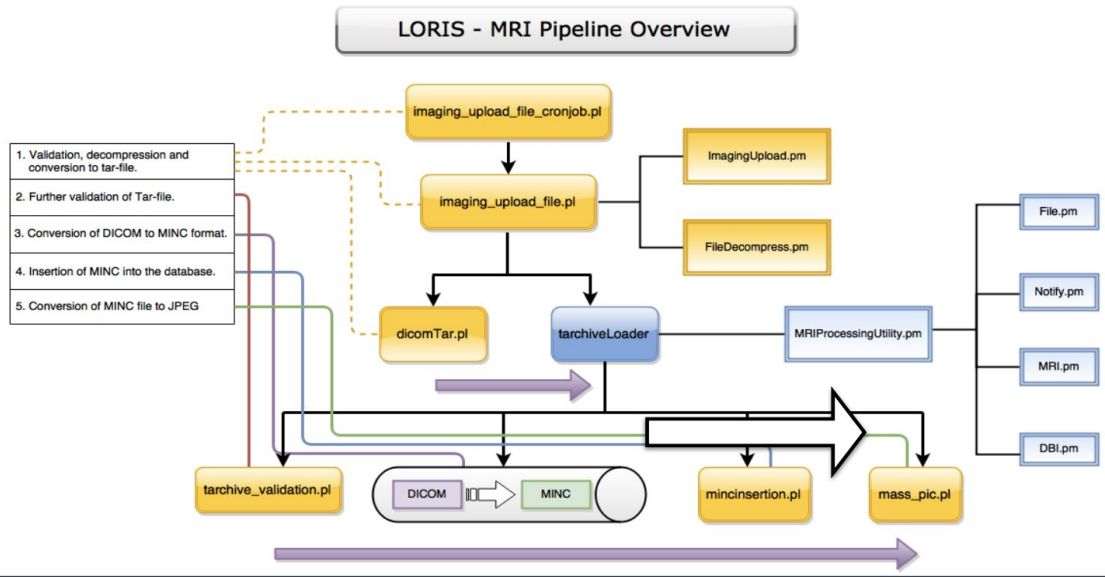
# Imaging Quality Control



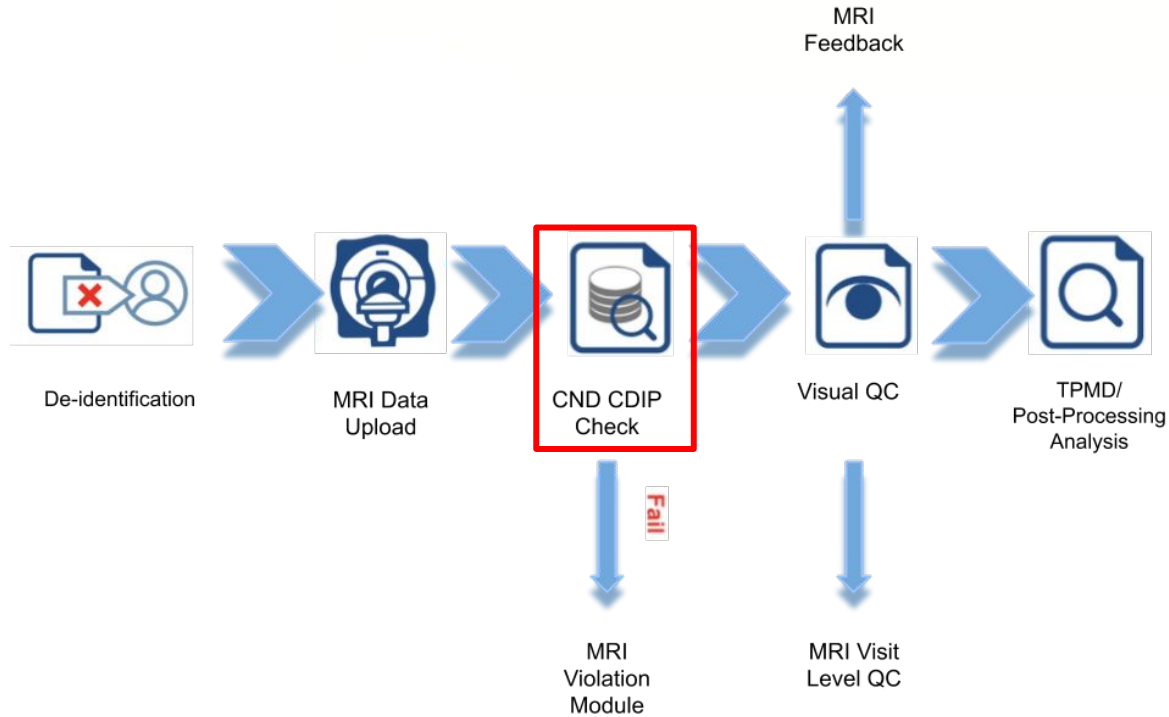
## 2. Image Upload Validation



- Patient name validation
- File name validation
- File integrity checking (making sure all dicoms are uploaded)

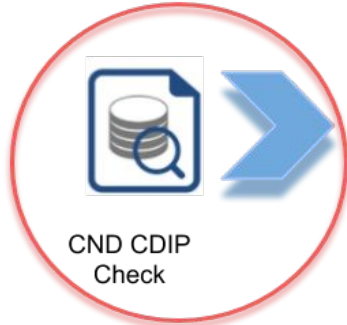


# Imaging Quality Control





# 3. MRI Protocol Checking



- Adherence to the common MRI protocol (Acceptable ranges for different parameter types)
- Parameter uniformity across the different MRI modalities

Hide mri-protocol Table

ID	Center_name	ScannerID	Scan_type	TR_min	TR_max	TE_min	TE_max	TI_min	TI_max	slice_thickness_min	slice_thickness_max	xspace_min	xspace_max	yspace_min	yspace_max
1	ZZZZ	0	1001 (3d_t1w)	2150.0000	2450.0000	2.0000	5.0000	800.0000	1000.0000	0.7000	1.3000				
2	ZZZZ	0	1001 (3d_t1w)	4.0000	10.0000	2.0000	5.0000			0.7000	1.3000				
5	ZZZZ	0	1003 (2d_flair)	8000.0000	10000.0000	80.0000	155.0000	2250.0000	2750.0000	2.0000	4.0000				
7	ZZZZ	0	1004 (t2_star)	625.0000	675.0000	13.0000	25.0000			2.0000	4.0000				
9	ZZZZ	0	48 (dti)	6500.0000	13200.0000	50.0000	120.0000			2.0000	4.0000				
10	ZZZZ	0	1006 (resting_state)	1750.0000	2950.0000	20.0000	40.0000			3.5000	3.5000				
13	ZZZZ	0	1007 (dual_pd)	2750.0000	3500.0000	5.0000	15.0000			2.0000	4.0000				
15	ZZZZ	0	1008 (dual_t2)	2750.0000	3500.0000	80.0000	110.0000			2.0000	4.0000				
18	ZZZZ	0	1009 (fMRI_task_memory)	1750.0000	2950.0000	20.0000	30.0000			3.0000	3.0000				
19	ZZZZ	0	1010 (gre_field_map1)	440.0000	485.0000	2.0000	6.0000			2.0000	4.0000				
20	ZZZZ	0	1011 (gre_field_map2)	440.0000	485.0000	6.0000	9.0000			2.0000	4.0000				
24	ZZZZ	0	1015 (b0_map)												
25	ZZZZ	0	1015 (b0_map)												
26	ZZZZ	0	1015 (b0_map)												
27	ZZZZ	0	1015 (b0_map)												
28	ZZZZ	0	1015 (b0_map)												
29	ZZZZ	0	1015 (b0_map)												
30	ZZZZ	0	1015 (b0_map)												

