FINAL REPORT

2019 EOD, Summary Stage, and SSDI Reliability Study
Surveillance, Epidemiology, and End Results (SEER) Program
National Cancer Institute
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Executive Summary

Study Purpose

The 2019 Extent of Disease (EOD), Summary Stage, and Site-Specific Data Items (SSDI) Reliability Study was conducted to

- Assess the coding instructions and rules for the 2018 EOD, Grade, Summary Stage 2018 (SS2018) and relevant site-specific data items (SSDIs)
- Provide information on registrar training needs
- Provide a baseline to evaluate the effectiveness of training materials that are developed

The results of this study

- Have been used to evaluate the functionality of the current rules, coding instructions and data item set up
- Will be used to make adjustments/clarifications to existing data items
- Will be used to develop educational material

The 2019 study was not intended to evaluate the performance of individual participants or registries. Therefore, no error rates or accuracy goals were established for this study.

Study Participants

- 734 users completed study
- 669 completed one group (10 cases)
- 18 started a second group but did not complete
- 39 completed two groups (20 cases)
- Three started a third group but did not complete
- Three completed three groups (30 cases)
- Two completed all groups (50 cases)
- 249 users started, but did not complete the study

Study Cases

The cases used for testing were actual cases submitted to NCI SEER by the SEER central registries. These cases were de-identified, but not manipulated or altered in any other way. Cases were selected for the study because they had information on staging, SSDIs, and Grade.

The study was conducted online using the SEER Reliability Software, which was specifically developed for SEER by Information Management Services (IMS), Inc.

The study cases covered 10 schemas. The 10 schemas were

- Brain
- Breast
- Colon and Rectum
- Lung
- Lymphoma (CLL/SLL)
- Melanoma Skin
- Ovary
- Prostate
- Soft Tissue Abdomen and Thoracic
- Tongue Anterior

There were 50 cases in the study, 5 cases for each of the 10 schemas, divided into 5 sets of 10 cases per set. Each set had one case for each of the 10 schemas. Each participant was randomly assigned 1 set, with the option to complete up to 5 sets. For each schema, participants were required to code

- Primary Site
- Histology
- Behavior
- Tumor Size Clinical
- Tumor Size Pathologic
- EOD Primary Tumor
- EOD Regional Nodes
- Regional Nodes Positive
- Sentinel Lymph Nodes Examined (Breast and Melanoma only)
- Sentinel Lymph Nodes Positive (Breast and Melanoma only)
- EOD Mets
- Summary Stage 2018
- Grade Clinical
- Grade Pathological
- Grade Post Therapy
- Schema specific Site-Specific Data Items (SSDIs)

Preferred Answers

Preferred answers were developed by an expert panel composed of experienced personnel from SEER registries. The team lead and co-team lead coded all 50 cases. Three members of the expert panel were assigned to review 1 of the 5 sets of cases. Each case had a total of 5 registrars reviewing the case. If consensus was not reached, additional reviewers were consulted to assist with determining the preferred answer.

Comments received back from the study participants were reviewed and additional review by other registrars was done to determine the final answers.

Study Timing

The study was conducted via the secure website, https://reliability.seer.cancer.gov, from March 1, 2019-April 15, 2019. Post-study reconciliation of the answers took place June 2019-September 2019.

Findings/Results

995 data items in the study were distributed among five groups consisting of 199 data items each. Preferred answers with less than 85% agreement by study participants were reviewed as well as all comments provided by study participants. Of the 995 items, 84 (8.4%) preferred answers and rationales were modified after review and reconciliation of the preferred answers. (See Tables 1 and 2 for a detailed listing of data items where the answers were changed.)

Conclusions

The 2019 EOD, Summary Stage, and SSDI Reliability study demonstrated that registrars in general understand how to code EOD, Summary Stage, and the SSDIs. Specific schema-related issues were identified. Review of answers selected by study participants and comments received from participants were very valuable in determining the problematic areas, identifying areas needing clarification, and where corrections are needed. Many of the issues found during the study are addressed in Manual Clarification and/or Education section. Updates to SEER*RSA for the 2020 update were also done.

Introduction

NCI SEER conducts reliability studies as a vital part of the quality improvement process. The reliability study is usually designed to test the skills of central and hospital registry personnel and to measure consistency in the application of codes and coding rules across the program. In a reliability study, all participants code information from the same medical records using the same references under similar conditions. The quality improvement process focuses on why results varied from the expected answers.

Background

In 2018, SEER changed from directly assigning T, N, M, and Stage Group to using the Extent of Disease (EOD) stage data collection system for collecting the input data elements necessary to derive an AJCC 8th edition-based EOD T, EOD N, EOD M, EOD Stage Group and the Summary Stage (SS) 2018.

SEER has collected EOD since the early 1970's and it has been the cornerstone for staging for SEER. In 2004, Collaborative Stage (CS) was introduced and collected by all the standard setters. CS was originally developed based on the existing EOD Schemas (2003) collected by SEER. Additional schemas were added and other changes were made to accommodate the changes in the AJCC Manual, 6th edition. In 2010, CSv2 was implemented, which was updated according to the AJCC 7th edition. EOD was discontinued in 2004 when CS was implemented.

Due to issues associated with CSv2 (too cumbersome, difficult to keep up with), CS was discontinued as of 12/31/2015 and for years 2016 and 2017, assignment of Clinical T, N, M and Pathological T, N, M was implemented for all U. S. standard setters. Based on a request from NCI SEER, some of the SEER registries continued to also collect CS for years 2016 and 2017.

NCI SEER wanted to return to EOD, which derived a combined T, N, M, and Stage Group, instead of continuing with the direct assignment of Clinical and Pathological TNM (AJCC stages). During 2016 and 2017, the CSv2 schemas were reviewed and revised and an internal 2016 EOD was developed based on AJCC 7th edition. After this change was made and it was determined that the 2016 EOD was deriving the same results as CSv2, the process for developing EOD 2018 was started, based on the AJCC 8th edition manual. At the same, Summary Stage 2000 was updated to Summary Stage 2018.

Effective with cases diagnosed 1/1/18, all SEER registries started collecting EOD 2018. Also, effective 1/1/18, all registries in the United States started collecting Summary Stage 2018.

Lastly, the site-specific factors (SSFs) collected in CS starting in 2004 were changed to Site-Specific Data Items (SSDIs) in 2018. The format for many of the SSFs was changed, along with some of the instructions. New SSDIs were added so that the correct AJCC Clin and Path Stage Group, plus the correct TNM Stage derived from EOD, could be calculated.

The 2019 reliability study tested the data items for 10 schemas to see if the EOD data items and the SSDIs were being coded correctly.

Method

Study Mechanism

A formal study protocol was developed and followed (See Appendix 1: 2019 EOD/SS/SSDI Reliability Study-Protocol). The 2019 EOD, Summary Stage, and SSDI Reliability Study was a web-based study. Participants were required to use a computer with access to the Internet. Study cases were placed on the SEER website and participants completed the study online. The study was open for 6 weeks starting Friday, March 1, 2019 and closed Monday, April 15, 2019. The study was conducted online using the Reliability Software specifically developed for SEER by Information Management Services (IMS), Inc., a biomedical computing contractor with NCI SEER. The reliability software used had two major improvements compared to software used for prior SEER reliability studies.

- Preferred answers and rationales available to participant after a data item was answered
- Participant able to provide immediate comments on the preferred answer and rationale

Two practice cases were available on the study website starting two weeks before the study opened and throughout the study period. The practice cases were provided to give participants a chance to become familiar with the study site and software before beginning the actual study cases.

Case Selection

A call for cases was issued to the SEER registries (See Appendix 1: 2019 EOD/SS/ SSDI Reliability Study-Protocol, Appendix C: Call for Cases). Approximately 300 cases were received in response to the call for cases. The study coordinator at SEER and the study co-coordinator from Westat reviewed the submitted cases. Study cases were selected for each of the schemas to be tested. The remaining cases were stored in the NCI SEER case database for future reliability studies. The criteria for the study cases was for primary sites to be from the schemas requested, along with information on the SSDIs for those schemas. Personal and facility-identifying information was removed from the cases by the registry prior to sending to NCI SEER. After receipt, the cases were further de-identified, if needed. Each case selected was then assigned an identifier and this identifier was added to each page of the case. IMS converted the cases to HTML for placement on the study website.

Number of Cases

Fifty cases (5 sets of 10 cases, 1 case per schema in each set) were selected. In addition, two practice cases were selected.

Preferred Answers

The study coordinator and co-coordinator coded each of the 50 cases. They met to compare and reconcile their answers. Representatives from each of the SEER registries were invited to participate; reviewers were assigned to be part of the expert panel. Each representative was assigned to code one set of cases using an Access database to record their answers and rationale, which resulted in 3 additional reviewers for each case, for a total of 5 reviewers per case. Once all the comments were received, the study coordinators reconciled the comments and preferred answers. For some of the cases, additional reviewers were consulted for adjudication and reconciliation of selected cases and/or data items of study cases.

Invitation to Participate

NCI SEER issued an invitation to participate in the study (See Appendix 1: 2019 EOD/SS/SSDI Reliability Study-Protocol, Appendix A: Invitation to Participate). The invitation to participate was distributed via email on February 11, 2019. The email was sent to the SEER registries. An email was sent out via the NAACCR listserv and NCRA agreed to send out the announcement in one of their member communications.

Requirements for Participation

Study participants were required to use a computer with Internet access. The reliability study was web-based and located on a secure website.

Participation Registration

Registration took place via the web. The study website opened for registration on February 15, 2019, two weeks before the actual study began. If a registrar had participated in a previous reliability study (2011 or later), they could use their existing username and login (forgot username and password links available). If a registrar had not participated in a reliability study before, instructions were provided in the invitation to participate for them to set up an account. Each registrant chose a unique username and password and provided their demographic information (See Appendix 1: 2019 EOD/SS/SSDI Reliability Study-Protocol, Appendix B: Functional Requirements Document). Per all SEER Reliability studies, demographic information was required to participate in the study.

Study Participants-Demographics

The study was open to all registrars in the United States. It was recommended that registrars in SEER program areas participate. There were no mandatory requirements for participation.

Agency	Number of Participants	Percentage
Central Cancer Registry	243	29.0
Hospital Cancer Registry	541	64.6
Other	45	5.4
Blank	8	1.0
Total	837	100

CTR?	Number of Participants	Percentage
No	60	7.2
Yes	647	77.3
Blank	130	15.5
Total	837	100

EOD Training?	Number of Participants	Percentage
No	385	46.0
Yes	319	38.1
Blank	133	15.9
Total	837	100

Experience with CS?	Number of Participants	Percentage
No	42	5.0
Yes	660	78.9
Blank	135	16.1
Total	837	100

Assignment of Cases

Each participant was randomly assigned 1 set of cases. Assignment of the set was based on the set group that was next in line. The first participant entering the study was assigned the first set, the second participant, the second set, and so on. This procedure continued until all participants entered the study.

