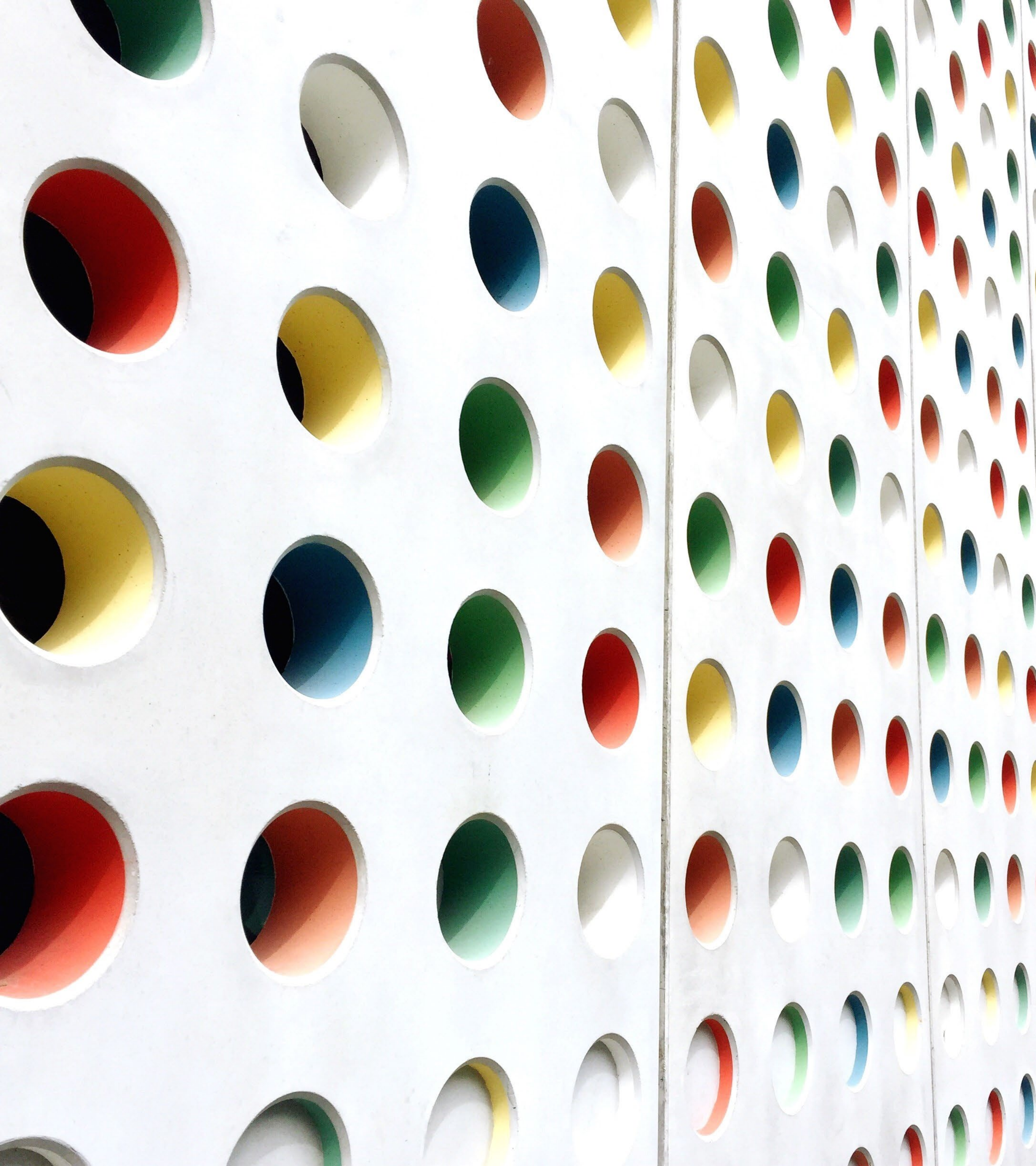


SEER*DMS Workshop: Consolidation

NOVEMBER 7, 2022

Welcome to SEER*DMS Workshop #3: Consolidation

- Roll Call
- Today's session is the 3rd workshop of 2022:
  - In workshop #1 we discussed requirements to consider a CTC "submission-ready"
  - In workshop #2 we discussed follow-back processes
  - Today's topic is consolidation
  - Outcomes, changes, and next steps related to the 2022 workshops will be discussed in early 2023
- Format of today's session:
  - 20 or 30-minute presentation
  - Up to 30 minutes for open discussion on topics covered so far
  - 10 or 15-minute presentation related to registry variations
  - Open discussion for the remaining time