## 3. MRI Protocol Checking – MRI Violation Module



CND CDIP  
Check



MRI  
Violation  
Module

- Scans violating acceptable and required protocol checks are tagged and inserted in the MRI-Violation Module

Mri Violations

Selection Filter

Patient Name:  Time Run:

MincFile:  Type of problem:

Series Description or Scan Type:  Series UID:

Project:  Subproject:

Site:

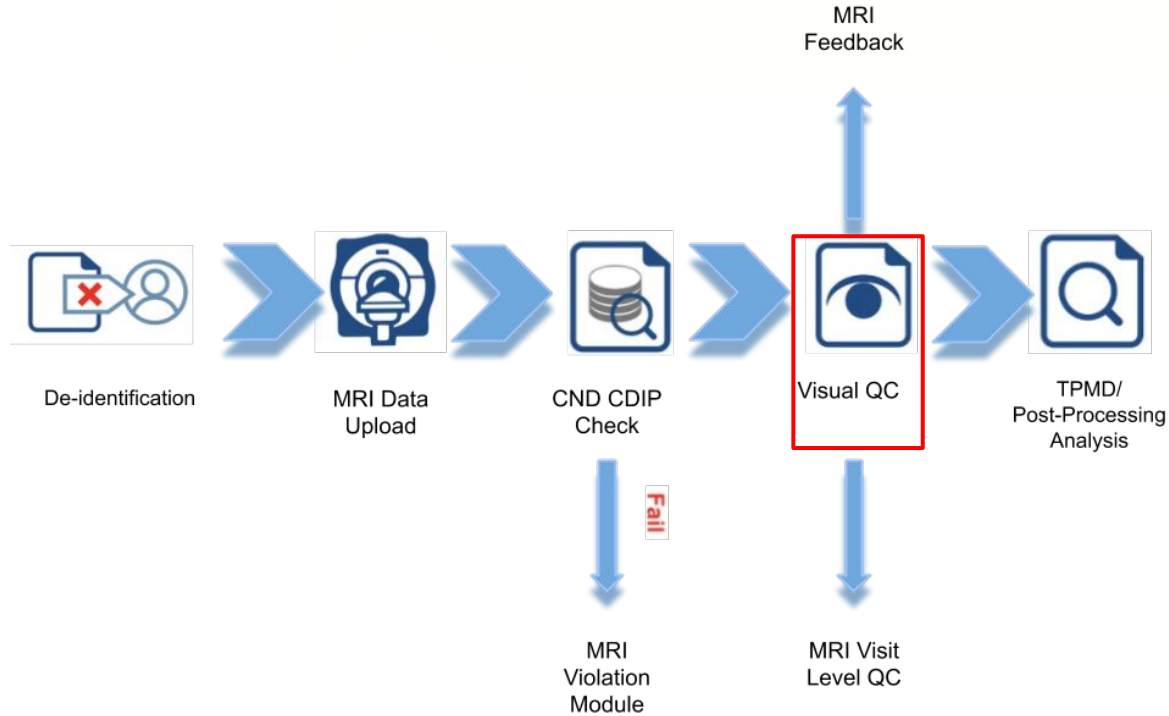
Show Data Clear Form

Not Resolved Resolved

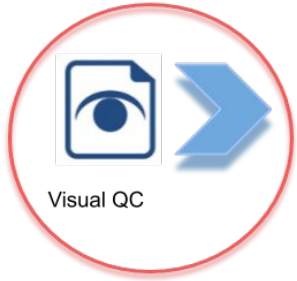
1240 rows displayed of 1240. (Maximum rows per page: 1000)

No.	PatientName	Project	Subproject	Site	TimeRun	MincFile	Series Description Or Scan Type	Problem	Resolution Status
1	CBH8629_337363_Initial_MRI	COMPASS-ND			2020-10-21 16:56:43	trashbin/TarLoad-16-29-P1feh/cbh8629_337363_Initial_mri_20201021_112207_301e1_mri.mnc	PD_T2_FS	Could not identify scan type	Unresolved Re-ran Enabled site/pending Inserted Rejected Inserted with flag Other
2	CBH8629_337363_Initial_MRI	COMPASS-ND			2020-10-21 16:56:37	trashbin/TarLoad-16-29-P1feh/cbh8629_337363_Initial_mri_20201021_112207_101e1_mri.mnc	Survey	Could not identify scan type	Unresolved
3	HEJ2436_290211_Initial_MRI	COMPASS-ND			2020-10-20 17:45:13	trashbin/TarLoad-17-20-HgqTME/hej2436_290211_Initial_mri_20201020_140122_101e1_mri.mnc	Survey	Could not identify scan type	Unresolved
4	MNI3369_597801_Initial_MRI	COMPASS-ND			2020-10-19 10:59:57	trashbin/TarLoad-10-52-__qlvi/mni3369_597801_Initial_mri_20201016_111457_4d1_mri.mnc	AAHead_Scout_MPR_tra	Could not identify scan type	Unresolved
5	MNI3369_597801_Initial_MRI	COMPASS-ND			2020-10-19 10:59:55	trashbin/TarLoad-10-52-__qlvi/mni3369_597801_Initial_mri_20201016_111457_3d1_mri.mnc	AAHead_Scout_MPR_cor	Could not identify scan type	Unresolved
6	MNI3369_597801_Initial_MRI	COMPASS-ND			2020-10-19 10:59:52	trashbin/TarLoad-10-52-__qlvi/mni3369_597801_Initial_mri_20201016_111457_2d1_mri.mnc	AAHead_Scout_MPR_sag	Could not identify scan type	Unresolved
7	BCU1339_682976_Initial_MRI	COMPASS-ND			2020-10-15 11:59:08	trashbin/TarLoad-11-54-2Hvk48/bcu1339_682976_Initial_mri_20200925_141339_4d1_mri.mnc	AAHead_Scout_MPR_tra	Could not identify scan type	Unresolved
8	BCU1339_682976_Initial_MRI	COMPASS-ND			2020-10-15 11:59:06	trashbin/TarLoad-11-54-2Hvk48/bcu1339_682976_Initial_mri_20200925_141339_3d1_mri.mnc	AAHead_Scout_MPR_cor	Could not identify scan type	Unresolved

# Imaging Quality Control



# 4. MRI Visual QC



Brainbrowser

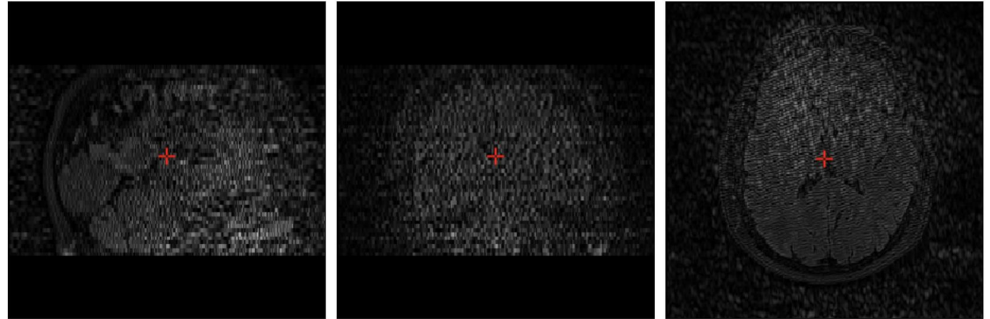
Sync Volumes    Reset View    300 Pixels (Default) ▾

ccna\_553565\_Initial\_MRI\_2d\_... ▾

World Coordinates  
X 1.6064    Y 15.261    Z 13.548

Color Map    Gray ▾

Threshold  
0    1385



- Facilitate the task of Visually Reviewing For artifacts (motion, scanner, intensity, and others)
- Brain-Browser is a Visualization Tool
- Consists of Volume Viewer, a slice-by-slice volumetric data analysis tool

## 4. MRI Visual QC- QC Comments



Qccna\_553565\_Initial\_MRI\_dual\_t2\_001.mnc **Fail** Header Info



QC Status: Fail

Selected:

Caveat: False

SNR: 12.2082

[QC Comments](#) [Download Minc](#) [Longitudinal View](#)

- Facilitates insertion of visual QC feedback directly in the system
- Comments and status flags are included for each modality
- Entries can be perused and downloaded by other researchers.

