

Remote monitoring and source document collection in



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Agenda

- Introduction
- Remote monitoring
- Source collection methods
- Challenges
- Planning and considerations
- Step by step
- Questions

Regulatory guidance during the COVID-19 pandemic

- US FDA: “If planned on-site monitoring visits are no longer possible, sponsors should consider optimizing use of **central and remote monitoring** programs to maintain oversight of clinical sites.”
- Health Canada: “**Central monitoring** of clinical trials should be considered.”
- EU: Remote source data verification not currently allowed in most countries, but some countries are looking into temporary options due to the emergency situation.
- South Africa: “If planned on-site monitoring visits are no longer possible, sponsors should consider optimizing use of **central and remote monitoring** programmes to maintain oversight of clinical sites.”
- UK: “Source data verification may be done **remotely** by electronic means if the necessary security arrangements can be put in place, if the arrangements are in line with the participant information sheet.”
- Australia: “**Remote source data verification** may be done electronically as long as appropriate security arrangements either are or can be put in place.”

Remote monitoring

“Virtual” monitoring visits
– remote login to local
clinical site system

EDC and source documents
in a single system

Separate platform for remote
source document collection

Central data and
statistical monitoring

Remote monitoring



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Central data and
statistical monitoring

Remote monitoring workflow

dfexplore

Site enters
data

Site submits
documents

Monitor
reviews
documents

Monitor
completes
SDV

- Benefits:**
- Avoids on-site monitoring visits
 - Reduces travel time and cost
 - SDV performed on monitor's schedule

Methods of collecting source documents

- DFsend/email/fax
- In DFexplore:
 - File > Submit PDF
 - Plate > Attach Subject Document
 - Subject > Import Subject CRFs
- DFattach command-line program

Comparison of document collection methods

Method	Submitted to	File types	Multi page ¹	File size limit	Permission required
DFsend/email/fax	Image Router/ Image View	PDF	No	Limit of 999 pages per PDF	DFsend/None
DFexplore Submit PDF	Image Router/ Image View	PDF	No	Limit of 999 pages per PDF	DFexplore: Data - Submit PDF
DFexplore Attach Subject Document	Data record ²	PDF, DICOM (dcm, dic, dicom), image (png, jpg, jpeg, bmp), AV (mp3, wav, avi, mp4)	Yes	25MB	DFexplore: Data - Attach subject document
DFexplore Import Subject CRFs	Data record ²	PDF	No	25MB	DFexplore: Data - Import subject CRFs
DFattach command-line utility	Data record ²	PDF, DICOM (dcm, dic, dicom), image (png, jpg, jpeg, bmp), AV (mp3, wav, avi, mp4)	Yes	25MB	DFexplore: Data - Attach subject document Server: Attach document

¹ Multi-page PDFs are attached as a single document; otherwise each page of the PDF is attached as a separate document

² Attaching/importing to a blank record creates a pending record; otherwise it does not require re-saving the CRF

Attaching vs. importing documents

Plate > Attach Subject Document

- PDF, DICOM (dcm, dic, dicom), image (png, jpg, jpeg, bmp), AV (mp3, wav, avi, mp4)
- Data record must be selected to begin
- Entire selected document is attached to the selected record only (one by one)
- All pages of a multi-page PDF are attached together as one document
- Requires 'Data - Attach patient documents' permission in user role

Subject > Import Subject CRFs

- PDF only
- No record needs to be selected to begin
- Each page can be attached to specified subject, plate, and visit (without going to the record)
- Each page is a separate document (only one page is primary)
- Requires 'Data - Import subject CRFs' permission in user role

DFattach

- Automate document attachment in bulk, where the keys to import the documents to are included in the filename, using an input DRF, or script commands
- Example:
 - Save lab reports for study 200 subjects 1001, 1003, 1005, 1006 visit 1 plate 10 in /tmp/newdocs:
1001_1_10_labs.pdf
1003_1_10_labs.pdf
1005_1_10_labs.pdf
1006_1_10_labs.pdf
 - Run `DFattach -dir /tmp/newdocs -odrf /tmp/newdocs/results.drf 200`
 - Attaches 4 documents to the defined keys in the database (record status is pending if new)
 - Creates results.drf listing the records with attached documents for review
- More details and examples in Programmer Guide chapter 3

Challenges

- Privacy and security
- Site capabilities and needs
 - Policies, procedures, contracts
 - De-identification
 - Requirements around certified copies
 - Scanning, attaching process
 - Other study/research priorities
- Project and individual site differences – flexibility

De-identification

- In most cases, personally identifying information needs to be removed from source documents before submitting to the database
- Currently not able to de-identify documents within DFdiscover
 - De-identify before attaching to study data in DFexplore
 - Ensure the PDF or image can't be re-identified (removal, not just covering up)
- De-identification tools:
 - Adobe Acrobat Pro DC “redact” feature for PDFs
 - Many free online PDF tools available – consider privacy and security
 - Basic image editing:
 - Take a screenshot of the document
 - Open screenshot in an image editing app (Paint, Google Drawing)
 - Use drawing tools to redact personal identifiers
 - Save as a new image file