Agenda

- How things work:
  - Overview of consolidation tasks and algorithms
  - How users complete manual consolidation tasks in SEER*DMS
- How things differ among registries
  - Workflow rules and algorithms
  - Triggers for manual reviews
- How things are improving
  - Minor changes to controls used in manual consolidation tasks
  - Algorithm changes to reduce manual tasks
  - Consolidation dashboards
- Discussion

SEER*DMS

Setting Consolidated Data Values

Set by SEER*DMS
- Registry ID, patient ID, tumor record number, etc

Calculated in SEER*DMS
- Geocoded data items, derived fields, calculated fields

Historical fields
- Not actively collected but submitted for earlier years. No current need for auto-consolidation rules

Set by central registry staff and not consolidated
- Over-ride flags, some linkage results

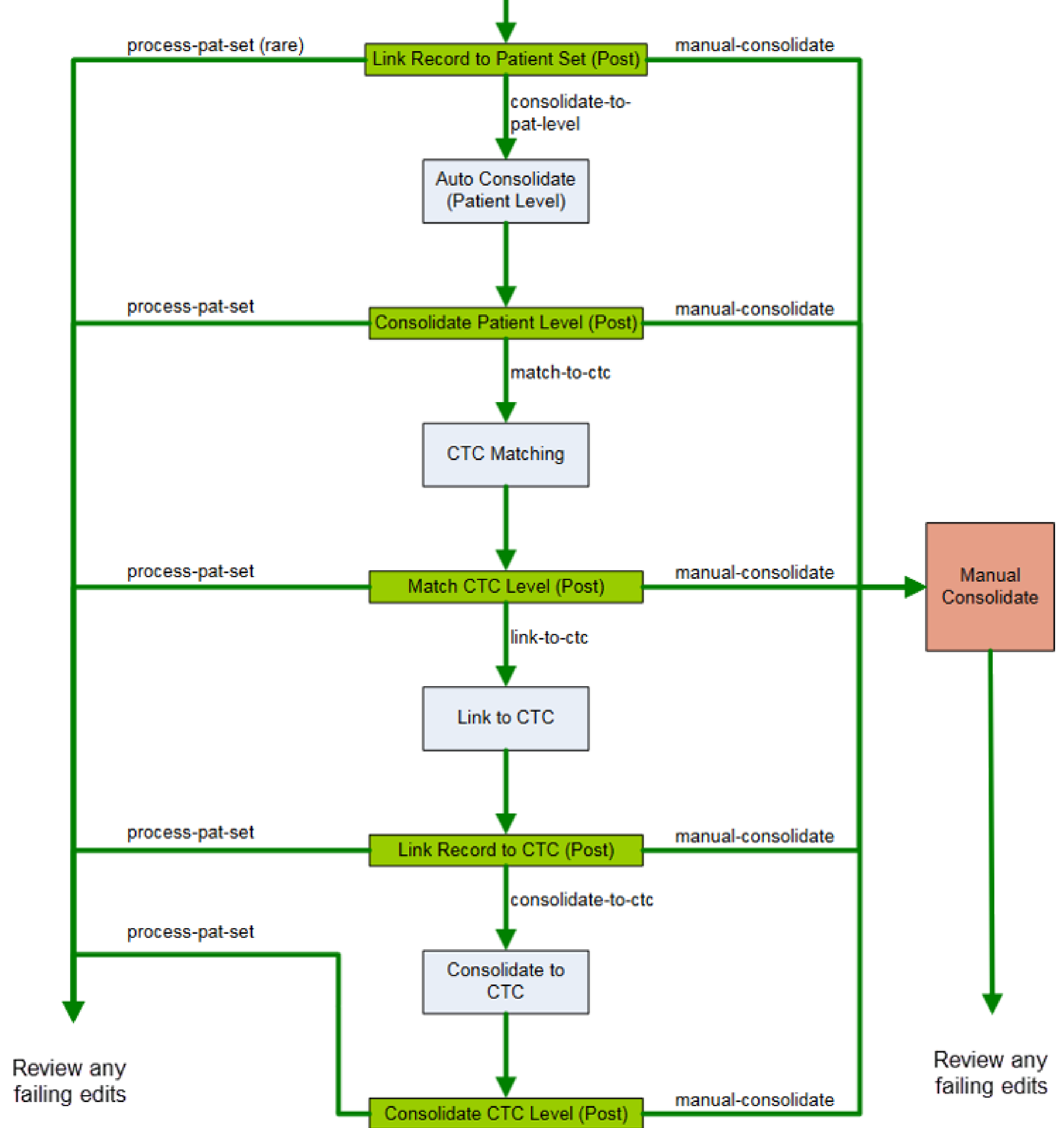
Treatment fields
- “Auto-consolidated” in SEER*DMS in a separate treatment summarization module. The technical implementation is in a set of summarization “polishers”.