If a participant elected to complete more than one set, the next set available was assigned to them. For example, if participant two had been assigned set 2 and wanted to complete another set, set 3 was assigned.

Continuing Education Credits

NCI SEER requested and NCRA awarded continuing education (CE) credits for participating in the reliability study. Completion of 1 set (10 cases) entitled the participant to 10 CEs and completion of 2 sets (20 cases) entitled the participant to 20 CEs. A certificate showing the event number and the number of CEs was made available to the participant following completion of their set.

- 2019 EOD/SS/SSDI Reliability Study: 2019-012

Study Process

The 2019 reliability study was conducted by having participants abstract and code at least 10 cases, 1 case from each of the following schemas

- Brain
- Breast
- Colon and Rectum
- Lung
- Lymphoma-CLL/SLL
- Melanoma Skin
- Ovary
- Prostate
- Soft Tissue Abdomen and Thoracic
- Tongue Anterior

The following data items were abstracted for each case

- Primary Site
- Histology
- Behavior
- Tumor Size Clinical
- Tumor Size Pathologic
- EOD Primary Tumor
    - For Prostate only: Prostate Pathological Extension
- EOD Regional Nodes
- Regional Nodes Positive
- Sentinel Lymph Nodes Examined (Breast and Melanoma only)
- Sentinel Lymph Nodes Positive (Breast and Melanoma only)
- EOD Mets
- Summary Stage 2018
- Grade Clinical
- Grade Pathological
- Grade Post Therapy
- Schema specific Site-Specific Data Items (SSDIs)
    - Brain
        - Brain Molecular Markers
        - Chromosome 1p: Loss of Heterozygosity (LOH)
        - Chromosome 19q: Loss of Heterozygosity (LOH)
        - Methylation of O6-Methylguanine-Methyltransferase (MGMT)
    - Breast
        - Estrogen Receptor Percent Positive or Range
        - Estrogen Receptor Summary
        - Estrogen Receptor Total Allred Score
        - HER2 IHC Summary
        - HER2 ISH Dual Probe Copy Number

        - HER2 ISH Dual Probe Ratio
        - HER2 ISH Single Probe Copy Number
        - HER2 ISH Summary
        - HER2 Overall Summary
        - Ki-67
        - Lymph Nodes Positive Axillary Level I-II
        - Multigene Signature Method
        - Multigene Signature Results
        - Oncotype Dx Recurrence Score-DCIS
        - Oncotype Dx Recurrence Score-Invasive
        - Oncotype Dx Risk Level-DCIS
        - Oncotype Dx Risk Level-Invasive
        - Progesterone Receptor Percent Positive or Range
        - Progesterone Receptor Summary
        - Progesterone Receptor Total Allred Score
        - Response to Neoadjuvant Therapy
    - Colon and Rectum
        - CEA Pretreatment Interpretation
        - CEA Pretreatment Lab Value
        - Circumferential Resection Margin (CRM)
        - KRAS
        - Microsatellite Instability (MSI)
        - Perineural Invasion
        - Tumor Deposits
    - Lung
        - Separate Tumor Nodules
        - Visceral and Parietal Pleural Invasion
    - Lymphoma (CLL/SLL)
        - Adenopathy
        - Anemia
        - B symptoms
        - HIV Status
        - Lymphocytosis
        - NCCN International Prognostic Index (IPI)
        - Organomegaly
        - Thrombocytopenia
    - Melanoma Skin
        - Breslow Tumor Thickness
        - LDH Pretreatment Lab Value
        - LDH Pretreatment Level
        - LDH Upper Limits of Normal
        - Mitotic Rate Melanoma
        - Ulceration
    - Ovary
        - CA-125 Pretreatment Interpretation
        - FIGO Stage
        - Residual Tumor Volume Post Cytoreduction
    - Prostate
        - Gleason Patterns Clinical
        - Gleason Patterns Pathological
        - Gleason Score Clinical
        - Gleason Score Pathological
        - Gleason Tertiary Pattern

        - Number of Cores Examined
        - Number of Cores Positive
        - PSA (Prostatic Specific Antigen) Lab Value
    - Soft Tissue Abdomen and Thoracic
        - Bone Invasion
    - Tongue Anterior
        - Extranodal Extension Head and Neck Clinical
        - Extranodal Extension Head and Neck Pathological
        - L Size

References

Participants were instructed to use the following references

- SEER Program Coding Manual 2018
- Solid Tumor Rules
- SEER Inquiry System (SINQ)
- Hematopoietic and Lymphoid Neoplasm Coding Manual 2018
- Extent of Disease 2018 General Instructions
- Summary Staging 2018 Manual
- SEER*RSA
- SSDI Manual
- Grade Manual

Study Results

Reconciliation

The objectives of the post-study reconciliation were to

- determine the final answer for each data item included in the study
- identify areas in the appropriate manuals needing revision or clarification
- identify educational needs

Eligibility for reconciliation was determined by the percent of participants disagreeing with the preferred answer. Data items with less than 85% agreement were eligible for review of the preferred answer. Additionally, each comment received, even on data items with 85% or greater agreement, was reviewed.

The study coordinators reviewed each of the applicable data items to determine if a change to the preferred answer was needed. In reviewing comments, questions were sent out to other registrars (AJCC, SEER, CoC, SSDI) to help determine the final preferred answer.

Final answers differed from preferred answers on 84 data items out of 995 total data items (8.4%). (See Table 1 for site distribution). Answers were changed based on comments reviewed, additional review done, and discussion of data items in question with other experts. Table 2 lists each case and data item changed with a brief explanation of the reason for the change. For more extensive rationales, see Appendix 2: 2019 EOD/SS/ SSDI Reliability Study-Final Answers and Rationale, which has a complete listing of all the data items and the final answers. Review of participant comments resulted in updating rationales for many data items without answer changes.

Table 1: List by Schema of Number Data Items and Number of Answers Changed

Schema	Total Data Items	Answers Changed
Brain	85	4 (4.7%)
Breast	180	8 (4.4%)
Colon and Rectum	100	7 (7.0%)
Lung	75	5 (6.7%)
Lymphoma (CLL/SLL)	105	9 (8.6%)
Melanoma Skin	105	9 (8.6%
Ovary	80	7 (8.8%)
Prostate	110	10 (9.1%)
Soft Tissue Abdomen and Thoracic	70	4 (5.7%)
Tongue Anterior	85	14 (16.5%)
Total	995	77 (7.7%)

Table 2: List of Answers Changed by Case # and Data Item

Case	Data Items	Pref Ans	Fin Ans	Rationale
Brain-1	Primary Site	C718	C711	Per the Solid Tumor Rules for brain, priority for primary site is resection (if available), then biopsy: operative report, pathology report. No resection done. Biopsy, operative report states “right frontal mass
Brain-2	Primary site	C718	C714	Per the Solid Tumor Rules for brain, priority for primary site is resection: operative report, then pathology. Resection, operative report, states right occipital brain tumor

Case	Data Items	Pref Ans	Fin Ans	Rationale
Brain-2	Tumor Size Pathologic	070	999	The measurements provided were of the specimen, not the tumor
Brain-5	Grade Clinical	H	9	MRI suggests a “high-grade” glial neoplasm. Suggests is not definitive for diagnosis and the high grade cannot be used
Breast-1	Primary Site	C504	C508	Per Appendix C of the SEER manual, the operative report takes priority, followed by pathology report and mammogram. No operative report, no information from breast biopsy. Mammogram states 3 o’clock position
Breast-1	Grade Clinical	A	1	Path report states G1. There is no mention of Nottingham; however, since G1 is the preferred grading format, assume this is Nottingham
Breast-2	Primary Site	C501	C508	Per Mammography and Ultrasound, 3 o’clock tumor (physical exam confirms). Only information from operative report and pathology is post neoadjuvant. Go with the site from Mammography and Ultrasound
Breast-2	Tumor Size Clinical	020	010	Information from biopsy, if available, takes priority over imaging. From biopsy report, at least 1 cm tumor (record as 1.0 cm)
Breast-2	Tumor Size Pathological	004	999	Tumor Size Path from post neoadjuvant surgery. Instructions in SEER manual to be corrected
Breast-2	Response to Neoadjuvant Therapy	3	9	Treatment effect based on pathology report only, need clinical evaluation as well
Breast-3	Oncotype Dx Recur Score	XX5	XX7	Oncologist states Oncotype is high. No number given. Code to test ordered, results not in chart
Breast-4	Tumor Size Clinical	028	030	Per SEER manual, Tumor Size Clinical, #7, biopsy and mammogram take priority over physical exam. When there are conflicting imaging reports, take the highest (mammogram)
Colon-1	Primary Site	C186	C185	Per Appendix C of the SEER manual, the operative report takes priority, followed by pathology report and imaging. The operative report states that the tumor is in the splenic flexure
Colon-2	Primary Site	C182	C183	Per Appendix C of the SEER manual, the operative report takes priority, followed by pathology report and imaging. The operative report states that the tumor is in the hepatic flexure
Colon-3	Primary Site	C187	C199	Per Appendix C of the SEER manual, the operative report takes priority, followed by pathology report and imaging. The operative report states that the tumor is in the rectosigmoid colon
Colon-3	Tumor Size Clinical	060	999	CT scan shows tumor at the 12-18 cm location in the colon, do no extrapolate information

Case	Data Items	Pref Ans	Fin Ans	Rationale
				from this report for a size of 060, no other information
Colon-4	Circumferential Resection Margin	XX.1	XX.9	Surgical specimen: All margins clear, proximal/distal distance from margin given, but not for radial/circumferential
Colon-5	EOD Mets	50	20	Surgical pathology report: tumor nodule in attached portion of omentum (single organ). Physician states M1
Colon-5	Circumferential Resection Margin	XX.1	20.0	Surgical pathology report: All margins negative, closest margin is mesocolonic, 2 cm Confirmed with AJCC and CAP that mesocolonic margin is mesenteric (CRM) Changed to 20.0 (20 mm=2 cm)
Lung-1	Histology	8255	8140	Surgical pathology report: Pulmonary adenocarcinoma, solid pattern (90%) and acinar pattern (10%). Per Solid Tumor rules, do not use histology when described as: architecture, foci/focus, pattern
Lung-2	Primary Site	C340	C343	Per the Solid Tumor Rules, there are no specific instructions for coding primary site. Per the SEER coding manual, use all available information in the medical record. Per the operative report, tumor originated in the left lower lobe
Lung-4	EOD Primary Tumor	700	650	Pulmonary consult: RUL mass, with separate tumor node in right apex; staged clinically as IIIB, T4N3M0; imaging showed invades parietal pleura, paratracheal region, compresses SVC; confluent with right hilum
Lung-4	Separate Tumor Nodules	1	0	Per PET Scan: possible metastasis to the right lung apex. Possible is not an ambiguous term that indicates involvement. Pulmonary consult states spiculated nodular opacities c/w mets noted in radiology report; however, does not factor this into staging (considered them negative)
Lung-5	Histology	8255	8551	Surgical pathology report: Invasive adenocarcinoma, acinar predominant Per the Solid Tumor Rules for Lung, Table 3: Acinar Predominant is a subtype/variant of Adenocarcinoma
Lymphoma-2	Lymphocytosis	1	6	Lab value for lymphocytosis not documented. Physician states patient has lymphocytosis
Lymphoma-3	Adenopathy	0	9	No mention of adenopathy in the record. Per **Note**, code 9 if not documented
Lymphoma-4	Primary Site	C778	C421	Peripheral blood smear not definitively diagnostic of CLL/SLL; however, physician's documents that peripheral blood was consistent with CLL/SLL
Lymphoma-4	EOD Primary Tumor	600	800	Since it was confirmed that peripheral blood was consistent with CLL/SLL, changed to code 800 to indicate peripheral blood involvement