Planning

- Collection
 - How many and what kind of source are required per subject? per visit?
 - How and when do sites submit source documents? once or multiple times?
 - How do sites know where to attach source documents in the database?
 - Attach documents one by one per CRF, or one PDF with multiple documents to one CRF?
 - Do sites attach source documents or can DM or other central staff assist?
- Review
 - How will SDV be incorporated into data validation workflow?
 - How will the monitor perform and document source data verification?
- Agreement between site/monitor/sponsor

Choose best collection method

Site staff submit source documents	
Individual PDFs/images	Attach Subject Documents
Bulk multi-page PDFs (per subject or across subjects)	Import Subject CRFs
Email/fax/DFsend/Submit PDF	Entered by DM via Image View

DM staff attach source documents on site's behalf	
Bulk multi-page PDFs (per subject or across subjects)	Import Subject CRFs
DFattach (filenames with key fields, input DRF)	Processed via command line

Setup considerations

- Site role permissions required to attach/import
- SDV tracking fields in study database
- Incorporate SDV step in validation workflow
- Edit checks to automate tracking of documents and/or SDV
- Data task for monitors to review source documents

SDV tracking fields

- 'Attached' checkbox tracks whether document is attached to the record
- 'Reviewed' tracks whether monitor has reviewed the source document
- SDV status tracks pass/fail as indicated by the monitor
- SDV date tracks date of last review by the monitor

Visit Data	
Visit Number	<input type="text" value="003"/>
Subject ID	<input type="text" value="10005"/>
Visit Date	<input type="text" value="- -"/>
Was visit done remotely?	<input type="radio"/> Y <input type="radio"/> N
Any concomitant medications?	<input type="radio"/> Y <input type="radio"/> N <input type="checkbox"/>
Any adverse events?	<input type="radio"/> Y <input type="radio"/> N <input type="checkbox"/>
Were labs collected?	<input type="radio"/> Y <input type="radio"/> N
SDV (internal use only)	
Source document attached	<input type="checkbox"/> Attached
Source reviewed	<input type="checkbox"/> Reviewed
SDV Status	<input type="radio"/> Pass <input type="radio"/> Fail
SDV Date	<input type="text" value="- -"/>

Edit check examples

- Check for source documents
 - Identifies whether a document is attached to the record (using DFRASTER) on plate exit
 - Automatically completes 'Attached' field
- Ask about SDV status
 - Asks the monitor whether source document has been reviewed and SDV status on plate exit
 - Automatically completes SDV reviewed, status, and date fields based on monitor responses
- Check if SDV should be redone
 - Removes SDV tracking data if CRF data is updated or new document is attached on plate exit

Data task for monitors

- Based on validation levels
 - Example: all visit source documents are attached to plate 1 (Subject Visit) for that visit
 - Records ready for SDV are at validation level 4 (Ready for SDV)
 - Once SDV is complete, record is saved to level 5 (SDV complete)
 - Batch validate other records at visit to level 5
- Based on journal files
 - Use DFmkdrf.jnl program to identify final records with images at validation level 4

The screenshot shows the 'DFExplore - Define Tasks' dialog box. The 'Task' field is 'SDV ready for monitor'. The 'Mode' is 'Validate'. The 'Save Level' is '5 - SDV complete', and 'Enable edit checks' is checked. The 'Search' section has 'Data' selected. The 'Status' section has 'Final' checked. The 'Site', 'Subject', and 'Visit' fields are empty. The 'Plate' field is '1' and the 'Level' field is '4'. The 'Creation' and 'Modification' fields are empty. The 'Pattern' field is empty. The 'Expression' field is '\$(17:SDattached) == 1'.

The screenshot shows the 'DFExplore - Define Tasks' dialog box. The 'Task' field is 'All CRFs with source for SDV'. The 'Mode' is 'Validate'. The 'Save Level' is '5 - SDV complete', and 'Enable edit checks' is checked. The 'Search' section has 'By program' selected. The 'Program' field is 'DFmkdrf.jnl -image yes -v 4 -s final -cv 4 -cs final'.