All other fields --- require auto-consolidation and are the focus of the SEER*DMS Auto-consolidation workgroup

Consolidation Workflow

- Consolidation begins after a source record is matched against patient data and linked to a patient set
- Consolidation starts with an automated task that is triggered immediately after a record is linked
- Sequence of events:
  - Record is linked to a patient set
  - Patient level consolidation
  - CTC matching and linkage – record is linked to a CTC
  - CTC level consolidation

Consolidation Workflow



Manual Consolidate Tasks

Manual reviews are required for these reasons:

- To complete patient-level consolidation. That is, to resolve discrepancies identified by an auto-consolidation rule. This is required when a patient-level auto-consolidation rule "fails" (requires review)
- To complete the CTC-level matching and linkage of pending records
- To complete CTC-level consolidation. This is required when a CTC-level auto-consolidation rule "fails".
- To review records that were linked and fully auto-consolidated (all rules successful), but registry rules require a manual review of the new data. These rules vary by registry and data type.

Manual Consolidate Tasks

Five basic steps in manual consolidation:

1. Confirm that all data are for the same patient.
2. Link pending records to the appropriate part of the Patient Set.
3. Update consolidated data items using the best values.
4. Resolve any edits and visually edit core data items.
5. Save and confirm your changes.

Manual Consolidate Tasks

Step 1: Use Demo Info to confirm that all data pertain to the same patient.

Demographic Information PDF

Type	Facility	First	Mid	Last	Suf	Maiden	Alias	SSN	DOB	Sex	Med Rec #	Race	Birth Place	Hisp	Marit
Pending Records															
NAACCR Abstract	FAC-0015	JANE		SMITH		JOHNS		301-72-4151	12-07-1940	2		01 88 88 88 88		0	4
HL7 E-Path	FAC-0071	JANE	C	SMITH				301-72-4151	12-08-1940	2	54321-6	01 88 88 88 88			
NAACCR Abstract	FAC-1000	JANE		SMITH				301-72-4151	12-08-1940	2		99 99 99 99 99		9	2
HL7 E-Path	FAC-1000	JANE		SMITH				301-72-4151	12-08-1940	2		99 99 99 99 99			
HL7 E-Path	FAC-1000	JANE		SMITH				301-72-4151	12-08-1940	2		99 99 99 99 99			
Patient Set		**JANE**	**C**	**SMITH**				**301-72-4151**	**12-08-1940**	**2**		**01 88 88 88 88**		**0**	**2**
NAACCR Abstract	FAC-0071	JANE		SMITH				301-72-4151	12-08-1940			99 99 99 99 99			
NAACCR Abstract	FAC-1000	JANE		SMITH				301-72-4151	12-08-1940	2		01 88 88 88 88		0	6

Close

Manual Consolidate Tasks

Step 2: Use Record Linkages to link pending records to appropriate CTC

Record Linkages for PAT-00005559 (SMITH, JANE)