# 4. MRI Visual QC- QC Comments



DCCID:	553565
PSCID:	BRI7461
Visit label:	Initial_MRI
SubprojectID:	17
File name:	assembly/553565/Initial_MRI/mri/native/ccna_553565_Initial_MRI_dual_t2_001.mnc
Scan type:	dual_t2

**Geometric distortion**

**Intensity artifact**

- missing slices
- reduced dynamic range due to bright artifact/pixel
- slice to slice intensity differences
- noisy scan
- susceptibility artifact above the ear canals.
- susceptibility artifact due to dental work
- sagittal ghosts
- checkerboard artifact
- horizontal intensity striping (Venetian blind effect, DWI ONLY)
- diagonal striping (NRRD artifact, DWI ONLY)
- high intensity in direction of acquisition
- signal loss (dark patches)
- susceptibility artifact due to anatomy

F artefact

**Dominant Direction Artifact (DWI ONLY)**

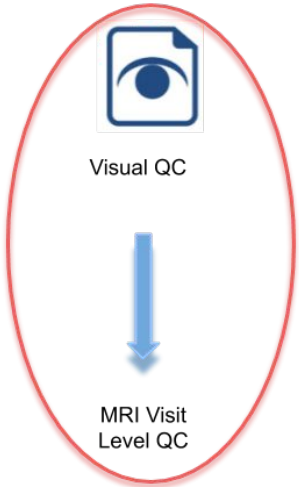
- red artifact
- green artifact
- blue artifact

**Entropy Rating (DWI ONLY)**

**Overall**

- copy of prev data
- Too few remaining gradients (DWI ONLY)
- No b0 remaining after DWIPrep (DWI ONLY)
- No gradient information available from scanner (DWI ONLY)
- Incorrect diffusion direction (DWI ONLY)
- Duplicate series

# 4. MRI Visual QC – Visit Level Feedback



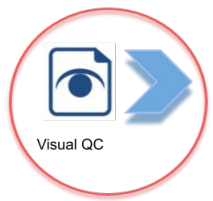
- Identify images within a session that pass or fails QC standards
- In failed QC cases, further information is communicated to the site to decide on the proper course of action

The screenshot displays the MRI Visual QC interface. On the left is a navigation sidebar with sections: 'Navigation' (Back to list, Previous, Next), 'Volume Viewer' (3D Only, 3D + Overlay), 'Links' (MRI Parameter Form, MRI Visual Measurements, MRI Synoptic Report, DICOM Archive 752, Download DICOM 752), and 'Visit Level QC' (Visit Level Feedback). The main area shows three failed QC cases:

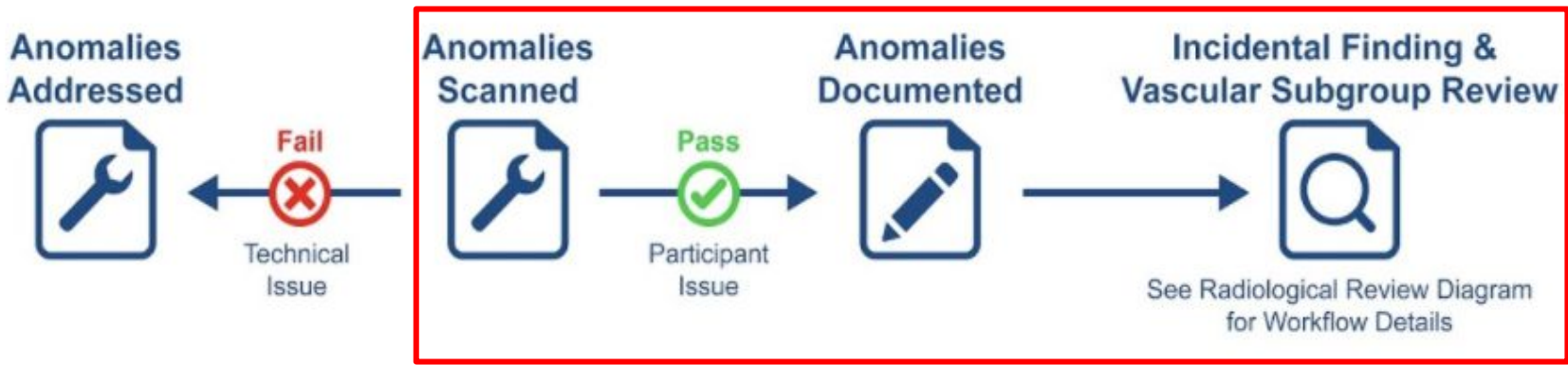
- Case 1:** `ccna_553565_Initial_MRI_2d_flair_001.mnc` (Fail). QC Status: Fail. SNR: 3.68937.
- Case 2:** `ccna_553565_Initial_MRI_2d_flair_002.mnc` (Fail). QC Status: Fail. SNR: 3.7218.
- Case 3:** `ccna_553565_Initial_MRI_resting_state_001.mnc`. QC Status: Fail. SNR: (not visible).

Each case includes a 'Header Info' dropdown, a 'QC Status' dropdown (set to Fail), a 'Selected' dropdown, a 'Caveat' dropdown (set to False), and buttons for 'QC Comments', 'Download Minc', and 'Longitudinal View'. A 'Subject' information window is also visible, showing: CandID: 338924, PSCID: BCT0108, Visit label: Initial\_MRI, SubprojectID: 1.