Additional considerations

- Primary and secondary documents
 - First attached document is primary; subsequent documents are secondary and only primary if manually changed
 - Primary documents are shown alongside CRFs in Data View; secondary documents are shown in Review Images dialog
- Plate exit edit checks
 - Documents can be attached/imported without saving the CRF (no plate exit edit checks)
 - Consider workflow for sites to ensure edit check automation works as expected
 - Consider setting working mode to “Validate” for site staff so that they can easily re-save the CRF when attaching documents to existing records

```
edit DFopen_study() {  
    if ( dfrole()=="Site Data Entry" ) {  
        dfpref("WorkingMode", "Validate",DFPREF_LOCK);  
    }  
}
```

PDF scanning guidelines

- File size limit is 25 MB
- PDF version 1.3 or higher
- Minimum size and maximum quality
- Use greyscale, unless color is important
- Use 200 dpi resolution, unless high definition (300 dpi) is important

Server considerations

- Documents are stored on the DFdiscover server
- Ensure your server has enough storage for the anticipated volume of documents
- HD imaging enabled = better quality, larger file sizes

Training considerations

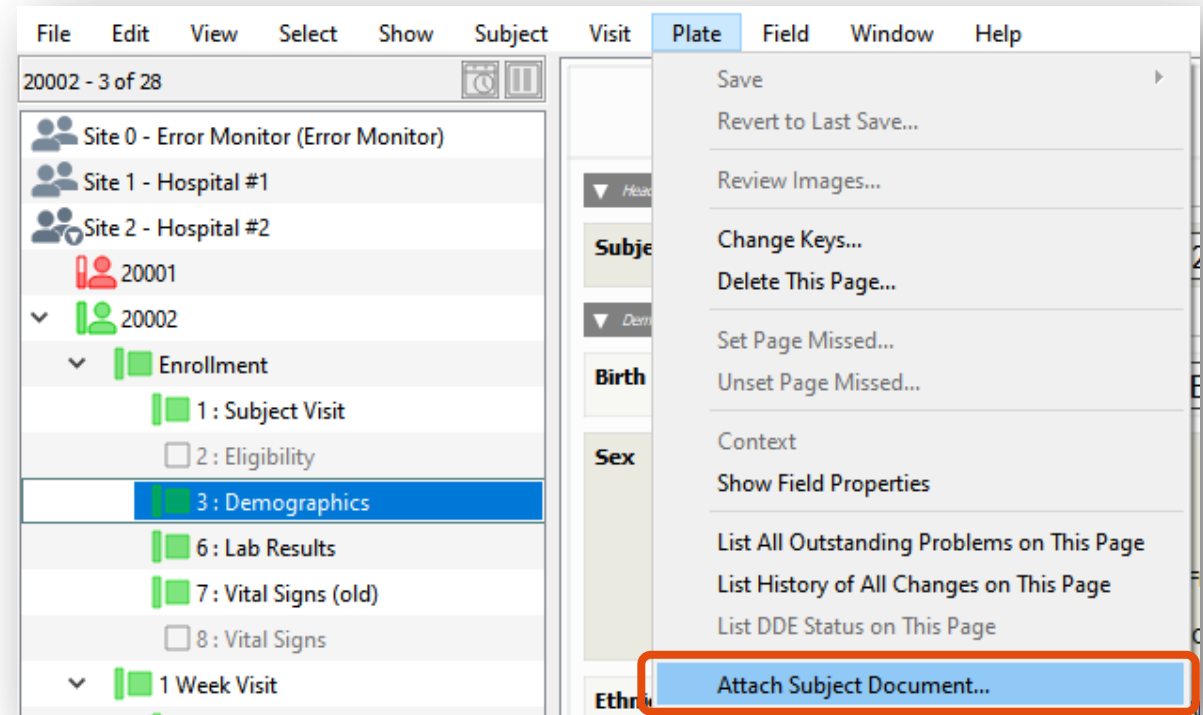
- For sites, ensure they can:
 - produce PDFs or images of source documents (scanning, saving from EHR, etc.)
 - de-identify documents as needed
 - organize source documents in local electronic storage
 - submit/attach documents in DFExplore
- For monitors, ensure they can:
 - review attached documents in DFExplore
 - complete any SDV tracking information (using data tasks or list views to assist)

How to ...

1. Attach source documents (recommended for sites)
2. Import source documents
3. View source documents
4. Change a primary document
5. Download source documents
6. Select records ready for SDV
7. Document SDV status