Requires CTC Linkage

ID	Type	Action	Site	Morph	Date	Seq	Cl Ca	Facility	Path#	Site/Hist Title
REC-1000004185	NA	Move	C501-1	8540/3	11-01-2019	00		FAC-0015 COMMUNITY HOSPITAL		PAGET DISEASE
REC-1000001204	HL7				01-05-2020			FAC-0071 General Hospital	S-12252020	
REC-1000006207	NA				01-05-2020			FAC-1000 Sacred Heart Hospital		
REC-1000001200	HL7	Move	C189	8140/3	01-05-2020			FAC-1000 Sacred Heart Hospital	SP-03042016	
REC-1000001203	HL7	Move	C501-1	8540/3	11-01-2019			FAC-1000 Sacred Heart Hospital	SP-071157	

Action menu:
- Link to CTC
- Create CTC from this Record
- Keep at Patient Level
- Unlink from Patient Set on Save

Linked to CTCs

Hide Records

ID	Type	Action	Site	Morph	Date	Seq	Cl Ca	Facility	Path#	Site/Hist Title
CTC 01			**C504-2**	**8500/3**	**02-22-2019**	**01**				**Upper-outer quadrant of breast Invasive carcinoma**
REC-1000000622	NA	Move	C504-2	8500/3	02-22-2019	00		FAC-1000 Sacred Heart Hospital		Upper-outer quadrant of breast Invasive carcinoma
CTC 02			**C189-9**	**8140/3**	**01-05-2020**	**02**				
REC-1000006208	NA	Move	C189-9	8140/3	01-05-2020			FAC-0071 General Hospital		

Apply | Cancel

Record Information

REC-1000004185 NA | Text | Audit Log 62 | CTC Matching | Open Record

	Date	Site	Morph	G	Result	Rules
NA	11-01-2019	C501-1	8540/3			
CTC 01	02-22-2019	C504-2	8500/3		MULTIPLE_PRIMARIES	Solid Tumor
	Tumors on both sides (right and left breast) are multiple primaries.					
	Logic followed by SEER*DMS					
	M4: Are there tumors in sites with ICD-O-3 topography codes that are different at the second (C?xx) and/or third character (Cx?x)?					
	M5: Are there tumors diagnosed more than five (5) years apart?					
	M6: Is there inflammatory carcinoma in multiple quadrants of the same breast or in bilateral breasts?					
	M7: Is there a tumor(s) in each breast?					
CTC 02	01-05-2020	C189-9	8140/3		MULTIPLE_PRIMARIES	
	The two sets of parameters belong to two different cancer groups.					

Manual Consolidate Tasks

Step 3: Use View Source Data to update data items with the best values

	DX Date			Cntr Seq	DX Conf	Rpt Src	Site	Lat	Hist	Behav
Patient Set	01	01	2018	02	1	1	C712	1	9440	3
Pending										
NA (10002-13)	01	01	2018	02	1	1	C712	1	9445	3
Previously Consolidated										
NA (10003-21)	01	01	2018	00	1	1	C719	0	9440	3

Demo of Manual Consolidation Task

Improvements:
SEER*DMS Consolidation Processes

- Retain unknown or non-specific values when other available values were rejected
  - Retain 9-filled SSN when a CTR determines that the only available SSN values are not correct
  - Retain C809 for primary site when other values are rejected (same as what we saw for SSN in the demo). Registries also have the option to consider C809 as a "known" value that conflicts with any other value.
- Indicate which values were "rejected"
  - Strike-through format shows that a value was rejected
  - Consolidation log information will show the user who rejected the value; and date/time when they saved the change
- Two new dashboards related to consolidation:
  - Summary of manual consolidation tasks showing # tasks by reason for the task
  - Summary of updates made in manual vs automated consolidation (specs needed – to be discussed today)
- Change algorithms to reduce manual tasks
  - Identify rules that trigger the most manual reviews. Evaluate their logic and define improvements.
  - Review manual reviews triggered when no rule fails – define algorithms to identify cases that should be reviewed vs cases that do not need manual review.