# 4. MRI Visual QC – Incidental Findings

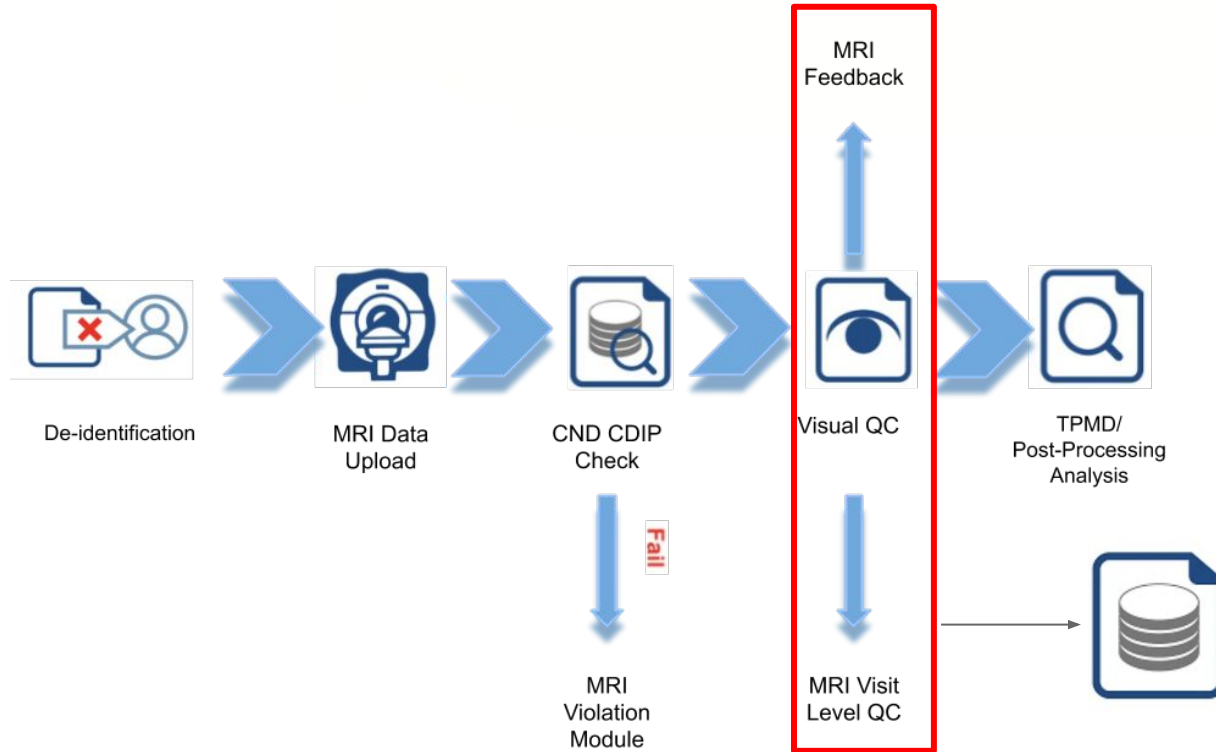


- Identify any incidental findings (Anomalies) and report back to the site coordinator for further action in a timely manner
- Radiologist will fill out the MRI Visual Measurement Form
- A text printable version of this report will be made available (Notification)
- Acknowledgment of receipt is required by each site
- In case of incidental findings, the site takes the full responsibility to follow up with the subject's physician





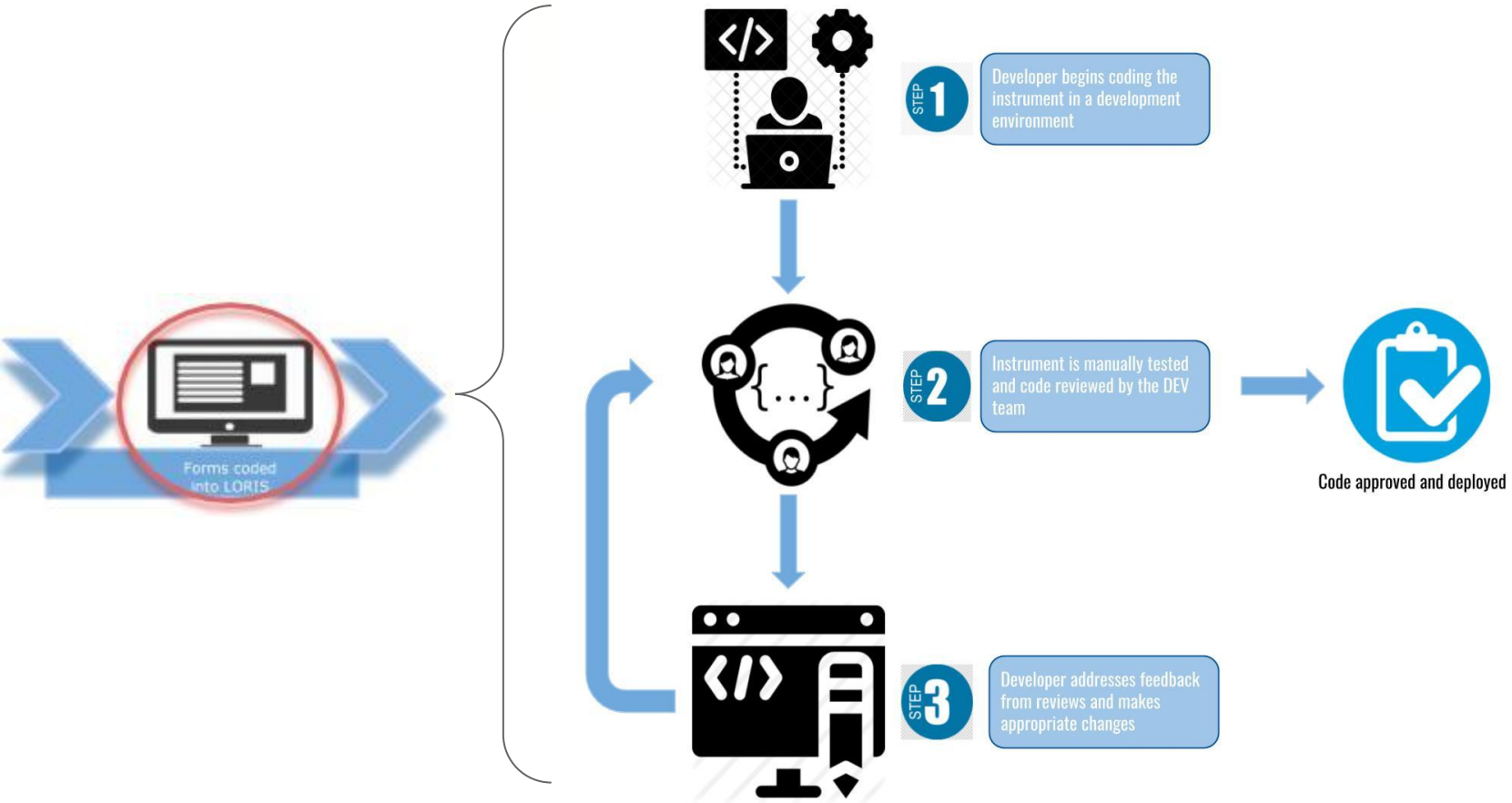
# Imaging Quality Control



# BVL Quality Control at each step of the way



# Quality Control During the Coding Process



# Quality Control During Data Entry



1. Instrument Validation
2. Feedback Module
3. Data Integrity
4. User Support
5. Double Data Entry

# 1. Instrument Validation



Instruments are validated upon saving the form. Typical things being checked include (but not limited to)

- Ensuring required fields are filled out
- Ensuring that entered values match the data type of the field (numeric, text, etc) (as shown in Figure I)
- Ensuring that entered values fall within pre-specified ranges (ex: dates)
- Enforcing conditional logic (as shown in Figure II)
- Checking for duplication (as shown in Figure III)
- Validating values before scoring can happen

## 1. Instrument Validation



### C. Work Activity

13. During the past 7 days, did you work for pay or as a volunteer?

If NO, please SKIP to question 14.

a) How many hours per week did you work for pay and/or as a volunteer?

Value must be numeric

Figure I

Has the research candidate and their study partner given informed consent and signed the consent forms?

If YES, please indicate the date the forms were signed:

Required

Figure II

Sample	Barcode	Timestamp (YYYY-MM-DD HH:MM)	Place to send
EDTA 3ml tube 1	1223345	2020-10-23 13:44	Local lab
Barcode duplicated on this page. Saving is blocked until error is fixed !			
EDTA 3ml tube 2	1223345	2020-10-23 13:43	Local lab

Barcode duplicated on this page. Saving is blocked until error is fixed !

Figure III



LORIS Candidate Clinical Imaging Reports Tools Admin

Administration  
 None  
 Partial  
 All

Data Entry  
 In Progress  
 Complete

Subtests  
[Top](#)  
[Page 1](#)

Access Profile > Candidate Profile 267890 / 9990173 > TimePoint Initial\_Assessment\_Screening Details

DOB	Biological Sex	Project	Visit Label	Visit to Site	Subproject
1950-06-01	Male	COMPASS-ND	Initial_Assessment_Screening	CCNA Testing Site	Mixed

Stage	Status	Date
Screening		
Visit	In Progress	2016
Approval		

### General Inclusion Criteria

\* Date of Administration

Candidate Age (Months) 806.2

# Quality Control During Data Entry



1. Instrument Validation
2. Feedback Module
3. Data Integrity
4. User Support
5. Double Data Entry



## 2. Feedback Module [Open]



Access Profile > Candidate Profile 389332 / 9992362 > TimePoint Initial\_Assessment\_Screening Details

DOB	Biological Sex	Project	Visit Label	Visit to Site	Subproject	MR Scan Done	Within Optima
1970-12-01	Male	COMPASS-ND	Initial_Assessment_Screening	CCNA Testing Site	SCI	?	Yes

Stage	Status	Date
Screening		
Visit	In Progress	2016-01-01
Approval		

### Behavioral Battery of Instruments

Main (Click To Open)	Data Entry	Administration	Feedback	Double Data Entry Form	Double Data Entry Status
Candidate Recruitment	In Progress		-	Double Data Entry	
General Inclusion Criteria			-	Double Data	

**Feedback for PSCID: 9992362**

**Open Thread Summary** ▾

This candidate has no behavioural feedback.