Case	Data Items	Pref Ans	Fin Ans	Rationale
Lymphoma-4	Lymphocytosis	9	6	No documentation of lymphocytosis in record; however, physician documents RAI Stage 1, which requires the presence of lymphocytosis
Lymphoma-5	Anemia	0	9	Hemoglobin results were obtained 4 months after diagnosis. Per **Note 3**, the Hemoglobin should be done at the time of diagnosis
Lymphoma-5	Lymphocytosis	0	9	Lymphocytosis results were obtained 4 months after diagnosis. Per **Note 3,** the Lymphocytosis should be done at the time of diagnosis
Lymphoma-5	Organomegaly	0	9	No physical exam for organomegaly done at time of diagnosis; evaluation for organomegaly occurred 4 months after diagnosis
Lymphoma-5	Thrombocyto-penia	0	9	Platelet results were obtained 4 months after diagnosis. Per **Note 3**, the Platelets should be done at the time of diagnosis
Melanoma-2	EOD Primary Tumor	400	300	Breslow's thickness 2.9 mm. Per the "Relationship Between Thickness, Depth of Invasion, and Clark Level Table," found in the Summary Stage 2018 manual, this is a Level IV lesion based on the 2.9 mm measurement and no other mention of invasion into adjacent structures
Melanoma-2	Sentinel Lymph Nodes Examined	01	03	Surgical pathology report: A) Right axillary lymph node resection B) Right supraclavicular lymph node biopsy C) Left axillary lymph node, excisional biopsy Per the SEER Manual, Sentinel Nodes Examined, #1: Document the total number of nodes sampled during the sentinel node procedure in this data item when both sentinel and non-sentinel nodes are sampled during the sentinel node biopsy procedure; i.e., record the total number of nodes from the procedure regardless of sentinel node status
Melanoma-2	Sentinel Lymph Nodes Positive	01	02	Surgical pathology report: Re-excisional biopsy and SLN biopsy: 1 R axillary SLN & 1 L axillary LN excision; both showed metastatic malignant melanoma Per the SEER manual, Sentinel Nodes Positive, #1: Document the total number of positive nodes identified during the sentinel node procedure in this data item when, during a sentinel node biopsy procedure a few non-sentinel node happen to be sampled and are positive; i.e., record the total number of positive nodes from the sentinel node biopsy procedure regardless of whether the nodes contain dye or colloidal material (tracer or radiotracer)

Case	Data Items	Pref Ans	Fin Ans	Rationale
Melanoma-3	Histology	8720	8771	Surgical pathology report: Shave biopsy, Malignant melanoma, invasive, Cell type: epithelioid
Melanoma-4	EOD Primary Tumor	400	300	Breslow's thickness 1.65 mm. Per the "Relationship Between Thickness, Depth of Invasion, and Clark Level Table," found in the Summary Stage 2018 manual, this is a Level IV lesion based on the 1.65 mm measurement and no other mention of invasion into adjacent structures
Melanoma-4	Sentinel Lymph Nodes Examined	98	02	Per the Operative report, 2 radioactive nodes were encountered and excised No pathology report is available for the sentinel lymph node procedure. Based on the operative report, 2 sentinel lymph nodes were removed
Melanoma-4	Sentinel Lymph Nodes Positive	97	99	Per the Operative report, 2 radioactive nodes were encountered and excised No pathology report is available for the sentinel lymph node procedure, so unknown if sentinel nodes were positive or negative
Melanoma-5	Histology	8720	8743	Surgical pathology report: Shave biopsy, Malignant melanoma, Histologic subtype: nevoid Sent out for consult, came back as: nevoid/superficial spreading type
Melanoma-5	Breslow's Thickness	A0.6	0.9	Shave biopsy showed Breslow's depth of at least .6 mm. Re-excision stated Breslow's depth as .9 mm. Per comment, "considering the combination of prior biopsy site changes and residual atypical dermal melanocytes as highlighted by the Melan-A red stain, our best estimate for a Breslow depth is a maximum of 0.9 mm" Per consult with AJCC and CAP, if the physician adds the two specimens together to get a final Breslow's depth, the registrar can use that. Registrars are not to add specimens together (SSDI manual will be updated)
Ovary-2	EOD Regional Nodes	400	999	CT A/P 4/1/2018: retroperitoneal lymphadenopathy up to 2cm Per EOD Coding instructions: cannot use "lymphadenopathy" Clinical Stage: 3c (with or without lymph node involvement) No regional nodes examined during surgery. Due to extensive involvement and the description of "lymphadenopathy," better to code lymph node status as unknown

Case	Data Items	Pref Ans	Fin Ans	Rationale
Ovary-2	Residual Tumor Volume Post Cytoreduction	99	97	Surgical operative report: Exploratory laparotomy, total abdominal hysterectomy, bilateral salpingo-oophorectomy, omentectomy, appendectomy and proctosigmoidoscopy. No mention of cytoreduction or debulking
Ovary-3	Residual Tumor Volume Post Cytoreduction	00	97	Surgical operative report: Laparoscopic assisted vaginal hysterectomy and bilateral oophorectomy with lymph node dissection and partial omentectomy No mention of cytoreduction or debulking
Ovary-4	Grade Pathological	9	3	Surgical pathology report stated that grade was not applicable (original answer); however, physician notes state this was a Grade 3. Since there was no biopsy done, this would be a pathological grade
Ovary-4	Residual Tumor Volume Post Cytoreduction	00	97	Surgical operative report: Localized disease, no disease left behind No mention of cytoreduction or debulking
Ovary-5	Histology	8441	8461	High grade serous carcinoma (right histology, wrong code assigned)
Ovary-5	EOD Regional Nodes	999	000	Surgical pathology report: No lymph nodes found/examined: pNX Per HPI, based on 12/17/17 CT scan, borderline prominent celiac axis LNs, without substantial LAD
Prostate-1	EOD Primary Tumor	220	300	Per physician: both lobes abnormal and indurated. Capsule and seminal vesicles intact There is no documentation of “tumor”, “mass” or “nodule” by the physician. Cannot infer that this is an apparent tumor based on the enlargement and the statement of “abnormal” by the physician
Prostate-1	Prostate Path Extn	600	400	Per Surgical Pathology report: tumor invades the seminal vesicles with bladder base margin involvement. Margins are no longer part of staging for Prostate
Prostate-2	Tumor Size Pathologic	999	020	Gross description: Sectioning reveals a 2 x 1.5 x 0.8 cm yellow-tan, firm mass within the posterior right, apical aspect of the prostate
Prostate-2	Number of Cores Examined	20	X6	Biopsy pathology report: Per the Gross Description: The number of “cores” counted are described as “pieces” Per **Note 3**: Second bullet: Information from the gross description of the core biopsy pathology report can be used to code this data item when the gross findings provide the actual number of cores and *not pieces, chips, fragments, etc.*
Prostate-2	Number of Cores Positive	04	X6	Biopsy pathology report: Positive cores reported as “fragments”

Case	Data Items	Pref Ans	Fin Ans	Rationale
				Per **Note 3**: Second bullet: Information from the gross description of the core biopsy pathology report can be used to code this data item when the gross findings provide the actual number of cores and *not pieces, chips, fragments, etc.*
Prostate-3	EOD Primary Tumor	250	200	Per Physician's notes: Abnormal DRE, newly diagnosed T2a Can use physician's statement
Prostate-3	Number of Cores Examined	12	26	Biopsy pathology report: Per the Gross Description: A-F, 26 cores were examined **Note 3** (Bullet 2): Information from the gross description of the core biopsy pathology report can be used to code this data item when the *gross findings provide the actual number of cores* and not pieces, chips, fragments, etc.
Prostate-5	EOD Primary Tumor	350	120	Elevated PSA. Per Urology Note: Rectal examination revealed an enlarged somewhat firm prostate without nodules that appeared palpably benign on DRE. CT Abdomen and Pelvis: Median lobe of the prostate gland protrudes into the posterior bladder wall Although the CT scan indicates "protrusion into the posterior bladder wall," and the physician documents that the patient has high risk disease (high PSA and Gleason Score), there is not enough information in the record to support a code higher than code 120 for an elevated PSA
Prostate-5	EOD Mets	00	10	Physician states metastatic disease was suspected, and they were referring to the retroperitoneal node (or nodes) that were enlarged on imaging. Generally, when multiple ambiguous terms are used, the non-reportable ambiguous terms are ignored ("concerned" in this case) and use the reportable ambiguous term ("suspect" in this case). The physician does ultimately treat this patient as though he has metastatic disease as well
Prostate-5	SS2018	2	7	Originally coded as regional based on extension to bladder. Extension now based on elevated PSA, which makes this a localized tumor; however, also changed distant mets to include the retroperitoneal lymph nodes
Soft Tissue Abdomen and Thoracic-2	Grade Clinical	9	D	Biopsy pathology report: High-grade myxofibrosarcoma Preferred grading system: FNCLCC. "High-grade" is not part of FNCLCC