Consolidation Tasks

Updated just now

Creation Year From

Creation Year To

Manual Consolidation Tasks

Total	Needs CTC Linkage (Abstract)	Needs CTC Linkage (Other)	Forced Review	Autocons Rule Failed	No Longer Needed
					0
	16.67%	75.44%	0.04%	10.14%	0.00%

Most Frequent Auto-Cons Failures (20 most frequent)

Count	Rule
	Histology ICD-O-3
	SSN
	Race
	Primary Site
	Name Middle
	Date of Last Contact and Vital Status
	DX Date
	PLACE-BIRTH
	Name Last
	Name First
	DOB
	Schema ID Version Original
	NCDB SARSCoV2 Tests

Most Frequent Unique Auto-Cons Failures (20 most frequent)

Count	Rule
	Histology ICD-O-3
	SSN
	Race
	Primary Site
	Name Middle
	Date of Last Contact and Vital Status
	PLACE-BIRTH
	DX Date
	Name Last
	DOB
	Name First
	NCDB SARSCoV2 Tests
	Schema ID Version Original

New Dashboard (coming soon) Manual Consolidation Tasks

Discussion Notes: Questions on what you've seen so far? And what would you like to see in the new

Name & Registry	Comment
Carolyn (SE)	Rejected values – how can you reverse a reject?
Marina (NCI)	Please review ???
Brent (LA)	What are we doing to handle rejecting auto consolidation values. Answer: select or enter a value.
Valerie (UT)	all this consolidation starts after record duplicate comparisons, correct?
Mona (MN)	Always had issue with matching. Lookup same people repeatedly. Would the crossed out value show in matching? Possible new feature: show SSN values from records that were rejected in matching.
Robin	What is best way to validate address @dx? I usually click on View Aggie data and select/copy the one that has the highest percentage, but sometimes for whatever reason that doesn't clear the review task to verify the address. Also I usually do this at the beginning of reviewing the case since it's on the CTC page and sometimes it clears the edit, but by the time you've worked through the case the review address edit may pop
Linda	AGGIE popup is the best way. The score is not a percentage but it is a score returned by AGGIE. We should consider a geocoding workshop.
Henry	Can we have a Dashboard entry for NPCR or NAACCR edits that are NOT covered by SEER*Edits?
Linda	That should be available in the current edits dashboard. I will follow-up with NJ to see if the current dashboard fills the need. Squish 11499.
Seana	Have we done a usability study on that strike-through? As someone who has a heavy editing load, my brain is already having trouble reading those values with the line across the middle of the code.
Linda	We could consider making it optional or a toggle to turn on/off
Loretta	Will there be a way to create a reject for incorrect known values, when the correct value for a field is actually "blank"? i.e., keep auto-consolidation from repeatedly filling in an incorrect code when the field should be blank (like Grade Post-Therapy when patient didn't have neoadjuvant treatment).
Linda	We will test to see if blank can be handled in the same way as unknown.
Linda	One option would be to tie rejected values to a facility. Not appropriate for large registries.
Melanie	May also need to consider class of case. If it comes in as non-analytic from another facility, then do not review. But TX still wouldn't want that 2nd review of the same value. JL agrees.

Discussion Notes: Questions on what you've seen so far? And what would you like to see in the new dashboards?

Name & Registry	Comment
Melanie	Automated – pristine record from analytic;
Linda	Yes, those rules are built into the auto-consolidation rule
Jennifer Link	Even though the value is crossed out as a reject would it still show up yellow as a difference?
Linda	No, the highlighting goes away.
Cathy (CT)	We've noticed HL7 path reports auto-coded by DMS that don't have laterality coded. These require manual consolidation.
Linda	I'll create a squish issue and we will investigate. Squish 11497

Variations – Triggers for Manual Reviews

Manual reviews are required for these reasons:

- To complete patient-level consolidation: resolve discrepancies identified by an auto-consolidation rule.
- To complete CTC-level matching and linkage of pending records
- To complete CTC-level consolidation: required when a CTC-level auto-consolidation rule "fails".
- To review new records that were linked and fully auto-consolidated (all rules successful). Rules vary by registry and data type. "Forced Review" of new data