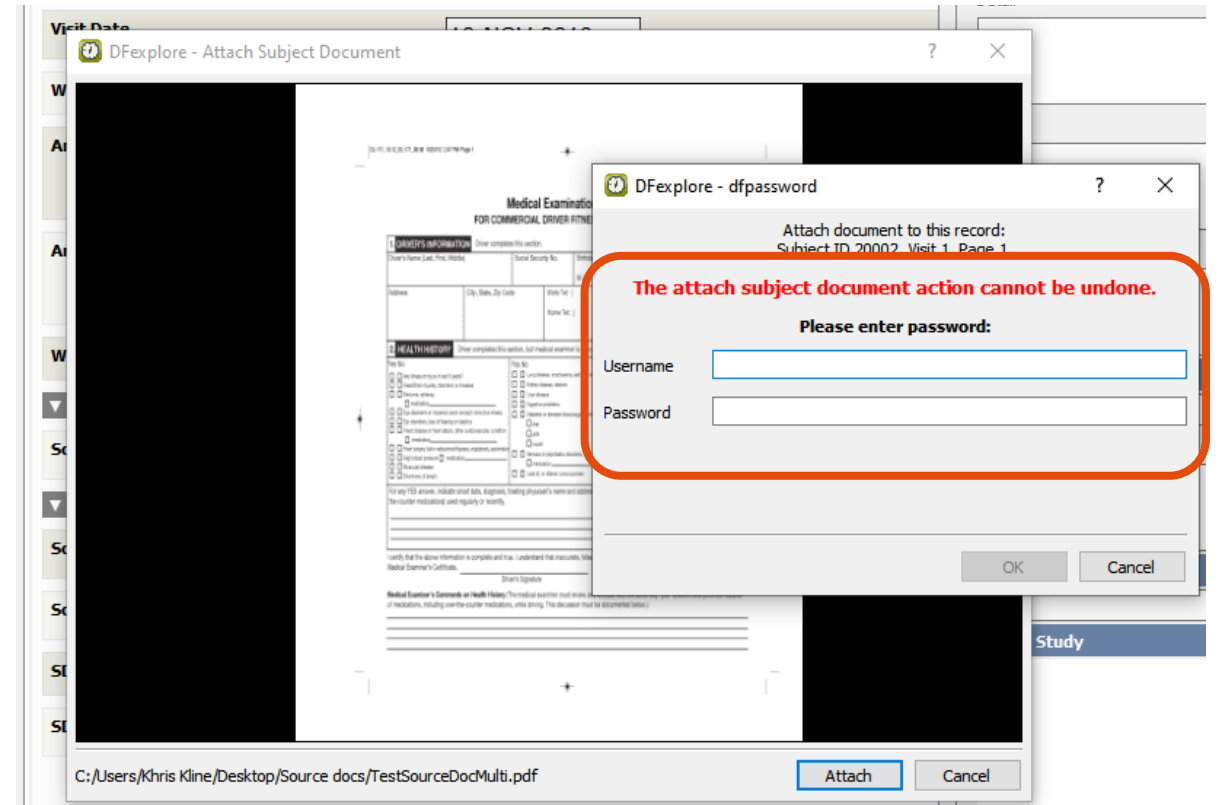
How to *attach* source documents (1)

1. In Data View, identify and open an existing CRF to attach document(s)
 - If attaching to a new CRF, enter data and save the record first
2. Select Plate > Attach Subject Document
3. Navigate your local computer files to open the document to be attached
 - Allowed file types: pdf, dcm, dic, dicom, png, jpg, jpeg, bmp, mp3, wav, avi, mp4
 - In the file selection dialog, ensure the correct types of files are being shown



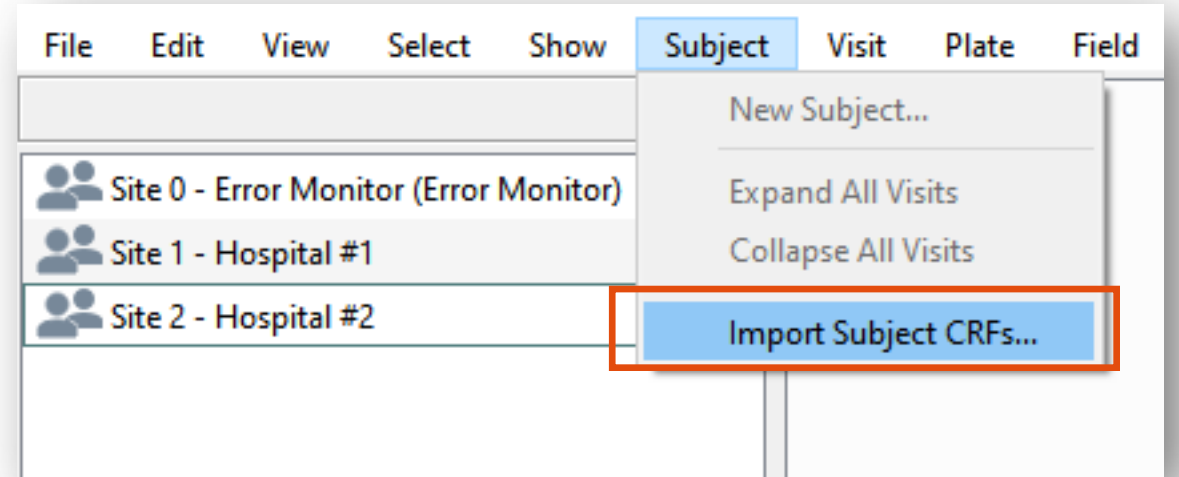
How to *attach* source documents (2)

- The Attach Subject Document dialog will display the document to be attached
 - Hover over the image to display the toolbar
 - Navigate between pages, zoom
- Username and password are required to confirm before importing (cannot be undone)
- Save the CRF to apply the changes



How to *import* source documents (1)

1. In Data View, select any site, subject, or record
 - Select a record to attach all pages of a PDF as separate documents to a single record
2. Select Subject > Import Subject CRFs
3. Navigate your local computer files to open the PDF to be imported
 - Progress bar will display while larger PDFs load