Case	Data Items	Pref Ans	Fin Ans	Rationale
				Soft Tissue has generic grade codes of A-D available, can use the table for converting grade descriptions, "High-grade" equal to D
Soft Tissue Abdomen and Thoracic -4	EOD Primary Tumor	500	700	Multifocal involvement, NOS: Tumor was multifocal at diagnosis; confirmed involvement included the peritoneum, omentum and mesentery
Soft Tissue Abdomen and Thoracic -4	EOD Mets	00	10	PET/CT scan shows lymph nodes suspicious for involvement (left supraclavicular, left retroclavicular, left internal mammary, right axillary and left external iliac regions)
Soft Tissue Abdomen and Thoracic -4	SS2018	2	7	Distant based on involvement of distant lymph nodes
Tongue-1	Histology	8072	8070	Surgical pathology report: Non-keratinizing squamous cell carcinoma (under final diagnosis). Per Solid Tumor Rules: keratinizing and non-keratinizing no longer recognized for head and neck tumors, code to SCC, NOS
Tongue-1	Tumor Size Clinical	014	999	Size initially recorded was based on an ulcerative lesion seen on the floor of mouth, no information available on the clinical tumor size for the tongue
Tongue-1	Extranodal Exten H&N Clin	7	0	Per PET/CT scan, there is mild increased metabolic activity of a lymph node. Based on recommendations for LN dissection, evidence of clinical lymphadenopathy. No mention of ENE
Tongue-2	Primary Site	C022	C023	Per the Solid Tumor Rules for head and neck, priority for primary site is tumor board (if available), then operative report (resection or biopsy). Per operative report, right lateral tongue Further clarification from SEER, states that "lateral" without further identification is coded to C023
Tongue-2	Histology	8071	8070	Surgical pathology report: Non-keratinizing squamous cell carcinoma (under final diagnosis). Per Solid Tumor Rules: keratinizing and non-keratinizing no longer recognized for head and neck tumors, code to SCC, NOS
Tongue-2	Tumor Size Clinical	050	025	There is no imaging available, so tumor size clinical is based on physician's statement of "tongue lesion measuring 1 x 2.5 cm"
Tongue-2	Grade Clinical	9	1	Biopsy pathology report: Well differentiated
Tongue-2	Extranodal Exten H&N Clin	0	7	MRI mildly prominent L lymph node measuring 1.2 X 0.8cm, likely reactive Likely reactive is not diagnostic of lymph node involvement
Tongue-3	Primary Site	C022	C020	Per the Solid Tumor Rules for head and neck, priority for primary site is tumor board (if

Case	Data Items	Pref Ans	Fin Ans	Rationale
				available), then operative report (resection or biopsy). Per operative report, dorsal surface of tongue
Tongue-3	LN Size	0.4	4.0	Size of lymph node 0.4 cm, which is equal to 4 mm
Tongue-4	Tumor Size Clinical	013	015	CT Neck Soft Tissue: Asymmetric enhancement involving the L ventricle tongue/floor of month measuring 1.3cm x 0.7 cm x 1.5 cm (*inadvertently recorded the wrong measurement, should be the highest measurement of 1.5 cm*)
Tongue-4	Extranodal Exten H & N Clin	0	1	Patient noted to have matted nodes on clinical exam, which is clinical indication of ENE
Tongue-5	Histology	8071	8070	Surgical pathology report: Non-keratinizing squamous cell carcinoma (under final diagnosis). Per Solid Tumor Rules: keratinizing and non-keratinizing no longer recognized for head and neck tumors, code to SCC, NOS
Tongue-5	Extranodal Exten H&N Clin	9	7	No documentation of clinical lymph node involvement

Data Analysis

Data were analyzed by case and by data item based on the percent of participants agreeing with the preferred answer and based on comments submitted by participants. Preferred answered were updated based on post-study reconciliation. Individual participant performance was not examined.

The results of agreement with the post-reconciliation final answers are shown by schema in Tables 3.0 – 3.9 . The cells highlighted in yellow indicate less than 85%.agreement with the preferred answer.

Table 3.0: Brain Final Answers

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5	Total
Primary Site	**36.3**	**11.7**	96.5	**62.4**	95.9	**59.7**
Histology	94.7	98.3	98.2	97.0	89.9	95.2
Behavior	99.4	97.8	98.8	100	99.4	98.6
Tumor Size Clinical	**71.3**	**35.8**	93.6	89.1	**56.8**	**68.6**
Tumor Size Pathologic	95.9	**59.2**	91.2	93.3	90.5	85.3
EOD Primary Tumor	**76.0**	**78.8**	91.2	**84.2**	88.2	**83.2**
EOD Regional Nodes (default value)	100	100	100	100	100	100
Regional Nodes Positive (default value)	90.6	86.6	**84.8**	**82.4**	89.9	86.5
EOD Mets	90.1	97.2	97.1	97.6	96.4	95.2
SS2018	**73.1**	**79.3**	87.1	87.3	93.5	**83.6**
Grade Clinical	**79.5**	**77.7**	**77.8**	**77.6**	**63.3**	**74.9**
Grade Pathological	**65.5**	**83.8**	91.2	86.7	**84.0**	81.8
Grade Post Therapy	**78.4**	**73.2**	86.0	**74.5**	**82.2**	**78.5**
Brain Molecular Markers	**80.7**	**62.0**	**84.2**	**80.0**	**73.4**	**75.5**
Chromosome 1p Status	90.6	**81.6**	93.0	93.3	**66.3**	**84.5**
Chromosome 19q Status	92.4	**82.7**	93.6	93.9	**65.1**	85.1
MGMT	**80.7**	**79.3**	93.6	92.7	88.8	86.5

Table 3.1: Breast Final Answers

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5	Total
Primary Site	**55.8**	**56.2**	**71.1**	90.9	98.2	**74.2**
Histology	97.0	97.8	99.4	90.2	88.1	87.1
Behavior	100	99.4	97.7	98.2	98.2	98.7
Tumor Size Clinical	**41.2**	**2.8**	90.2	**25.6**	**56.0**	**43.0**
Tumor Size Pathologic	95.2	**10.7**	96.5	96.3	91.1	**77.4**
EOD Primary Tumor	89.1	93.8	96.5	94.5	86.3	92.1
EOD Regional Nodes	90.9	73.0	**35.8**	**37.8**	**53.0**	**58.1**
Regional Nodes Positive	**75.2**	96.6	96.5	95.7	**57.7**	**84.6**
EOD Mets	95.8	98.9	98.3	97.6	92.3	96.6
SS2018	90.9	96.6	96.0	95.1	88.1	93.4
Grade Clinical	90.9	89.9	87.9	**76.2**	92.9	87.6
Grade Pathological	86.7	**79.2**	94.2	93.9	**79.8**	86.7
Grade Post Therapy	**58.8**	**77.5**	87.9	**81.7**	**82.1**	**77.7**
Sentinel Lymph Nodes Examined	**7.9**	93.8	93.6	95.7	**51.2**	**68.9**
Sentinel Lymph Nodes Positive	**7.3**	97.2	99.4	98.2	**33.9**	**67.8**
ER Summary	97.0	96.6	98.3	97.6	98.2	97.5
ER Percent Positive	86.1	96.6	**45.1**	**82.3**	**69.0**	**75.8**
ER Allred Score	**65.5**	96.6	87.3	**49.4**	91.1	**78.4**
PR Summary	96.4	97.8	98.8	96.3	95.8	97.1
PR Percent Positive	**83.6**	96.1	**52.0**	**79.3**	**70.2**	**76.3**
PR Allred Score	**67.3**	95.5	85.5	**45.7**	87.5	**76.8**
HER2 IHC Summary	93.3	**61.8**	**80.3**	**72.0**	85.1	**78.3**
HER2 ISH Summary	**80.6**	91.6	**71.1**	**81.1**	**79.8**	**80.9**
HER2 Overall Summary	95.2	93.3	**78.6**	87.2	94.0	89.6
HER2 SP Copy Number	93.3	**73.6**	**72.8**	90.9	87.5	**83.4**
HER2 DP Copy Number	92.7	**39.3**	**29.5**	93.3	86.3	**67.5**
HER2 DP Ratio	93.3	**67.4**	**51.4**	93.9	87.5	**78.3**
Ki-67	93.9	94.4	**55.5**	**32.3**	86.3	**72.8**
Lymph Nodes Positive Axillary Level I-II	**78.8**	90.4	91.9	87.2	**54.2**	**80.1**
Multigene Signature Method	93.9	**80.9**	93.1	86.0	92.3	89.2
Multigene Signature Results	93.3	**77.5**	93.1	**82.9**	88.1	86.9
Oncotype DX Recur Score – DCIS	**64.2**	**64.6**	**65.3**	**68.9**	**63.1**	**65.2**
Oncotype DX Recur Score	98.2	94.4	**44.5**	86.6	95.8	**83.7**
Oncotype Dx Risk Level – DCIS	**64.8**	**65.7**	**64.2**	**64.6**	**58.3**	**63.7**
Oncotype Dx Risk Level Invasive	95.8	93.8	**50.9**	**80.5**	92.9	**70.9**
Response to Neoadjuvant Therapy	**79.4**	**15.7**	86.1	86.0	**78.0**	**74.0**

Table 3.2: Colon and Rectum Final Answers

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5	Total
Primary Site	**1.8**	**33.1**	**35.3**	96.3	97.6	**52.2**
Histology	97.0	**75.8**	87.1	100	98.2	91.4
Behavior	98.8	98.9	98.2	98.8	98.2	98.6
Tumor Size Clinical	92.9	87.1	**58.2**	95.1	85.7	**83.7**
Tumor Size Pathologic	95.8	96.1	98.2	96.3	97.6	96.8
EOD Primary Tumor	90.5	**54.5**	**42.9**	**61.1**	**75.6**	**64.8**
EOD Regional Nodes	98.8	98.3	99.4	98.8	**76.2**	94.3
Regional Nodes Positive	99.4	98.9	99.4	98.8	99.4	99.2
EOD Mets	98.2	99.4	99.4	98.8	**26.8**	**84.6**
SS2018	89.3	**59.0**	**53.5**	**71.0**	**76.8**	**61.2**
Grade Clinical	**74.4**	94.9	93.5	95.1	91.1	89.8
Grade Pathological	**14.9**	97.2	97.6	96.3	99.4	**81.2**
Grade Post Therapy	**83.9**	**77.5**	88.2	**79.0**	**82.1**	**82.2**
CEA PreTX Interpretation	91.1	96.1	96.5	96.3	**76.2**	91.3
CEA PreTX Lab Value	91.1	94.9	95.9	94.4	**73.2**	90.0
Circumferential Resection Margin	**47.0**	**57.9**	90.6	**48.8**	**12.5**	**59.2**
KRAS	94.6	97.8	97.6	96.9	**76.8**	92.8
Microsatellite Instability	**33.3**	87.6	**62.9**	**44.4**	97.0	**65.5**
Perineural Invasion	95.2	96.6	98.2	94.4	96.4	96.2
Tumor Deposits	92.3	93.3	97.1	95.7	94.0	94.4

Table 3.3: Lung Final Answers

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5	Total
Primary Site	90.4	**51.5**	98.2	98.1	98.8	86.6
Histology	**48.5**	**78.4**	**30.7**	89.5	**46.1**	**58.6**
Behavior	100	99.4	100	100	99.4	99.8
Tumor Size Clinical	95.8	**69.0**	**15.7**	**58.0**	93.4	**66.5**
Tumor Size Pathologic	97.0	96.5	98.8	96.9	95.2	96.9
EOD Primary Tumor	**71.9**	**25.1**	**68.7**	**42.6**	**64.1**	**54.4**
EOD Regional Nodes	**76.0**	**74.9**	**84.3**	**58.0**	**64.1**	**71.5**
Regional Nodes Positive	**72.5**	95.3	98.2	**77.8**	**84.4**	86.1
EOD Mets	96.4	93.0	98.2	**77.8**	94.6	92.1
SS2018	**76.6**	**49.1**	**55.4**	**47.5**	**64.7**	**58.7**
Grade Clinical	98.8	**77.2**	92.2	98.8	98.2	92.9
Grade Pathological	97.6	96.5	96.4	98.1	97.6	97.2
Grade Post Therapy	**83.8**	**79.5**	89.2	**79.6**	85.6	**83.6**
Separate Tumor Nodules	85.0	**80.7**	96.4	**41.4**	97.0	**80.3**
Visceral and Parietal Pleural Invasion	95.8	94.2	**57.8**	**44.4**	**63.5**	**71.4**