---

**New visit level feedback** ▾

**Feedback Type**  ▾

---

**Feedback Threads** ▾

There are no threads for this user!

# Quality Control During Data Entry



1. Instrument Validation
2. Feedback Module
3. Data Integrity
4. User Support
5. Double Data Entry

### 3. Data Integrity

- Scripts to parse through the entire database
- Identify duplicate data
- Ensure that data is normalized



# Quality Control During Data Entry



1. Instrument Validation
2. Feedback Module
3. Data Integrity
4. User Support
5. Double Data Entry

## 4. User Support



### Edit Issue #43

Last Update: 2020-10-19 11:48:58

Last Updated By: charliehenrib@gmail.com

Date Created: 2020-10-16 19:52:21

Reporter: lpiquett@ualberta.ca

Title*	<input type="text" value="d-kefs color-word interference test"/>
Description	<input type="text" value="condition 3 and 4 time limit should be 300 s but it won't allow anything over 180"/>
Assignee	<input type="text" value="Camille Beaudoin"/>
Site	<input type="text" value="University of Alberta"/>
Status	<input type="text" value="Assigned"/>
Priority	<input type="text" value="Normal"/>
Category	<input type="text" value="Data Entry"/>
Module	<input type="text" value="Instrument Builder"/>
PSCID	<input type="text" value="UOA9111"/>
Visit Label	<input type="text" value="Initial_Assessment_Screening"/>

Support requests related to data entry

### Comment History

2020-10-19 11:48:58 - charliehenrib@gmail.com updated :

assignee	to	camille.beaudoin@mcin.ca
status	to	assigned
lastUpdatedBy	to	charliehenrib@gmail.com
comment	to	Hi, I have created a ticket for this issue ( <a href="https://github.com/aces/CCNA/issues/4104">https://github.com/aces/CCNA/issues/4104</a> ) and Assigned Camille to it. We will notify you as soon as the changes have been made. Charlie

# Quality Control During Data Entry



1. Instrument Validation
2. Feedback Module
3. Data Integrity
4. User Support
5. Double Data Entry

## 5. Double Data Entry

**Double Data Entry** is an important step of the Quality Control pipeline.

- A second DE staff will be responsible for going over the original forms and re-entering the data.
- This allows LORIS to compare both entries and flag any errors in the data entry process that could have been the result of typos, misreading or misinterpreting the forms, etc.



### Behavioral Battery of Instruments

Main (Click To Open)	Data Entry	Administration	Feedback	Double Data Entry Form	Double Data Entry Status
Candidate Recruitment	Complete	All	-	Double Data Entry	Complete
General Inclusion Criteria	Complete	All	-	Double Data Entry	Complete
General Exclusion Criteria	Complete	All	-	Double Data Entry	Complete
Pure Tone Audiometry	Complete	All	-	Double Data Entry	Complete
Montreal Cognitive Assessment (MoCA)	Complete	All	-	Double Data Entry	Complete
Subjective Cognitive Impairment and Functional Capacity	Complete	All	-	Double Data Entry	Complete
Biosample Collection (Screening)	Complete	None	-	Double Data Entry	Complete

# Quality Control After Data Entry



1. Resolve conflicts
2. Address / close feedbacks



# 1. Conflict Resolver Module



- Any discrepancies between the original data entry and the DDE will be flagged as a conflict.
- All conflicts can be viewed and resolved from within the **Conflict Resolver** module.



# 1. Conflict Resolver Module



Home > Conflict Resolver

Selection Filter ⬆

<b>For Site:</b>	<input type="text" value="All"/>	<b>Instrument:</b>	<input type="text"/>
<b>Visit label:</b>	<input type="text" value="All"/>	<b>CandID:</b>	<input type="text"/>
<b>PSCID:</b>	<input type="text"/>	<b>Question:</b>	<input type="text"/>
<b>Project:</b>	<input type="text"/>	<input type="button" value="Clear Filters"/>	

Unresolved Conflicts Resolved Conflicts

20 rows displayed of 49624. (Maximum rows per page: )

No.	Instrument	CandID	PSCID	Visit Label	Project	Question	Correct Answer
41	Annual Follow-up Phone Call	316086	JGH8606	Follow_Up_1_Year_Phone_Call	COMPASS-ND	date_of_ER_visit_1_date	<div style="border: 1px solid #ccc; background-color: #f0f0f0; padding: 2px;"> <div style="background-color: #e0e0e0; padding: 2px;"> <input checked="" type="checkbox"/> Unresolved                 </div> <div style="background-color: #007bff; color: white; padding: 2px;">                     2019-05-01                 </div> <div style="padding: 2px;">                     2091-01-05                 </div> </div> <input type="text" value="Unresolved"/>
42	Annual Follow-up Phone Call	316086	JGH8606	Follow_Up_1_Year_Phone_Call	COMPASS-ND	reason_for_ER_visit	<input type="text" value="Unresolved"/>

## 2. Feedback Module [Review/Close]



Home > Access Profile > Candidate Profile 971574 / BRI8961 > TimePoint Initial\_Assessment\_Screening Details > Employment History

DOB	Biological Sex	Project	Visit Label	Visit to Site	Subproject	MR Scan Done	Within Optimal	Within Permitted
1928-05-01	Female	COMPASS-ND	Initial_Assessment_Screening	Bruyère Research Institute	SCI	N	Yes	Yes

Stage	Status	Date
Screening		
Visit	Pass	2018-01-10
Approval		

### Employment History

1. What is your current employment status? (Choose one)

Retired ▾

2. When you were working, what type of work did you do for the majority of your career?

Professional, non-managerial (work that requires a university degree, e.g., teacher) ▾

3. For the majority of your career, in which occupational category did your employment belong?

Business, finance, and administration  
 Natural and applied sciences and related occupations (incl. physical and life sciences, engineering, architecture, information technology)  
 Health occupations (incl. nurse, physician, health care and support staff)  
 Education, law, and social, community, and government services

4. For the majority of your employment history, about how many hours a week did you work?

Employed all of the time (≥ 30 hours/wk) ▾

5. Which of the following best describes your working schedule?

Daytime schedule or shift ▾

#### Feedback for PSCID: BRI8961

##### Open Thread Summary ▾

This candidate has no behavioural feedback.

##### New instrument level feedback ▾

Field Name

Feedback Type

##### Feedback Threads ▾

Fieldname	Author	Status
occupational_category Input Errors	lthompson@bruyere.org on: 2018-03-29	closed- ▾

lthompson@bruyere.org on commented:  
Participant provided two responses because occupation fit into more than one category

## 2. Feedback Module [Review/Close]



Last Update: 2020-10-16 11:02:01

Last Updated By: jessica.callegaro@mail.mcgill.ca

Date Created: 2020-10-13 19:49:27

Reporter: victor.whitehead@ladydavis.ca

Title*	VIA9514 Barcode Buccal and Fecal swab page will not save when information is input
Description	No matter what information is input, the page will not save.
Assignee	Jessica Callegaro
Site	Vancouver Island Health Authority
Status	Resolved
Priority	Normal
Category	Behavioural Instruments
Module	Access Profile
PSCID	VIA9514
Visit Label	Clinical_Assessment
Watching?	Yes
Add others to watching?	Abbie Barron Abdellady Osman Abdullah Al Jaja
New Comment	

### Comment History

2020-10-16 11:02:01 - jessica.callegaro@mail.mcgill.ca updated :

status	to	resolved
lastUpdatedBy	to	jessica.callegaro@mail.mcgill.ca
comment	to	Resolved.