Options available for registry consideration:

- Specific auto-consolidation rules – a registry may opt to reduce manual reviews for a specific rule.
- CTC matching and linkage rules (less variation in these than other algorithms)
- Processing of new records for old cases (diagnosed 5+ years prior to the reporting year)
- Requirements for manual review when all auto-cons rules complete successfully (all records, path and abstracts, only abstracts)

Registry Variations

1: Logic for individual rules – different requirements for manual review

- Options for rules related to SEER required fields are defined in auto-consolidation workgroup meetings; options for rules related to non-required fields are defined in Squish.
- In 2023, IMS will be working on cross-registry documentation so that each registry can view the options used in other registries
- It is not practical to review discrepant values for all fields in all incident cases.

Registry Variations

2: CTC Matching and Linkage Rules (limited variation)

- Solid tumor rules are used to match abstracts to CTCs.
- In addition to solid tumor rules, date comparison rules are also used to match Path Reports to CTCs.
- IMS will provide information to each registry:
  - Matching and linkage rules currently used in their registry
  - Other options that are used in other registries

Registry Variations – NEW OPTION

3: CTC-level processing NEW records for OLD cases

- Full processing (currently used in most registries). Subsequent abstracts identified as duplicates are auto-processed and deleted; abstracts from new facilities follow same rules as abstracts for more recent years.
- Minimal processing. Ignore CTC level data.
- Process for recurrence only. Update and consolidate Recurrence Type and Date.
- Process for recurrence and treatment. Update recurrence fields and add new treatment data.

Registry Variations

4: Require manual review when all rules run successfully

- Abstracts
  - Review all new abstracts linked to a CTC (excluding subsequent abstracts deleted as a duplicate of an abstract submitted by the same facility)
  - Review abstracts from a new facility – first abstract submitted by the facility
  - Only review if there are consolidation discrepancies or failing edits
- Path Reports
  - Rules are in place for patient-level fields, and core CTC fields (site, histology, behavior, laterality)
  - Data items described in text cannot be auto-consolidated
  - Discussion topic: should path report text be reviewed if there are abstracts available for the case? Should there be targeted reviews?
- Death Certificates and other Records (consistent across registries)
  - Do not require a manual review if ALL rules completed in automated tasks

Discussion Notes: Primary topics: NEW records for OLD cases; and “forced” reviews when all rules were successful.

Name & Registry	Comment
April (NY)	Sometimes we follow back to 2020 for path reports; hosp and dr office will submit a case from 2017-18. If we have a current case, could we have a task.
Linda	Yes, it’s up to the registry if a task is needed. And yes, a data search could also be created for QC.
Colleen (NY)	If we have incoming records for old cases, update recurrence in NY. Triggering edits because it’s updating recurrence because those dates conflict with other dates.
Linda	IMS will check on that.
Mona	Facilities says that can’t stop sending data for old cases. Issue today – prostate dx’ed in 2003. Another facility dx’ed in 2017.
Linda	IMS will look at MN issue.
Jennifer (SE)	Same is true for VA submissions in Seattle. We get based on "date case last changed."
Linda	Would you want those records ignored (if they match a CTC) ?
Jennifer	No (we pre-process and try to filter them out). But it might be helpful for DMS to link and ignore.
Robin (GA)	It would be helpful if a current path report comes in for an older pre-2018 dx if once the case is attached to the CTC if the newer 2018+ staging fields could be prevented from populating and creating edits for the case
Linda	Need to investigate the issue reported by Robin.
Mona & Jen	MN would also like help with those VA cases

Discussion Notes: Primary topics: NEW records for OLD cases; and "forced" reviews when all rules were successful.