Table 3.4: Lymphoma (CLL/SLL) Final Answers

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5	Total
Primary Site	**62.0**	**52.7**	95.7	**32.5**	**75.6**	**63.7**
Histology (default value-9823)	100	100	100	100	100	100
Behavior (default value-3)	99.4	98.2	98.1	99.4	100	99.0
Tumor Size Clinical (default value-999)	96.3	93.4	97.5	92.5	92.7	945.5
Tumor Size Pathologic (default value-999)	98.8	95.8	97.5	95.6	96.3	96.8
EOD Primary Tumor	**34.4**	**26.9**	**79.0**	**12.5**	**82.9**	**47.2**
EOD Regional Nodes (default value-888)	100	100	100	100	100	100
Regional Nodes Positive (default value-99)	97.5	95.2	94.4	97.5	95.1	96.0
EOD Mets (default value-88)	100	100	100	100	100	100
SS2018	**44.8**	**82.6**	**83.3**	86.9	**79.3**	**75.4**
Grade Clinical (default value-8)	100	100	100	100	100	100
Grade Pathological (default value-8)	100	100	100	100	100	100
Grade Post Therapy (default value-blank)	**63.8**	**56.9**	**69.1**	**55.6**	**61.6**	**61.4**
Adenopathy	87.7	94.6	**40.1**	95.0	90.2	81.6
Anemia	**77.3**	**74.9**	**64.8**	**66.9**	**31.1**	**63.0**
B symptoms	94.5	89.8	**67.3**	**81.9**	88.4	84.4
HIV status	**82.8**	85.0	85.2	90.0	**49.4**	**78.4**
Lymphocytosis	**71.8**	**37.1**	**56.8**	**5.0**	**43.9**	**58.0**
NCCN International Prognostic Index (IPI)	**71.8**	**76.0**	97.5	95.0	93.3	86.6
Organomegaly	87.7	**77.8**	**64.2**	**76.3**	**23.2**	**76.6**
Thrombocytopenia	**74.2**	**81.4**	**57.4**	**33.1**	**34.8**	**61.8**

Table 3.5: Melanoma Skin Final Answers

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5	Total
Primary Site	98.1	97.1	98.2	96.9	98.8	97.8
Histology	93.2	100	**14.6**	100	**38.0**	**69.2**
Behavior	100	100	99.4	98.8	100	99.6
Tumor Size Clinical	**76.5**	**7.0**	**79.9**	**48.8**	86.1	**59.2**
Tumor Size Pathologic	**76.5**	**24.4**	**76.8**	**67.3**	88.6	**66.7**
EOD Primary Tumor	90.7	**15.7**	87.8	**10.5**	89.8	**63.0**
EOD Regional Nodes	**72.2**	**62.8**	99.4	**42.0**	96.4	**74.6**
Regional Nodes Positive	87.7	**76.2**	93.3	**61.1**	90.4	**81.7**
EOD Mets	88.9	94.8	100	98.1	99.4	96.2
SS2018	**70.4**	**70.9**	97.0	**61.7**	94.6	**78.9**
Grade Clinical	100	99.4	99.4	98.8	97.6	99.0
Grade Pathological	100	99.4	99.4	98.8	97.6	99.0
Grade Post Therapy	**82.7**	**78.5**	89.0	**83.3**	**84.3**	**83.5**
Sentinel Lymph Nodes Examined	95.7	**57.0**	95.7	**48.1**	92.8	**77.7**
Sentinel Lymph Nodes Positive	95.7	**60.5**	98.2	**65.4**	95.8	**82.9**
Breslow Thickness	**80.9**	**79.1**	**78.0**	**62.3**	**71.1**	**74.3**
Ulceration	97.5	98.3	94.5	**64.2**	96.4	90.3
LDH (Lactate Dehydrogenase) Pretreatment Lab Value	96.3	94.2	94.5	**53.1**	94.6	87.8
LDH (Lactate Dehydrogenase) Pretreatment Level	98.8	99.4	95.7	**66.7**	98.2	90.6
LDH Upper Limits of Normal	90.7	93.0	95.7	**42.6**	92.8	**83.1**
Mitotic Rate Melanoma	93.8	92.4	93.9	**65.4**	86.7	86.6

Table 3.6: Ovary Final Answers

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5	Total
Primary Site	100	100	100	100	100	100
Histology	**20.8**	86.1	**17.7**	96.2	**30.5**	**50.1**
Behavior	99.4	100	100	99.4	99.4	99.6
Tumor Size Clinical	**25.8**	**79.5**	**1.8**	**14.7**	89.6	**61.4**
Tumor Size Pathologic	**84.9**	86.1	**72.6**	92.3	87.2	**84.5**
EOD Primary Tumor	**84.3**	**63.3**	**73.2**	95.5	**75.6**	**78.1**
EOD Regional Nodes	**68.6**	**32.5**	98.8	99.4	**51.8**	**69.8**
Regional Nodes Positive	**78.6**	**80.7**	100	96.8	**80.5**	87.3
EOD Mets	**83.0**	**25.9**	98.8	98.7	**61.0**	73.1
SS2018	88.1	89.2	86.0	98.1	90.9	90.4
Grade Clinical	86.2	89.2	89.6	91.7	**53.7**	**82.0**
Grade Pathological	93.1	90.4	95.1	**43.6**	92.1	**83.2**
Grade Post Therapy	**84.9**	**81.3**	87.8	**80.8**	86.0	**84.2**
CA-125 PreTX Lab Value	97.5	97.0	91.5	**79.5**	92.1	91.6
FIGO Stage	90.6	**75.3**	**65.9**	**80.1**	86.0	**79.6**
Residual Tumor Volume Post Cytoreduction	**54.1**	**19.3**	**50.0**	**26.9**	**67.7**	**48.6**

Table 3.7: Prostate Final Answers

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5	Total
Primary Site	100	100	100	100	100	100
Histology	93.3	93.6	94.0	88.1	92.2	92.3
Behavior	99.4	100	99.4	100	99.4	99.6
Tumor Size Clinical	97.0	98.3	91.0	91.8	94.0	94.4
Tumor Size Pathologic	**56.7**	**21.5**	86.2	96.9	97.6	**71.3**
EOD Primary Tumor	**5.5**	**25.0**	**20.4**	**75.5**	**50.6**	**37.0**
Prostate Path Exten	**42.7**	**73.8**	**82.6**	**85.5**	88.0	74.5
EOD Regional Nodes	91.5	98.8	96.4	88.7	**69.3**	89.0
Regional Nodes Positive	92.7	98.8	94.6	**79.2**	**80.7**	89.4
EOD Mets	97.0	98.8	98.2	86.2	**35.5**	89.0
SS2018	**78.7**	**75.0**	94.6	89.9	**34.3**	**74.4**
Grade Clinical	90.2	96.5	94.6	92.5	91.6	93.1
Grade Pathological	**72.0**	96.5	**31.7**	86.8	89.2	**75.2**
Grade Post Therapy	**83.5**	**79.1**	**73.7**	**83.0**	85.5	**80.9**
PSA Lab Value	**73.8**	91.3	**64.7**	**83.6**	**83.7**	**79.5**
Gleason Patterns Clinical	95.7	97.7	93.4	95.6	96.4	95.8
Gleason Score Clinical	95.1	96.5	98.2	97.5	96.4	96.7
Gleason Patterns Pathological	**50.6**	98.3	**77.2**	**84.3**	**84.3**	**79.1**
Gleason Score Pathological	**51.8**	97.7	**76.0**	**84.9**	**84.9**	**79.2**
Gleason Tertiary Pattern	87.2	86.0	**77.8**	85.5	**69.9**	**81.3**
Number of Cores Examined	**69.5**	**31.4**	**10.2**	**47.8**	97.6	**60.9**
Number of Cores Positive	88.4	**2.9**	**79.0**	93.1	97.6	**71.5**

Table 3.8: Soft Tissue Abdomen and Thoracic Final Answers

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5	Total
Primary Site	91.1	**46.0**	98.2	96.1	96.3	85.4
Histology	96.2	**83.4**	**79.9**	**80.0**	95.7	87.0
Behavior	99.4	98.8	100	100	98.8	99.4
Tumor Size Clinical	**75.2**	**46.0**	**84.8**	64.5	**84.0**	**70.9**
Tumor Size Pathologic	**5.1**	**83.4**	93.9	**53.5**	**83.3**	**64.4**
EOD Primary Tumor	93.6	**11.0**	**75.6**	**4.5**	92.6	**56.1**
EOD Regional Nodes	**84.7**	87.1	**84.8**	**52.9**	**84.6**	**79.0**
Regional Nodes Positive	**81.5**	**80.4**	**70.7**	**80.0**	**80.2**	**78.5**
EOD Mets	98.7	99.4	99.4	**17.4**	98.8	89.9
SS2018	96.8	**39.9**	**81.1**	**39.4**	93.8	**67.8**
Grade Clinical	100	**10.4**	**83.5**	**40.0**	95.7	**65.9**
Grade Pathological	99.4	86.5	**28.0**	**76.1**	**4.9**	**58.6**
Grade Post Therapy	87.9	85.3	**78.0**	**62.6**	88.3	**80.5**
Bone Invasion	86.6	97.5	95.1	95.5	93.8	93.8

Table 3.9: Tongue Anterior Final Answers

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5	Total
Primary Site	**33.8**	**20.4**	**57.7**	**51.3**	**83.9**	**49.4**
Histology	**58.6**	**40.1**	95.1	98.1	**37.3**	**70.1**
Behavior	100	98.8	99.4	98.7	100	99.4
Tumor Size Clinical	**32.5**	**26.5**	**69.3**	**10.9**	97.5	**47.7**
Tumor Size Pathologic	93.6	87.0	98.2	92.3	100	94.2
EOD Primary Tumor	94.3	89.5	**65.6**	**37.8**	**49.7**	**67.5**
EOD Regional Nodes	**75.2**	85.8	**62.6**	**77.6**	98.8	**80.0**
Regional Nodes Positive	96.8	**84.0**	98.8	87.2	100	93.4
EOD Mets	98.7	100	98.8	94.9	100	98.5
SS2018	**77.1**	90.1	**68.1**	**44.9**	**65.2**	**69.2**
Grade Clinical	**80.3**	**36.4**	87.1	**60.9**	93.8	**71.7**
Grade Pathological	91.7	**50.0**	**36.2**	93.6	93.2	**72.6**
Grade Post Therapy	87.3	**83.3**	89.6	**80.1**	88.2	85.7
Extranodal Exten H & N Clin	**59.2**	**23.5**	**51.5**	**32.7**	**37.9**	**41.8**
Extranodal Exten H & N Path	89.8	**72.2**	**54.6**	**41.7**	87.6	**69.2**
Human Papilloma Virus (HPV) Status	**49.0**	85.8	93.3	94.9	96.3	**84.0**
LN Size	**61.8**	**81.5**	**31.9**	**18.6**	92.5	**57.4**

Major/Minor Errors

Discrepancies between a participant's answer and the final answer were further classified as major or minor errors.