2020-10-15 11:26:51 - charliehenrib@gmail.com updated :

status	to	assigned
lastUpdatedBy	to	charliehenrib@gmail.com

2020-10-13 18:06:41 - jessica.callegaro@mail.mcgill.ca updated :

comment	to	PR issued: <a href="https://github.com/acces/CCNA/pull/4087">https://github.com/acces/CCNA/pull/4087</a> Karen to be notified when the bugfix goes live.
---------	----	--

2020-10-13 18:05:50 - jessica.callegaro@mail.mcgill.ca updated :

assignee	to	jess.callegaro@icloud.com
lastUpdatedBy	to	jessica.callegaro@mail.mcgill.ca
comment	to	PR issued: <a href="https://github.com/acces/CCNA/pull/4087">https://github.com/acces/CCNA/pull/4087</a> Karen to be notified when the bugfix goes live.

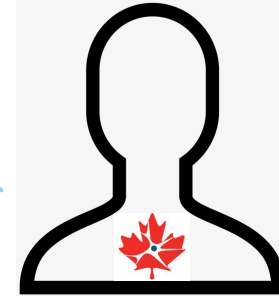
2020-10-13 15:49:28 - victor.whitehead@ladydavis.ca updated :

assignee	to	karen.coles@viha.ca
site	to	Vancouver Island Health Authority
title	to	VIA9514 Barcode Buccal and Fecal swab page will not save when information is input
category	to	Behavioural Instruments
module	to	Access Profile
lastUpdatedBy	to	victor.whitehead@ladydavis.ca
Visit Label	to	Clinical_Assessment
PSCID	to	VIA9514
comment	to	No matter what information is input, the page will not save.

# Behavioural Quality Control Browser



This all seems like a lot to remember... How will I ever keep track of all these data entry errors?!



Fret not! The **QC browser** makes it easy for you to view all conflicts, feedbacks and more! All centrally located in one convenient and filterable module.

# Behavioural Quality Control Browser



LORIS Candidate Clinical Imaging Reports Tools Admin Members Portal ? Site Affiliations: 54 Admin account

Home > Data Team Helper

## Selection Filter

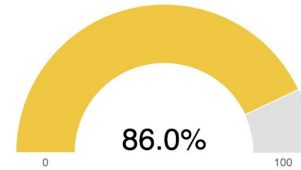
**Visit Labels:**  **Instruments:**

**DCCID:**  **PSCID:**

**Site:**  **Project:**

Show Data

At A Glance: All Candidates - Across All Visits - Across All Instruments - All Sites - All Projects



Incomplete Forms **73549** Data Conflicts **48825** Behavioural Feedback **1231**

## Incomplete Forms

Visit	DCCID	PSCID	Instrument
Clinical_Assessment	100673	UGM1083	Biomarker Data - Blood Analysis
Clinical_Assessment	100673	UGM1083	Biomarker Data - CSF Analysis
Follow_Up_2_Year_Screening	100673	UGM1083	Subjective Cognitive Impairment and Functional Capacity

# Behavioural Quality Control Browser



Incomplete Forms **73549**

Data Conflicts **48825**

Behavioural Feedback **1231**

## Data Entry Conflicts

Visit	DCCID	PSCID	Instrument	Field Name
Initial_Assessment_Screening	933011	HNB1753	Benson Complex Figure Copy (Delayed)	benson_delayed_q1
Initial_Assessment_Screening	933011	HNB1753	Benson Complex Figure Copy (Delayed)	benson_delayed_q2
Initial_Assessment_Screening	933011	HNB1753	Benson Complex Figure Copy (Delayed)	benson_delayed_q3

# Behavioural Quality Control Browser



Incomplete Forms **73549**

Data Conflicts **48825**

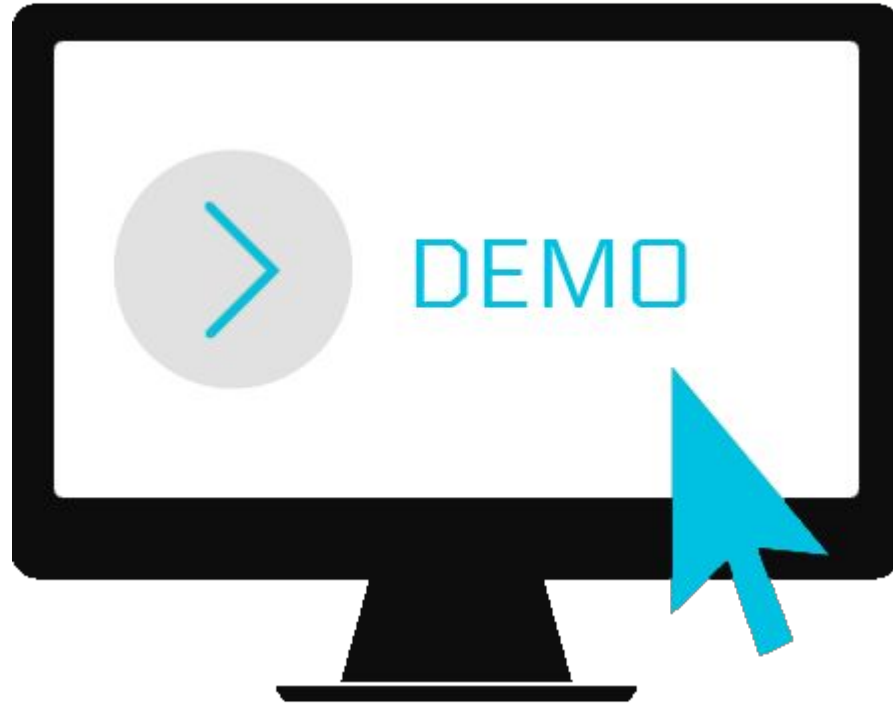
Behavioural Feedback **1231**

## Behavioural Feedback

<b>DCCID</b>	<b>PSCID</b>	<b>Feedback Level</b>	<b>Field Name</b>
267890	9990173	Instrument : Biosample Collection	blood_sample_fasting
267890	9990173	Instrument : Biosample Collection	saliva_sample_time_taken
150699	RUH6260	Instrument : Montreal Cognitive Assessment (MoCA)	Across All Fields
413695	CBH0964	Instrument : Rey Auditory Verbal Learning Test	Across All Fields



# Live Demo



# Clean Data, What Now?



- Once your data is clean, set instruments to “Complete” and visits to “Pass”

LORIS Candidate Clinical Imaging Reports Tools Admin

Access Profile > Candidate Profile 267890 / 9990173 > TimePoint Initial\_Assessment\_Screening D

DOB	Biological Sex	Project	Visit Label	Visit to Site	Subpro
1950-06-01	Male	COMPASS-ND	Initial_Assessment_Screening	CCNA Testing Site	Mixed

Stage	Status
Screening	
Visit	In Progress
Approval	

### Behavioral Battery of Instruments

Main (Click To Open)	Data Entry	Administration	Feedback
Candidate Recruitment	In Progress	Partial	closed

Actions

(No actions)

Stage: Visit

- Pass
- Failure
- Withdrawal
- In Progress

Send Time Point

- Send To DCC

BVL QC Type

- Not Done
- Visual
- Hardcopy

BVL QC Status

- Not Done
- Complete



1. Statistics
2. Study-Tracker

# Statistics



- The Statistics Module contains multiple tools to give a large statistical overview of the progression of the study in four domains: demographics, behavioural data, imaging data, and recruitment data
- In each of these categories, the module includes a general statistical summary, as well as the ability to filter for more specific results.