Name & Registry	Comment
Bobbi	Could we have a report and filters showing different consolidation tasks based on new facility vs existing facility. Would like to filter by whether the task failed a rule; new cases; new facility for an existing CTC; new record from existing facility.
Cathy	It may be helpful to compare treatment fields between the old CTC data and the new abstract for the old case.
Loretta	Just a comment - UT sees a similar problem as MN described, where incoming abstract has incorrect dx date & corresponding staging fields, which get auto-populated when that abstract is linked to CTC, creating lots of edits. If something could be implemented to prevent populating staging/tx fields for incorrect years/systems based on CTC Date of Dx, that would be very helpful. (I think this is related to my prior comment about fields being correctly blank, then overwritten with incorrect known values).
Desiree	Agreed with Bobbi and would like a way to identify different tasks
Linda	Which registries are interested in reducing tasks for older years of diagnosis? MA, KY, CT, NY, UT, IL, NJ, GA, and probably LA. MN.
Mona	Described the situation when a record is pending – what would be submitted?
Linda	IMS will review and try to make that clearer. Only persisted changes are submitted.

Discussion Notes: Primary topics: NEW records for OLD cases; and "forced" reviews when all rules were successful.

Name & Registry	Comment
Jennifer (SE)	SE proactively reviews all path reports linked to CTCs.
Linda	What about a path report received in 2022 for a 2020 case
Jennifer (SE)	We still review unless we flagged it as history only, ICD-10 only.
Cathy (CT)	CT reviews all path reports using a process similar to what Jennifer described. It would be good if we could have a way to identify which reports need review. We can't tell if it is a resection or a special study.
Robin (GA)	GA reviews all path reports linked to a CTC.
Colleen (NY)	Hoping to increase the amount of path reports that are auto-linked; but would still want to review breast cases and melanomas. Confirm that we aren't inadvertently combining bilateral breast tumors; also verifying that subsites were coded correctly and aren't unique primaries.
Suzanne (NJ)	what about new primaries? what are the criteria to being used? Similar to what Colleen said. We also have criteria for prostates as well.
Lori (IL)	Not ready to comment; traditionally have very few path report sources. Historically linked and only abstracted ones that did not match.
Miriam (TX)	Similar to what Lori described. Have not started using in DMS just yet.
Jennifer (SE)	Is there any analysis that IMS & SE could work on to see which reports change data and which don't?
Linda	Yes, IMS could work on that.
Linda	Should we look at 2018 cases and how many times the cases were updated by CTRs?
Jennifer (SE)	For Seattle, 2019 would be a better year for SE because SE had started real time reporting..

Name & Registry	Comment
Valerie (UT)	Yes, that type of analysis would be productive.
Lori (IL)	Agree that would be helpful
Suzanne (IA)	agree
Bobbi (IA)	Running a report for a hospital for what was changed in editing. Also changes made by auto-consolidation; and fields with values that do not meet the auto-cons logic.
Mona (MN)	auto consolidating has improved greatly in the past 5 years !!!!
Denise (ID) (after we signed off	Rejected data items. Did I hear you correctly that the rejected item will have a strikethrough and that there will be a message noting who rejected and the date? If yes, is there a message with a new incoming record that has a rejected data item that it was rejected through Auto-consolidation - due to a previous rejection. These messages might help Editors.
Linda	Yes, there will be a strikethrough if a value was rejected. This will likely be optional and may be controlled by a toggle. Auto-consolidation does not create rejects. Rejects are created by users. It is created when a user rejects the value assigned by the auto-consolidation rule.
Lori (IL)	Very helpful and appreciated!
Robin (GA)	I love the workshops. I appreciate all your hard work in putting these together for us. This is a great forum for learning and discussion.
Kacey (UT)	Very helpful! We appreciate all of the advancements and attention you are giving to this topic.
Keri	Yes they are helpful thank you.
Jennifer (SE)	These workshops are helpful and good slices of time.
Cathy (CT)	These are very helpful!
Miriam (TX)	Absolutely very valuable information and so helpful!
Email from a CTR (UT) re strike throughs	I like it. I do have some concern about editors skipping over/not seeing crossed-out codes as much as they now do with the yellow highlighting (although I like taking away the highlighting). Maybe the crossed-out codes could be shown in bold type, just so they're a little more obvious as "this code has been previously rejected". Thanks for all of IMS's hard work to try and help reduce and more specifically target consolidation tasks! We need all the help we can get.