- Major errors are defined as a value different from the final answer that would derive a different T, N, M, TNM stage group, or Summary Stage 2018
- Minor errors are defined as a value different from the final answer that would **not** result in a different T, N, M, TNM stage group, or Summary Stage 2018

Due to all the different data items that may be factored into deriving TNM stage group or Summary Stage 2018, a major error on an EOD Primary Tumor, EOD Regional Nodes, EOD Mets, tumor size (when applicable), regional nodes positive (when applicable) or a stage-related SSDI (when applicable), may not affect the overall derived TNM stage group or Summary Stage 2018.

The major and minor errors were determined for all the data items in the reliability study that could influence TNM stage group or Summary Stage 2018. For some schemas, this included SSDIs (See Appendix 3: 2019 EOD/SS/SSDI Reliability Study-Major vs Minor Errors for a complete listing of all the major and minor errors).

- "NA" in the following tables means that minor errors were not defined for the final answer for the field

Table 4.0: Brain-Major/Minor Errors

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
EOD Primary Tumor	Major-24.0% Minor-NA	Major-21.2% Minor-NA	Major-8.8% Minor-NA	Major-15.8% Minor-NA	Major-11.8% Minor-NA
EOD Mets	Major-9.9% Minor-NA	Major-2.8% Minor-NA	Major-2.9% Minor-NA	Major-2.4% NA Minor-NA	Major-3.6% Minor-NA

Table 4.1-Breast-Major/Minor Errors

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
Tumor Size Clinical	Major-53.3% Minor-5.5%	Major-97.2% Minor-0.0%	Major-8.7% Minor-1.2%	Major-1.2% Minor-73.2%	Major-26.8% Minor-17.3%
Tumor Size Pathologic	Major-4.8% Minor-NA	Major-89.3% Minor-NA	Major-2.3% Minor-1.2%	Major-3.7% Minor-0.0%	Major-8.9% Minor-NA
EOD Primary Tumor	Major-10.9% Minor-NA	Major-6.2% Minor-NA	Major-3.5% Minor-NA	Major-5.5% Minor-NA	Major-13.7% Minor-NA
EOD Regional Nodes	Major-6.1% Minor-3.0%	Major-3.4% Minor-23.6%	Major-0.6% Minor-63.6%	Major-0.6% Minor-61.6%	Major-39.9% Minor-7.1%
EOD Mets	Major-2.4% Minor-1.8%	Major-0.0% Minor-1.1%	Major-0.6% Minor-1.2%	Major-0.6% Minor-1.8%	Major-5.9% Minor-1.8%
Grade Clinical	Major-9.1% Minor-NA	Major-10.1% Minor-NA	Major-12.1% Minor-NA	Major-23.8% Minor-NA	Major-7.1% Minor-NA
Grade Pathological	Major-13.3% Minor-0.0	Major-20.8% Minor-0.0%	Major-5.8% Minor-NA	Major-6.1% Minor-NA	Major-19.6% Minor-0.6%
Grade Posttherapy	Major-41.2% Minor-0.0%	Major-22.5% Minor-0.0%	Major-12.1% Minor-NA	Major-18.3% Minor-NA	Major-17.9% Minor-NA
ER Summary	Major-3.0% Minor-NA	Major-3.4% Minor-NA	Major-1.7% Minor-NA	Major-2.4% Minor-NA	Major-1.8% Minor-NA
PR Summary	Major-3.6% Minor-NA	Major-2.2% Minor-NA	Major-1.2% Minor-NA	Major-3.7% Minor-NA	Major-4.2% Minor-NA

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
HER2 Summary	Major-4.8% Minor-NA	Major-6.7% Minor-NA	Major-21.4% Minor-NA	Major-12.8% Minor-NA	Major-6.0% Minor-NA
Lymph Nodes Positive Axillary Level I-II	Major-21.2% Minor-NA	Major-9.6% Minor-NA	Major-8.1% Minor-NA	Major-12.8% Minor-NA	Major-37.5% Minor-8.3%
Oncotype Rec Score	Major-1.2% Minor-0.6%	Major-3.9% Minor-1.7%	Major-1.2% Minor-54.3%	Major-1.8% Minor-11.6%	Major-3.0% Minor-1.2%

Table 4.2: Colon and Rectum-Major/Minor Errors

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
EOD Primary Tumor	Major-9.5% Minor-NA	Major-45.5% Minor-NA	Major-57.1% Minor-NA	Major-38.9% Minor-NA	Major-24.4% Minor-NA
EOD Regional Nodes	Major-1.2% Minor-NA	Major-1.7% Minor-NA	Major-0.6% Minor-NA	Major-1.2% Minor-NA	Major-4.2% Minor-19.6%
Regional Nodes Positive	Major-0.6% Minor-NA	Major-1.1% Minor-NA	Major-0.6% Minor-NA	Major-1.2% Minor-NA	Major-0.6% Minor-0.0%
EOD Mets	Major-1.8% Minor-NA	Major-0.6% Minor-NA	Major-0.6% Minor-NA	Major-1.2% Minor-NA	Major-71.4% Minor-1.8%

Table 4.3: Lung-Major/Minor Errors

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
Tumor Size Clinical	Major-0.6% Minor-3.6%	Major-26.9% Minor-4.1%	Major-2.4% Minor-81.9%	Major-11.7% Minor-30.2%	Major-1.2% Minor-5.4%
Tumor Size Pathologic	Major-0.6% Minor-2.4%	Major-2.9% Minor-0.6%	Major-0.6% Minor-0.6%	Major-2.5% Minor-0.6%	Major-1.2% Minor-3.6%
EOD Primary Tumor	Major-28.1% Minor-NA	Major-74.9% Minor-NA	Major-31.3% Minor-NA	Major-57.4% Minor-NA	Major-35.9% Minor-NA
EOD Regional Nodes	Major-20.4% Minor-3.6%	Major-21.1% Minor-4.1%	Major-14.5% Minor-1.2%	Major-24.1% Minor-17.9%	Major-35.9% Minor-NA
EOD Mets	Major-3.6% Minor-NA	Major-7.0% Minor-NA	Major-1.8% Minor-NA	Major-22.2% Minor-NA	Major-5.4% Minor-NA

Table 4.4: Lymphoma (CLL/SLL)-Major/Minor Errors

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
EOD Primary Tumor	Major-59.5% Minor-6.1%	Major-65.3% Minor-7.8%	Major-16.7% Minor-4.3%	Major-81.9% Minor-5.6%	Major-17.1% Minor-NA

Table 4.5: Melanoma Skin-Major/Minor Errors

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
EOD Primary Tumor	Major-3.1% Minor-6.2%	Major-30.2% Minor-54.1%	Major-3.0% Minor-9.1%	Major-40.2% Minor-49.3%	Major-4.2% Minor-6.0%
EOD Regional Nodes	Major-27.8% Minor-NA	Major-37.2% Minor-NA	Major-0.6% Minor-NA	Major-58.0% Minor-NA	Major-3.6% Minor-NA
EOD Mets	Major-11.1% Minor-NA	Major-5.2% Minor-NA	Major-0.0% Minor-NA	Major-1.9% Minor-NA	Major-0.6% Minor-NA

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
Breslow's Depth*	Major-6.1% Minor-2.5%	Major-5.8% Minor-1.2%	Major-17.0% Minor-0.0%	Major-14.2% Minor-18.5%	Major-24.1% Minor-1.2%
Ulceration	Major-2.5% Minor-NA	Major-1.7% Minor-NA	Major-5.5% Minor-NA	Major-35.8% Minor-NA	Major-3.6% Minor-NA
LDH Pre Tx Level	Major-0.6% Minor-0.6%	Major-0.6% Minor-0.0%	Major-1.3% Minor-3.0%	Major-33.3% Minor-NA	Major-1.2% Minor-0.6%

***** Miskeys (02.1 instead of 2.1) are not the correct but are not counted here.

Table 4.6: Ovary-Major/Minor Errors

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
EOD Primary Tumor	Major-15.7% Minor-NA	Major-36.7% Minor-NA	Major-26.8% Minor-NA	Major-4.5% Minor-NA	Major-24.4% Minor-NA
EOD Regional Nodes	Major-31.4% Minor-NA	Major-67.5% Minor-NA	Major-1.2% Minor-NA	Major-0.6% Minor-NA	Major-48.2% Minor-NA
EOD Mets	Major-17.0% Minor-NA	Major-74.1% Minor-NA	Major-1.2% Minor-NA	Major-1.3% Minor-NA	Major-39.0% Minor-NA

Table 4.7: Prostate-Major/Minor Errors

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
EOD Primary Tumor	Major-86.6% Minor-7.9%	Major-75.0% Minor-NA	Major-79.6% Minor-NA	Major-24.5% Minor-NA	Major-49.4% Minor-NA
EOD Prostate Path	Major-57.3% Minor-NA	Major-26.2% Minor-NA	Major-17.4% Minor-NA	Major-14.5% Minor-NA	Major-12.0% Minor-NA
EOD Regional Nodes	Major-1.8% Minor-6.7%	Major-1.2% Minor-NA	Major-3.6% Minor-NA	Major-11.3% Minor-NA	Major-30.7% Minor-NA
EOD Mets	Major-3.0% Minor-NA	Major-1.2% Minor-NA	Major-1.8% Minor-NA	Major-13.8% Minor-NA	Major-64.5% Minor-NA
Grade Clinical	Major-9.8% Minor-NA	Major-3.5% Minor-NA	Major-5.4% Minor-NA	Major-7.5% Minor-NA	Major-8.4% Minor-NA
Grade Pathological	Major-28.0% Minor-NA	Major-3.5% Minor-NA	Major-68.3% Minor-NA	Major-13.2% Minor-0.0%	Major-10.8% Minor-0.0%
Grade Posttherapy	Major-16.5% Minor-NA	Major-20.9% Minor-NA	Major-26.3% Minor-NA	Major-17.0% Minor-NA	Major-14.5% Minor-NA
PSA*	Major-16.4% Minor-3.0%	Major-1.7% Minor-1.7%	Major-2.4% Minor-28.1%	Major-12.6% Minor-3.8%	Major-0.6% Minor-15.7%