How to *import* source documents (2)

4. Select task options to attach:
 - all pages to current data record
 - each page to data records identified below (different records/subjects)
 - data entry worksheets/CRFs (N/A)
5. Select each page in the list to view the preview in the right panel
6. Check the box to the left of each page you want to import or click “Select all”

Select task: Attach each page to the data record identified below

Subject	Page/Page	Visit	
<input checked="" type="checkbox"/>	20004	1: Subject Visit	1: Enrollment
<input checked="" type="checkbox"/>	20004	6: Lab Results	1: Enrollment
<input checked="" type="checkbox"/>	20004	6: Lab Results	1: Enrollment
<input type="checkbox"/>			
<input type="checkbox"/>			
<input type="checkbox"/>			
<input type="checkbox"/>			

DATE	TIME	BLOOD SUGAR (mg/dL)	RUNNING AVERAGE
4/9/2020	11:30:00 AM	118	115.2
4/9/2020	5:00:00 PM	102	114.1
4/10/2020	7:30:00 AM	124	114.8
4/10/2020	11:30:00 AM	100	113.8
4/10/2020	5:00:00 PM	99	112.8
4/11/2020	7:30:00 AM	132	114.0
4/11/2020	11:30:00 AM	120	114.4
4/11/2020	5:00:00 PM	100	113.6
4/12/2020	7:30:00 AM	113	113.5
4/12/2020	12:30:00 PM	111	113.4
4/12/2020	6:30:00 PM	115	113.5
4/12/2020	6:30:00 PM	115	113.5

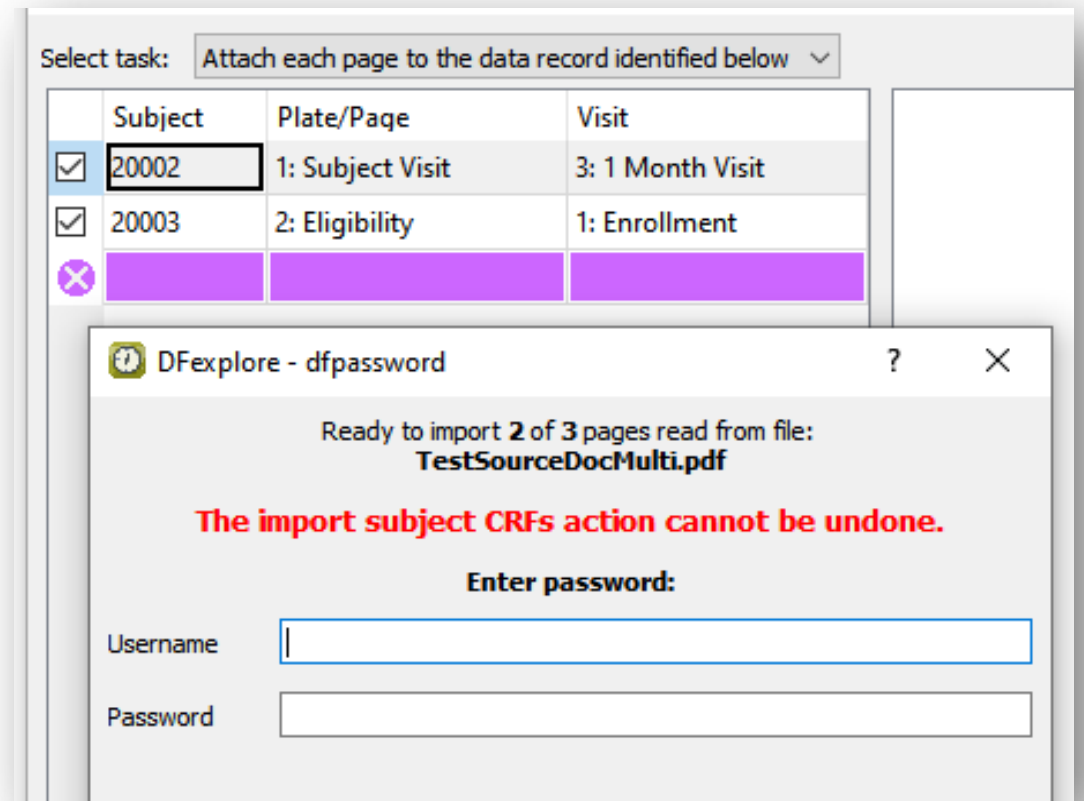
3/7 pages selected

Select All Select None

Import Cancel



How to *import* source documents (3)