## Welcome to the statistics page

This page will display statistics related to data acquisition, data processing and data entry as it relates to both the behavioural and imaging aspects of this study.

### Demographics Statistics

The **Demographics Statistics** tab currently includes general statistics relating to the number of candidates registered in each cohort as well as customizable categories displaying statistics relating to candidate demographics (participant status, sex, age etc.). You may also view statistics broken down per instrument, displaying the number of complete and incomplete instruments per site, as it pertains to each visit label and cohort by selecting an instrument from the dropdown menu with the option to hide visit labels to only display total visit counts per site.

### Behavioural Statistics

The **Behavioural Statistics** tab currently includes data entry statistics relating to the number of candidates who have completed each instrument per site and timepoint. As well, there is an option to view the data entry statistics per instrument as well a breakdown per participant, which will reveal an in-depth table, listing candidate PSCIDs, completion count, and incomplete candidates. The same statistics are also available for double data entry.

### MRI Statistics

The **MRI statistics** tab currently displays the number of scans inserted per site as well as their QC (Quality Control) status. For various scans within a study based on the MRI parameter form entries, there is a breakdown of scan completion, arranged by site, cohort and timepoint, with the option to hide visit labels to only display total visit counts per site.

### Recruitment Statistics

The **Recruitment statistics** tab currently displays an overview on recruitment and progress of candidates per subprojects and sites. It is shown how many candidates are in progress and how many have completed baseline across these categories, as well as average recruitment per month for sites and percentages of targets completed for subprojects. A summary of the top 5 highest recruiting sites for the last month is also given.

# 1. Demographics



Home > Statistics

General Description **Demographic Statistics** Behavioural Statistics Imaging Statistics Recruitment Statistics

## General Demographic Statistics for COMPASS-ND

All sites COMPASS-ND

Demographics	Undefined	SCI	MCI	V-MCI	AD	Mixed	FTD	PD	PD-MCI	PDD	LBD	T6-SCI	T10-SCI	SYN	
Registered candidates	19	157	471	49	157	63	52	101	52	21	40	14	63	148	
Participant Status	Active	7/19	141/157	413/471	45/49	123/157	56/63	40/52	93/101	45/52	13/21	28/40	14/14	58/63	134/148
	Inactive	0/19	0/157	1/471	0/49	0/157	0/63	0/52	0/101	0/52	0/21	0/40	0/14	0/63	0/148
	Other	12/19	16/157	57/471	4/49	34/157	7/63	12/52	8/101	7/52	8/21	12/40	0/14	5/63	14/148
Sex	Male	4/7	48/141	226/413	25/45	67/123	35/56	19/40	53/93	38/45	12/13	23/28	4/14	15/58	65/134
	Female	3/7	93/141	187/413	20/45	56/123	21/56	21/40	40/93	7/45	1/13	5/28	10/14	43/58	69/134
Age Average (months)	832.82	847.27	884.55	916.58	890.84	941.11	800.14	797.53	847.01	919.79	876.53	854.42	844.78	884.34	

# 1. Demographics



Home > Candidate Parameters

[Return to timepoint list](#)

[Candidate Information](#) **[Participant Status](#)** [Consent Status](#) [Clinical Trials](#) [Diagnosis Reappraisal](#) [Ext...](#)

[Date Of Birth](#) [Date of Death](#) [Timepoints Information](#) [Assessment of Biomarker Information on Clinical Diagn...](#)

PSCID HNB0415

DCCID 969801

Participant Status\*

Specify Reason

Comments

- ✓ Active
- Complete
- Excluded
- Inactive
- Incomplete
- Ineligible
- Refused/Not Enrolled
- Withdrawn

Update

- Participant status can be changed in the Candidate Parameters module

# 2. Behavioural



Home > Statistics

General Description Demographic Statistics **Behavioural Statistics** Imaging Statistics Recruitment Statistics

## Data Entry Statistics for COMPASS-ND

COMPASS-ND Submit Query

Visit	St. Joseph's Hospital		Centre Hospitalier de l'Université de Montréal		Douglas Mental Health University Institute, Memory Clinic		Hôpital Enfant-Jésus (CHA)		Institut Universitaire de Gériatrie de Montréal (CRIUGM)	
	Completed (%)	Created	Completed (%)	Created	Completed (%)	Created	Completed (%)	Created	Completed (%)	Created
CLINICAL_ASSESSMENT	1888 (98%)	1916	308 (91%)	335	804 (99%)	806	2262 (98%)	2285	4166 (95%)	4340
FOLLOW_UP_1_YEAR_PHONE_CALL	13 (100%)	13	0 (0%)	0	12 (100%)	12	23 (100%)	23	45 (100%)	45
FOLLOW_UP_1_YEAR_SCREENING	0 (0%)	0	0 (0%)	0	0 (0%)	0	0 (0%)	0	0 (0%)	0
FOLLOW_UP_2_YEAR_CLINICAL	0 (0%)	0	0 (0%)	0	0 (0%)	0	59 (100%)	59	546 (92%)	590



# 3. Imaging



Home > Statistics

General Description Demographic Statistics Behavioural Statistics **Imaging Statistics** Recruitment Statistics

## General Statistics with QC Status

All sites All Projects

Select All  3d\_t1w  2d\_flair  t2\_star  dti  resting\_state  dual\_pd  dual\_t2  fmri\_task\_memory  gre\_field\_map1  gre\_field\_map2  b0\_map

Submit Query

Scan Type	QC Status	Total	
3d_t1w	<b>Scans Inserted</b>	<b>1681</b>	
	QC status	Passed	1473
		Failed	105
		Not QCed	103
2d_flair	<b>Scans Inserted</b>	<b>1195</b>	
	QC status	Passed	1064
		Failed	98
		Not QCed	33

# 4. Recruitment



Home > Statistics

General Description Demographic Statistics Behavioural Statistics Imaging Statistics Recruitment Statistics

## Recruitment Statistics

Download table as CSV

Number Loris Rows	Discrepancy	Training Uploads	Scanners	Entries with no Dx	Not part of COMPASS-ND
1467	202	24	27	18	133

## Recruitment Data

All cohorts  
CIE  
CIE-S  
SCI  
MND

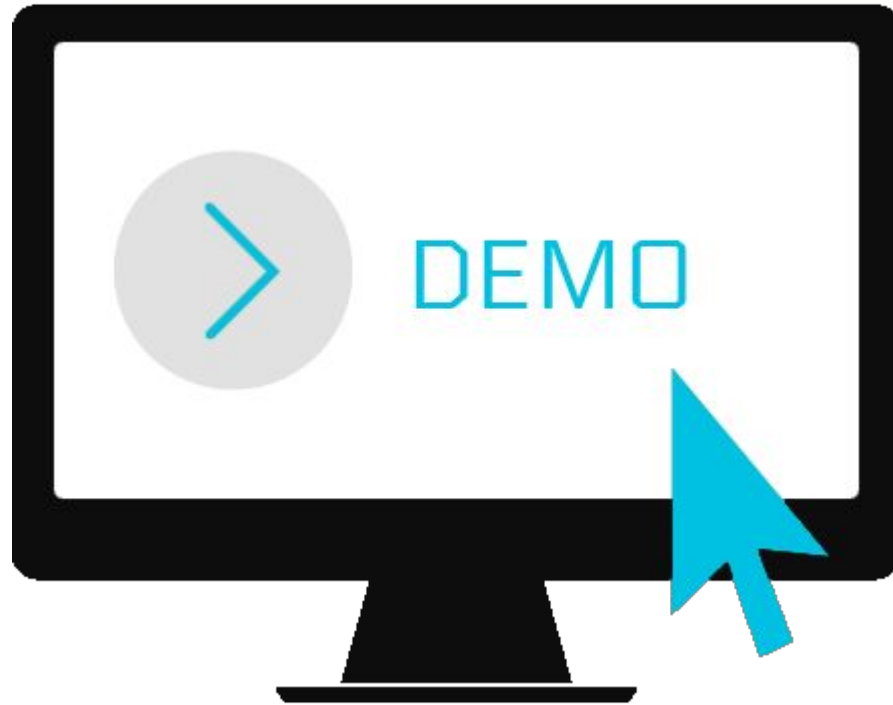
All sites  
TNH  
HNB  
NRS  
MND

Submit Query

Download table as CSV

Cohorts	TNH	HNB	NRS	MND	DMC	HEJ	UGM	JGH	CSA	IUS	HHS	KRC	PKD	LHS
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