***** Miskeys (02.1 instead of 2.1) are not the correct but are not counted here.

Table 4.8: Soft Tissue-Major/Minor Errors

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
EOD Primary Tumor	Major-6.4% Minor-NA	Major-89.0% Minor-NA	Major-24.4% Minor-NA	Major-95.5% Minor-NA	Major-7.4% Minor-NA
EOD Regional Nodes	Major-15.3% Minor-NA	Major-12.9% Minor-NA	Major-15.2% Minor-NA	Major-47.1% Minor-NA	Major-15.4% Minor-NA
EOD Mets	Major-1.3% Minor-NA	Major-0.6% Minor-NA	Major-0.6% Minor-NA	Major-82.6% Minor-NA	Major-1.2% Minor-NA
Grade Clinical	Major-0.0% Minor-0.0%	Major-40.5% Minor-49.1%	Major-14.6% Minor-1.8%	Major-11.0% Minor-49.0%	Major-1.9% Minor-2.5%
Grade Pathological	Major-0.6% Minor-0.0%	Major-13.5% Minor-NA	Major-72.0% Minor-NA	Major-8.4% Minor-15.5%	Major-4.9% Minor-90.1%
Grade Posttherapy	Major-12.1% Minor-NA	Major-14.7% Minor-NA	Major-22.0% Minor-NA	Major-23.9% Minor-13.5%	Major-11.7% Minor-NA

Table 4.9: Tongue Anterior-Major/Minor Errors

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
Tumor Size Clinical	Major-4.5% Minor-63.1%	Major-73.5% Minor-0.0%	Major-5.5% Minor-25.2%	Major-80.8% Minor-8.3%	Major-2.5% Minor-0.0%
Tumor Size Pathologic	Major-2.5% Minor-3.8%	Major-5.6% Minor-7.4%	Major-0.6% Minor-1.2%	Major-7.1% Minor-0.6%	Major-0.0% Minor-0.0%
EOD Primary Tumor	Major-5.7% Minor-NA	Major-10.5% Minor-NA	Major-34.4% Minor-NA	Major-62.2% Minor-NA	Major-50.3% Minor-NA
EOD Regional Nodes	Major-20.3% Minor-4.5%	Major-14.2% Minor-NA	Major-35.6% Minor-1.8%	Major-22.4% Minor-0.0%	Major-1.2% Minor-NA
EOD Mets	Major-1.3% Minor-NA	Major-0.0% Minor-NA	Major-1.2% Minor-NA	Major-5.1% Minor-NA	Major-0.0% Minor-NA

Derived Values

Data were also analyzed by case for the derivation of T, N, M, Stage Group, and Summary Stage based on the percent distribution of participants agreeing with the final answer. The purpose of this analysis was to determine how often the data items collected resulted in the correct T, N, M and Stage Group.

For calculation of the Derived TNM Stage Group, three data items are used

- EOD Primary Tumor: EOD Derived T
- EOD Regional Nodes: EOD Derived N
- EOD Mets: EOD Derived M

For some schemas, additional data items may be used to derive the T, N, M, or TNM Stage Group. The two most common data items used are

- Tumor Size with EOD Primary Tumor
    - Tumor Size Clinical and Tumor Size Pathologic are both collected for all cases. When Tumor Size is part of EOD Primary Tumor, an algorithm is used to determine which of the Tumor Sizes are used to determine the derived Tumor Size. When there is surgery, usually Tumor Size Pathologic is used
- Regional Nodes Positive with EOD Regional Nodes

In addition to Regional Nodes Positive and Tumor Size, Site-Specific data items (SSDIs) may also be used to determine T, N, M, or TNM Stage Group.

Below are the percentages of agreement with the derived value based on the preferred answers for T, N, M, TNM Stage Group, and Summary Stage, from the data items EOD Primary Tumor, EOD Regional Nodes, EOD Mets and additional data items when applicable. Additional information is provided for each schema when additional data items are needed to calculate one of these fields. For all schemas in the Reliability Study, only the three main EOD data items (and Prostate Pathological Extension for Prostate schema) are used to derive Summary Stage.

Table 5.0: Brain Derived Values

For Brain, T, N, M, and TNM Stage Group are not applicable (NA) because they are not defined in the TNM staging system. They are recorded as '88' in the cancer registry software.

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
EOD Derived T	NA	NA	NA	NA	NA
EOD Derived N	NA	NA	NA	NA	NA
EOD Derived M	NA	NA	NA	NA	NA
EOD Derived TNM	NA	NA	NA	NA	NA
Derived Summary Stage 2018	73.1	78.2	91.2	84.2	88.2

Table 5.1: Breast Derived Values

For Breast, T is defined by tumor size for T1-T3 (all study cases had T values of T1-T3). The derived T value is based on EOD Primary Tumor and the Tumor Size.

For Breast, N is defined by EOD Regional Nodes and/or the SSDI: Lymph Nodes Positive Axillary Levels I-II. The derived N value, depending on the N, may be based on EOD Regional Nodes and the number of positive axillary levels.

For Breast, Stage Group is defined by: T, N, M, and the following SSDIs: ER Summary, PR Summary, HER2 Summary, Grade, and for specific cases, Oncotype Dx Score (invasive).

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
EOD Derived T	42.4	1.7	93.6	91.5	65.5
EOD Derived N	93.9	96.6	97.1	96.3	72.0
EOD Derived M	96.4	98.3	97.1	95.7	91.1
EOD Derived TNM Stage Group	37.0	84.3	74.6	75.0	90.5
Derived Summary Stage 2018	87.3	92.1	97.1	95.1	94.0

Table 5.2: Colon Derived Values

For Colon, N is defined by EOD Regional Nodes and Regional Nodes Positive.

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
EOD Derived T	87.5	89.3	82.4	94.4	74.4
EOD Derived N	95.8	97.2	86.5	98.8	94.0
EOD Derived M	95.8	97.8	86.5	99.4	28.6
EOD Derived TNM Stage Group	87.5	88.2	81.2	93.2	28.6
Derived Summary Stage 2018	93.5	53.4	55.3	35.8	89.9

Table 5.3: Lung Derived Values

For Lung, T may be defined by tumor size. The derived T value is based on EOD Primary Tumor and the Tumor Size.

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
EOD Derived T	71.9	87.7	92.8	82.7	58.7
EOD Derived N	78.4	78.4	85.5	70.4	56.9
EOD Derived M	96.4	91.2	98.2	74.7	82.6
EOD Derived TNM Stage Group	76.6	72.5	83.7	58.6	49.1
Derived Summary Stage 2018	92.8	50.3	64.5	85.8	70.7

Table 5.4: Lymphoma-CLL/SLL Derived Values

For Lymphoma, T, N, and M are not applicable (NA) because they are not defined in the TNM staging system. They are recorded as '88' in the cancer registry software. Stage Group is defined and is derived from the EOD Primary Tumor field.

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
EOD Derived T	NA	NA	NA	NA	NA
EOD Derived N	NA	NA	NA	NA	NA
EOD Derived M	NA	NA	NA	NA	NA
EOD Derived TNM Stage Group	40.5	34.7	83.3	17.5	82.9
Derived Summary Stage 2018	41.7	79.0	83.3	85.6	83.5

Table 5.5: Melanoma Skin Derived Values

For Melanoma Skin, T is defined by EOD Primary Tumor, and the two SSDIs: Breslow's Depth and Ulceration.

For Melanoma Skin, M is defined by EOD Mets, and the SSDI: LDH Pretreatment Level

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
EOD Derived T	92.6	70.3	82.3	30.2	73.5
EOD Derived N	72.2	62.8	99.4	42.0	95.2
EOD Derived M	88.9	94.8	100	98.1	98.2
EOD Derived TNM Stage Group	71.6	61.6	82.3	19.1	71.7
Derived Summary Stage 2018	82.1	82.6	97.0	56.8	93.4

Table 5.6: Ovary Derived Values

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
EOD Derived T	83.6	62.0	72.6	94.2	75.6
EOD Derived N	67.9	30.7	97.6	97.4	51.2
EOD Derived M	82.4	25.9	98.2	97.4	61.6
EOD Derived TNM Stage Group	70.4	21.7	76.2	94.2	51.8
Derived Summary Stage 2018	93.1	97.6	93.9	98.1	95.1

Table 5.7: Prostate Derived Values

For Prostate, TNM Stage Group is defined by the three EOD data items, EOD Prostate Exten, PSA (SSDI) and Grade.

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
EOD Derived T	40.9	73.3	19.2	66.0	48.2
EOD Derived N	90.9	93.6	90.4	81.1	65.7
EOD Derived M	91.5	93.0	93.4	79.2	30.7
EOD Derived TNM Stage Group	90.2	80.8	79.6	85.5	30.7
Derived Summary Stage 2018	93.3	85.5	88.0	94.3	35.5

Table 5.8: Soft Tissue Abdomen and Thoracic Derived Values

For two of the cases in the Reliability Study (Group 1 and Group 4), the specific histology was not applicable for TNM staging (NA for Derived T, N, M, Stage Group).

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
EOD Derived T	NA	11.0	70.1	NA	91.4
EOD Derived N	NA	94.5	93.3	NA	96.9
EOD Derived M	NA	93.9	93.3	NA	98.1
EOD Derived TNM Stage Group	NA	99.4	100.0	NA	99.4
Derived Summary Stage 2018	94.3	44.2	75.6	48.4	92.0

Table 5.9: Tongue Anterior Derived Values

For Tongue Anterior, T may be defined by tumor size. The derived T value is based on EOD Primary Tumor and the Tumor Size.

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
EOD Derived T	93.6	85.2	92.6	85.3	77.0
EOD Derived N	77.7	84.6	63.8	84.0	95.7
EOD Derived M	97.5	98.1	98.8	97.4	96.9
EOD Derived TNM Stage Group	77.7	74.1	64.4	82.7	77.6

Data Item	Group 1	Group 2	Group 3	Group 4	Group 5
Derived Summary Stage 2018	93.0	86.4	77.9	39.7	57.1

Manual Clarification and/or Education

Findings from the Reliability Study show that there is confusion on several data items. Based on the analysis of data items and the comments from participants, areas needing clarification and/or registrar education have been identified. These are shown in Table 6.