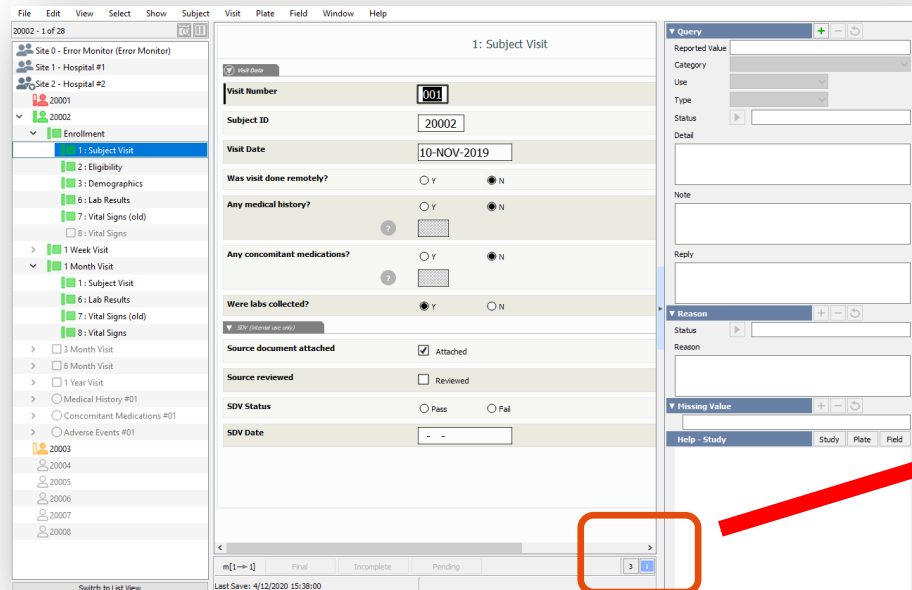
- Identify key fields (subject, plate, visit) for record of each page of the PDF that will be imported
 - If the plate or visit number is unknown, press Enter in the blank cell or right click - Select Plate/Visit to select from available plates/visits
 - Use Shift-click to enter the same plate or visit number in multiple rows
 - Purple highlighted pages will not be imported
- Username and password are required to confirm before importing (cannot be undone)
- Import log is created and can be saved




How to *view* source documents (1)

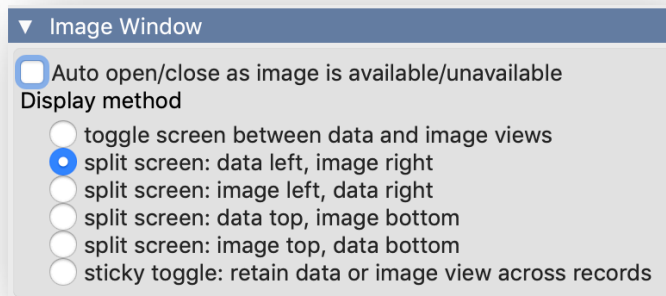
- In Data View, open the CRF with attached source documents
- In the bottom right corner of the CRF there are two buttons:

-  indicates the number of documents (primary & secondary) attached to the CRF
-  shows/hides the primary attached document alongside the CRF