# Live Demo



# Study Tracker



- Study management tool
- 4 initial assessment visits
- Graphical help for coordinators to manage their candidates

## Study Progression



Total Rows: 1340

Filters ^

Search by PSCID  Show All Sites  COMPASS-ND  Show All Cohorts

▼	Initial Assessment - Screening	Initial Assessment - Clinical	Initial Assessment - Neuropsychology	Initial MRI
JGH0174 ↗				
PKD5674				
PKD1227 ↗ ↗				
PKD6564 ↗ ↗				
PKD4773 ↗ ↗				

# Study Tracker




Filter candidates by PSCID, sites or cohort


## Study Progression





Total Rows: 1340





























Filters 

Search by PSCID

Show All Sites 

COMPASS-ND 

Show All Cohorts 

	Initial Assessment - Screening	Initial Assessment - Clinical	Initial Assessment - Neuropsychology	Initial MRI
JGH0174 				
PKD5674				
PKD1227  				
PKD6564  				
PKD4773  				

# Study Tracker



## Study Progression

Total Rows: 1340



Filters ^

Search by PSCID

Show All Sites

COMPASS-ND

Show All Cohorts

	Initial Assessment - Screening	Initial Assessment - Clinical	Initial Assessment - Neuropsychology	Initial MRI
JGH0174 >&#x2197;				
PKD5674				
PKD1227 &#x2197;				
PKD6564 &#x2197;				
PKD4773 &#x2197;				

### Legend:

- : No deadline for visit
- : Deadline for visit registration passed
- : Deadline for DE passed
- : DDE completed
- : Visit cancelled

- : Visit registration deadline approaching
- : Visit registration completed. DE deadline approaching
- : Initial DE completed
- : Data sent to DCC

# Study Tracker



## Study Progression

Total Rows: 1351



Filters ^

Search by PSCID

Show All Sites

COMPASS-ND

Show All Cohorts

	Initial Assessment - Screening	Initial Assessment - Clinical	Initial Assessment - Neuropsychology	Initial MRI
JGH0174				
PKD5674				
PKD1227				
PKD6564				
PKD4773				
PKD9893				
PKD2009				
JGH7671				
PKD6185				

Visit Registration: **complete**  
Data Entry: **complete**  
27/27 Instruments entered  
Double Data Entry:  
27/27 Instruments entered  
Data not yet sent to DCC

# Study Tracker



## Study Progression

Total Rows: 1351

Search by PS

Show All !

COMPAS!

Show All (

Filters ^



	Initial Assessment - Screening	Initial Assessment - Clinical	Initial Assessment - Neuropsychology	Initial MRI
JGH0174 🔗	D	D	D	D
PKD5674	X	X	X	X
PKD1227 🔗	X	X	X	X
PKD6564 🔗	D	D	D	D
PKD4773 🔗	D	D	D	D
PKD9893 🔗	D	●	D	D
PKD2009 🔗	D	D	D	D
JGH7671 🔗	X	X	X	X

### Participant PKD6564



#### General Health

✓✓ Physical Activity

#### Screening Tests (con't)

✓✓ Logical Memory II - Delayed Recall

✓✓ CERAD Word List Memory

✓✓ CERAD Word List Recall / Recognition

#### Main

✓✓ Montreal Cognitive Assessment (MoCA)

✓✓ Candidate Recruitment

✓✓ General Inclusion Criteria

✓✓ General Exclusion Criteria

✓✓ Subjective Cognitive Impairment and Funct...

✓✓ Pure Tone Audiometry

✓✓ Biosample Collection

#### Psychiatric Assessment

✓✓ Generalized Anxiety Disorder 7-Item Scale (...)

#### Psychiatric Assessment (con't)

✓✓ Geriatric Depression Scale (GDS)

#### Main (con't)

✓✓ Group-Specific Inclusion & Exclusion Criter...

✓✓ Summary and Diagnosis

#### Add-on Assessments

✓✓ Conversation Study (Parts I & II) + PCI-DAT

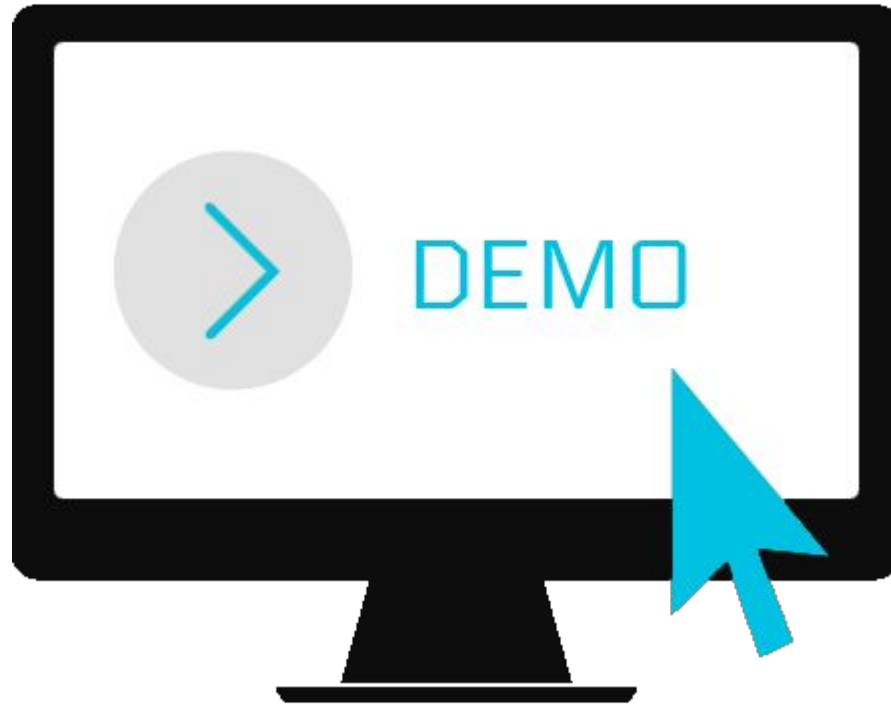
✓✓ Sleep Study

#### Screening Tests

✓✓ Logical Memory I - Immediate Recall



# Live Demo



# Acknowledgement



## Protocol Implementation Team

Howard Chertkow

Michael Borrie

Jennifer Fogarty

Nimi Bassi

Cynthia Di Prospero

Simon Duchesne

Victor Whitehead

Natalie Phillips

Randi Pilon

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**MCIN** **MCGILL CENTRE**  
**for INTEGRATIVE**  
**NEUROSCIENCE**

## Ace Lab



Alan Evans



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# Questions



You can email us at [ccna@mcin.ca](mailto:ccna@mcin.ca) if you have any further questions!