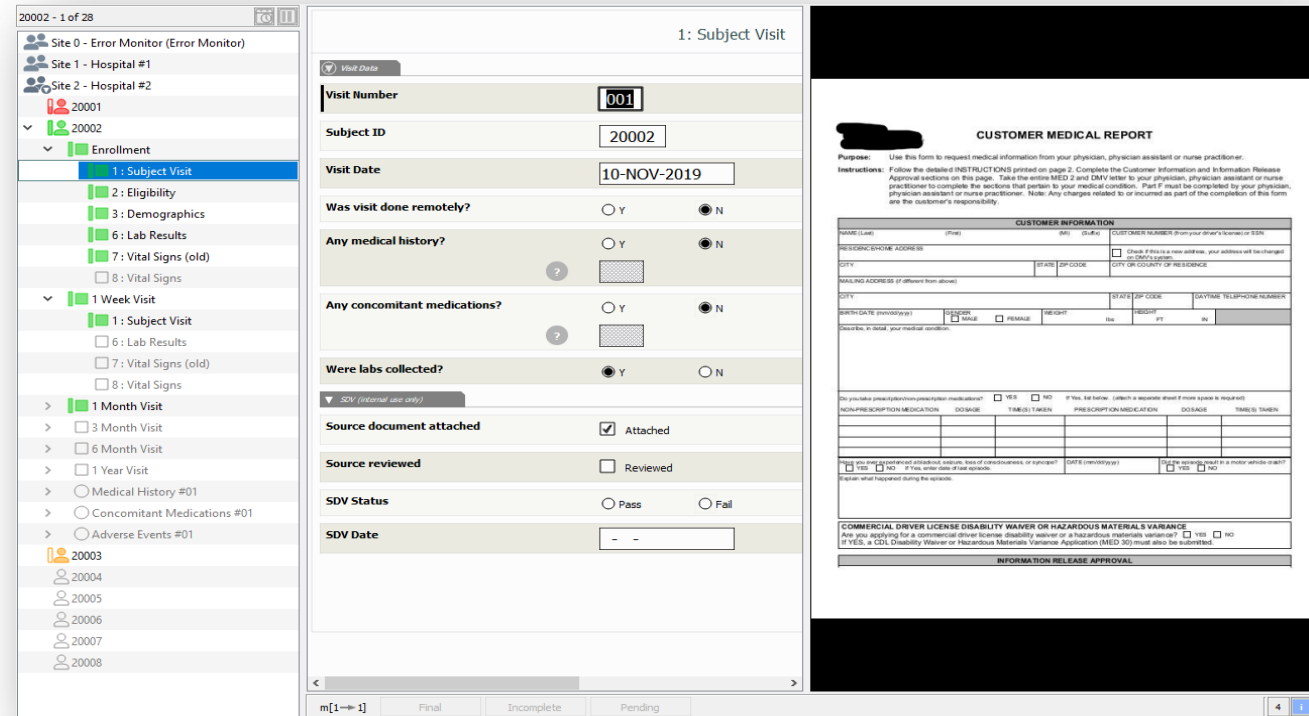


How to *view* source documents (2)

- Click  to show/hide the primary source document
 - First attachment is primary
 - Later attachments are secondary unless manually switched to primary
- Document appears next to the CRF (left/right/top/bottom)
 - Change under File > User Preferences



- Hover over document to display toolbar (total pages, navigate pages, zoom, play audio/video/DICOM, snapshot)



How to *view* source documents (3)

Click 3 to open the Review Images dialog to see all source documents (primary and secondary) for the current CRF, in the order they were attached

DFexplore - Review Images

Window	Image ID	Type	Arrival	Status	Sender
	2015R000P001	EDC		secondary	
	2015/000Y001	IMG	2020/04/12 19:29:18	*primary	DFexplore Attach DOC:khris:lnkedCustomer-Medical_LL.jpg
	2015/000S001	CRF	2020/04/10 18:28:27	secondary	DFexplore Import PDF:khris:TestSourceDocMulti.pdf
	2015/000R001	PDF	2020/04/10 16:52:51	secondary	DFexplore Attach DOC:khris:Blood pressure tracker.pdf
	2015/000Q001	PDF	2020/04/10 16:25:08	secondary	DFexplore Attach DOC:khris:TestSourceDocMulti.pdf

Primary
Fix Keys
Delete
Reset

CUSTOMER MEDICAL REPORT

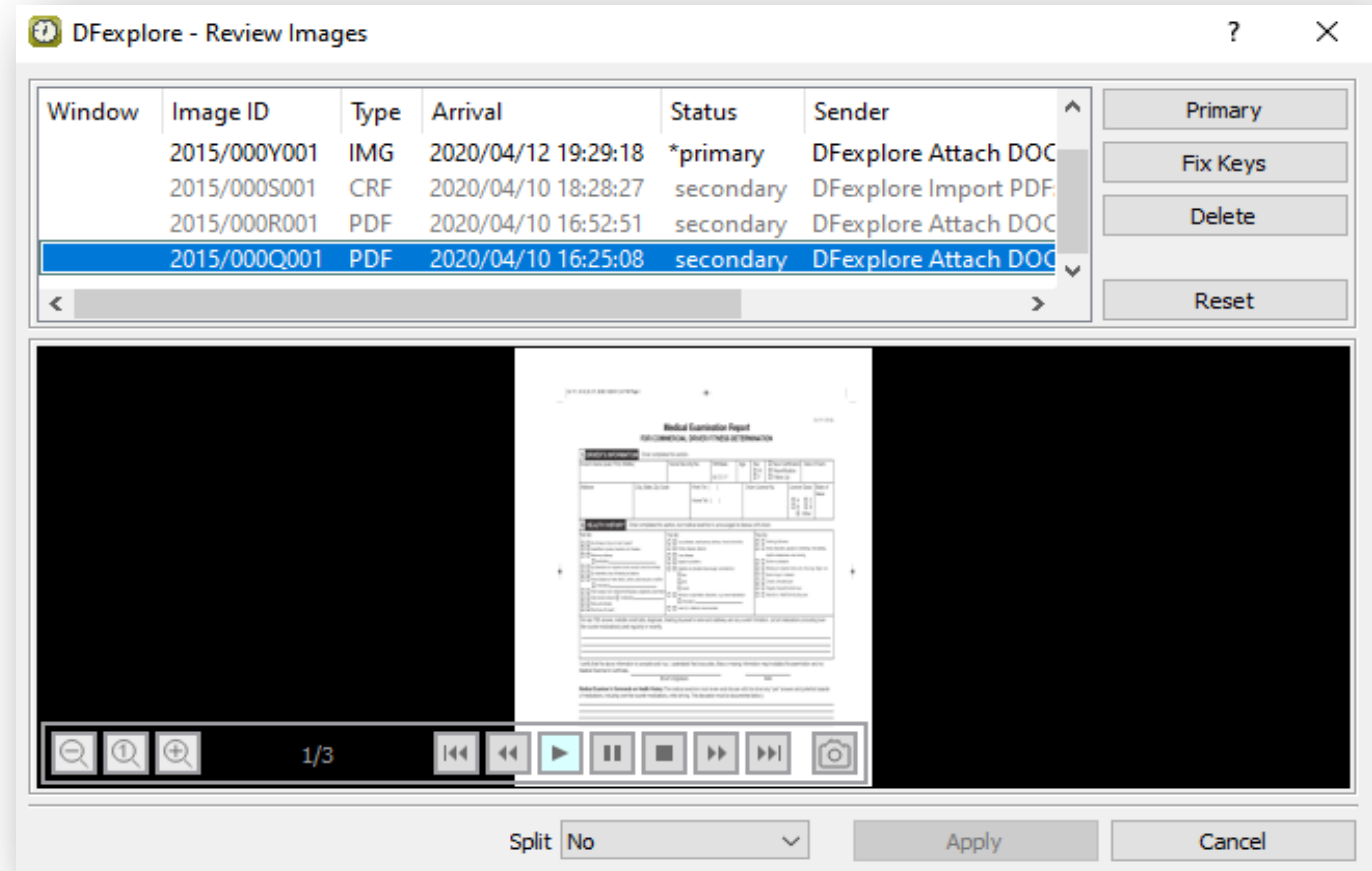
Purpose: Use this form to request medical information from your physician, physician assistant or nurse practitioner.

Instructions: Follow the detailed INSTRUCTIONS printed on page 2. Complete the Customer Information and Information Release Approval sections on this page. Take the entire MED 2 and DMV letter to your physician, physician assistant or nurse practitioner to complete the sections that pertain to your medical condition. Part F must be completed by your physician, physician assistant or nurse practitioner. Note: Any charges related to or incurred as part of the completion of this form are the customer's responsibility.

CUSTOMER INFORMATION				
NAME (Last)	(First)	(MI)	(Suffix)	CUSTOMER NUMBER (from your driver's license) or SSN
RESIDENCE/HOME ADDRESS				<input type="checkbox"/> Check if this is a new address, your address will be changed on DMV's system.

How to *change* a primary document

- Select the secondary document to be made primary (shown alongside CRF)
- Click “Primary” and then “Apply” and “OK” to save the changes
- Also use this dialog to:
 - Delete: delete the selected document
 - Fix Keys: move the selected document to a different record
 - Reset: undo changes made
 - Split: view multiple documents side by side



How to *download* source documents

- Monitors may download attached documents for review on their local computer
 - Only if allowed based on privacy and security considerations
- In Data View, select the CRF with source documents
- Select File > Save as PDF
- In Save as PDF dialog:
 - Selection Criteria: “Data and images” and appropriate records
 - Save Options: “Images” and “all images” (leave “Data records” unchecked unless CRF data should be included)
- Specify output file on local computer and click Save
- Requires ‘Print/Save - Images’ permission in user role permissions

DFExplore - Save as PDF

Selection Criteria

Blank CRF books

current subject subject

all visits visit

all plates plate

print visit numbers include optional visits include optional plates

Data and images

current plate current visit

current subject all open visits

current task set

Save Options

Blank plates

Data records

expand text fields for plates

data + primary image (side by side)

Images

primary only

all images

Apply field color for completed plates

Output File

Save Cancel

How to select records ready for SDV

Dashboard

- Data entry and review
- New data entry from CRFs
- Review queries
- Review reasons
- Review data and metadata
- Show database status
- Subject scheduling
- Run reports
- Run batch edit checks
- Data View Tasks** ▶

SDV ready for monitor

Record status chart

Enrollment by Site

DFExplore - By Task

SDV ready for monitor

1. Review all visit data and attached source documents. If there are SDV issues, apply queries using the SDV category to the appropriate CRF at this visit.
2. Save the record. You will be prompted to confirm whether you reviewed the source documents, and whether any issues were identified. Your responses will update the SDV internal fields on the record.

2 records match the search criteria.

Print Cancel OK

How to document SDV completion

▼ SDV (internal use only)

Source document attached	<input checked="" type="checkbox"/> Attached
Source reviewed	<input type="checkbox"/> Reviewed
SDV Status	<input type="radio"/> Pass <input type="radio"/> Fail
SDV Date	<input type="text" value="- -"/>

DFexplore - dfask: SDVCheck

Did you review the source documents for this CRF?

DFexplore - dfask: SDVCheck

Did SDV pass (no issues identified) or fail (issues identified, queries added)?

<input checked="" type="checkbox"/> Attached
<input checked="" type="checkbox"/> Reviewed
<input checked="" type="radio"/> Pass <input type="radio"/> Fail
<input type="text" value="13-APR-2020"/>

Final

Summary

- Collect source documents in DFdiscover alongside CRF data to support remote monitoring activities
- Choose a method and workflow that suits study and site needs
- Decide what level of tracking makes sense and implement in the database

Thanks all who helped put this webinar together, especially:

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Questions?

Thank you!

Email us at support@datafax.com

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