Table 6: Manual Clarifications and/or Education

Data Item	Schema	Education/Clarification
General	N/A	***Note***: Comment about not being able to find any instructions in the "EOD" Manual for some of the SSDIs • The EOD manual only covers data items: EOD Primary Tumor, EOD Regional Nodes, EOD Mets and the Derived Data items based on these fields • The SSDI manual covers the SSDIs • The Grade manual covers Grade Clinical, Grade Pathological, Grade Post-therapy
General	Histology	AJCC has determined that some site specific histologies cannot be assigned a TNM stage in the 8th edition. As a reminder, **AJCC does not determine how to code histology** or determine multiple primaries. It is important to remember the following • Follow the 2018 Solid Tumor Rules to determine single or multiple primaries, primary site and histology • NEVER change the histology in order to assign TNM • Cases that cannot be assigned TNM may still be assigned a Summary Stage
Tumor Size Clinical	General	1. The STORE manual includes instructions for coding Tumor Size Summary. Do not use Tumor Size Summary to code the two SEER Tumor Size data items • Tumor Size Clinical and Tumor Size Pathologic can be found in the SEER Coding Manual (https://seer.cancer.gov/manuals/2018/SPCSM_2018_maindoc.pdf), pgs. 114-120 2. Tumor Size Clinical does not include findings from the resection operative report. This was included in the instructions in the 2016 manual; however, was taken out for the 2018 manual. Tumor size from the operative report is collected in Tumor Size Pathologic. The operative report from surgical exploration without resection is collected in Tumor Size Clinical. 3. Priority order for assigning Tumor Size Clinical, #7: Information on size from imaging/radiographic techniques can be used to code clinical size when there is no more specific size information from a biopsy or operative (surgical exploration) report. It should be taken as a lower priority, and over a physical exam a. For purposes of Tumor Size Clinical, a "surgical exploration" is when there is no resection; however, there is exploration of the primary site b. Imaging takes priority over physical exam c. Physical exam is the **lowest** priority for assigning Tumor Size Clinical 4. Tumor Size Summary in the STORE Manual:

Data Item	Schema	Education/Clarification
		a. Per Coding instructions #3: If no surgical resection, then largest measurement of the tumor from physical exam, imaging or other diagnostic procedures prior to any other form of treatment (See Coding Rules Below) b. This is not saying that physical exam takes priority over imaging c. Per Coding Rules #4: Priority of imaging/radiographic techniques: Information on size from imaging/radiographic techniques can be used to code size when there is no more specific size information from a pathology or operative report, but it should be taken as low priority, over a physical exam o The coding rule, which is the same rule found in SEER's Tumor Size Clinical, clearly states that imaging takes priority over physical exam. Physical exam is the *lowest priority* for assigning tumor size (Tumor Size Clinical or Tumor Size Summary)
Tumor Size Pathologic	General	If Tumor Size Pathologic is not available from the pathology report, or the synoptic report, a tumor size from the gross description (if available) may be used The instructions for Tumor Size Pathologic state: 4. Code the largest size of the primary tumor measured on the surgical resection specimen when surgery is administered as part of the first definitive treatment **Note:** This includes pathologic tumor size from surgery when there is neoadjuvant therapy a. Code the size from the synoptic report (also known as CAP protocol or pathology report checklist) when there is a discrepancy among tumor size measurements in the various sections of the pathology report. b. Use final diagnosis, microscopic, or gross examination, in that order, when no synoptic report is available Volume is not the same thing as tumor size • If volume of the tumor is reported on a pathology report, do not use this for the size Tumor Size Pathologic should be coded 999 when there is neoadjuvant therapy • Current instructions in the SEER manual state that you can code the post-neoadjuvant pathological tumor size in this data field, which is incorrect • SEER manual will be updated
EOD (Primary Tumor, Regional Nodes and Mets)	General	Per EOD General Instructions #3: Pathological findings take priority over clinical findings a. Assign the highest code representing the greatest extension pathologically (based on pathology report), when available
Summary Stage 2018	General	Per Summary Stage 2018 General Instructions, #4 For ALL primary sites and histologies, Summary Stage is based on a combined clinical and operative/pathological assessment. Gross observations at surgery are important when all malignant tissue cannot be, or was not, removed • In the event of a discrepancy between pathology and operative reports concerning excised tissue, *priority is given to the pathology report*
Sentinel Lymph Nodes Examined & Sentinel Lymph Nodes Positive	General Currently required for Breast	**Note:** These two data items are not SSDIs. They are regular data items. They were added to SEER*RSA for the Version 1.7 release (this was done since Regional Nodes Positive and Regional Nodes Examined are also in SEER*RSA) • These two data items will only be available in Breast and Melanoma Skin

Data Item	Schema	Education/Clarification
	and Melanoma	• Full instructions for these data items can be found in the STORE or SEER manual For Breast, sentinel lymph nodes are usually axillary lymph nodes. If a sentinel lymph node biopsy is done and there is no axillary lymph node dissection, the following data items can be coded • EOD Regional Nodes • Regional Nodes Examined • Regional Nodes Positive • Sentinel Lymph Nodes Examined • Sentinel Lymph Nodes Positive • Lymph Nodes Positive Axillary Level I-II The general coding guidelines apply 1. Sentinel Lymph Nodes Examined must be equal to or less than Regional Nodes Examined 2. Sentinel Lymph Nodes Positive must be equal to or less than Regional Nodes Positive 3. Lymph Nodes Positive Axillary Level I-II must be equal to or less than Regional Nodes Positive
Grade Clinical	General	Per the General Instructions • For the Grade Clinical data item, record the grade of a solid primary tumor before any treatment. Treatment may include surgical resection, systemic therapy, radiation therapy, or neoadjuvant therapy • Do not use information from the pathological timeframe for this data item • If grade is documented as 1-2, or 2-3, go with the higher grade Regarding **Note**: There is only one grade available and it cannot be determined if it is clinical, pathological, or after neo-adjuvant therapy • If there is documentation of a grade and it is known there is no biopsy (clinical grade), can assume that the grade is pathological
Grade Pathological	General	Per the General Instructions • For the Grade Pathological data item, record the grade of a solid primary tumor that has been surgically resected and for which no neoadjuvant therapy was administered. If AJCC pathological staging is being assigned, the tumor must have met the surgical resection requirements in the AJCC manual. This may include the grade from the clinical workup, as all information from diagnosis (clinical staging) through the surgical resection is used for pathological staging • If grade is documented as 1-2, or 2-3, go with the higher grade Per the General Instructions for this data item, if there is no surgical resection, then Grade Pathological is 9. • The note indicating that clinical information can be used in Grade Pathological does not apply when there is no surgical resection. To use Grade Clinical results in the Grade Pathological data item, there must be a resection (qualifying for Grade Pathological) and then Clinical Grade must be higher (worse) than the Pathological Grade Per the General Instructions, if there is neoadjuvant therapy, code 9 • If the only surgery is post-therapy surgery, this data item must be coded 9

Data Item	Schema	Education/Clarification
Grade Post Therapy	General	Per the General Instructions • For the Grade Post Therapy data item, record the grade of a solid primary tumor that has been resected following neoadjuvant therapy. If AJCC post therapy staging is being assigned, the tumor must have met the surgical resection requirements for yp in the AJCC manual. Neoadjuvant therapy must meet guidelines or standards, and not have been given for variable or unconventional reasons as noted in the AJCC manual • If post-therapy surgery is done and there is no grade documented, do **not** use the grade from Clinical Grade • If post-therapy surgery is done and the post-therapy grade is lower than the clinical grade, do not use the grade from Clinical Grade • If grade is documented as 1-2, or 2-3, go with the higher grade **Per Note 1:** Leave post therapy grade blank when • No neoadjuvant therapy • Clinical or pathological case only • There is only one grade available and it cannot be determined if it is clinical, pathological, or post therapy
SSDIs	General	**Rounding Rules** • New section added to the SSDI manual Version 1.7 • Includes general instructions and examples o Found after "General Rules for Entering Lab Values" (pg. 20)
SSDIs	General	Leading 0's are not necessary for SSDIs measuring lab values • For example, 0.1 should not be coded as 00.1, 2.3 should not be coded as 02.3
SSDIs	General	The values for unknown are different depending on the SSDI. • For SSDI fields that are one digit, the unknown code is 9 • For SSDI fields that are greater than one digit, the last digit is always 9, preceding digits must be X o Example: XX.9, XX9 o Pay close attention to the code structure for unknown for each SSDI
SSDIs	General	**The "not applicable" codes are to be used ONLY when the data item is not required by the standard setter** • If a pathology report states "not applicable" for information on a SSDI, do not use the "not applicable code," use the unknown code o Some SSDIs do have "not applicable" codes followed by a specific definition (e.g., see SSDI Brain Molecular Markers) • Physicians and pathologists use of "not applicable" is different than the registry use of "not applicable"
Primary Site	Lung, Melanoma Skin, Ovary, Prostate, Soft Tissue Abdomen and Thoracic	SEER Coding Manual, Primary Site, pg. 95 https://seer.cancer.gov/manuals/2018/SPCSM_2018_maindoc.pdf Per the SEER Coding Manual, General Instructions for Primary Site, #1: Unless otherwise instructed, use all available information in the medical record to code the site *Note*: There are no specific primary site instructions for Lung, Melanoma, Skin, Ovary, Prostate, Soft Tissue Abdomen and Thoracic. Per #2: Code the site in which the primary tumor originated, even if it extends onto/into an adjacent subsite

Data Item	Schema	Education/Clarification
Primary Site	Brain	Solid Tumor Rules Manual: Malignant CNS and Peripheral Nerves, pg. 201 https://seer.cancer.gov/tools/solidtumor/STM_2018.pdf Per the 2018 Solid Tumor Rules for Malignant CNS and Peripheral Nerves, the priority order for assigning primary site is 1. Resection • Operative report • Pathology report 2. Biopsy • Operative report • Pathology report 3. Resection and/or biopsy performed, but operative report(s) and pathology are not available (minimal information) • Tumor Board • Code from physician's documentation of original diagnosis from operative report or pathology report OR • Physician's documentation of primary site in the medical record 4. For cases diagnosed by imaging (no pathology/resection or biopsy), use information from scans in the following priority order: MRI, CT, PET, Angiogram
Histology	Brain	New histology code 9445/3: Glioblastoma, IDH-mutant is not the same thing as Glioblastoma, wild type (9440/3)
Regional Nodes Positive	Brain	Always coded to 99 for "not applicable" Same for Regional nodes examined
EOD Primary Tumor	Brain	On a previous NAACCR webinar, there was a comment about "midline shift" being regional. This was later determined to be wrong and was communicated to NAACCR for the updated answers to go out to all participants It must state "Tumor **crosses** the midline" to be coded 500. • A midline shift is not the same thing as crossing the midline
SS2018	Brain	On a previous NAACCR webinar, there was a comment about "midline shift" being regional. This was later determined to be wrong and was communicated to NAACCR for the updated answers to go out to all participants It must state "Tumor **crosses** the midline" to be coded 2 (regional). • A midline shift is not the same thing as crossing the midline
Grade Clinical	Brain	1. One of the cases stated, "concerning for high grade neoplasm," while another stated "suggest a high-grade intra-axial glial neoplasm." Concerning and suggests are not indicative of a diagnosis, nor are acceptable terms in any of the ambiguous terminology lists. With these cases, the grade was unknown; however, several registrars still coded "high" based on the concerning and suggests 2. Grade clinical can be coded based on imaging for Brain. Per code **Note 4:** CNS WHO classifications use a grading scheme that is a "malignancy scale" ranging across a wide variety of neoplasms rather than a strict histologic grading system that can be applied equally to all tumor types. a. Code the WHO grading system for selected tumors of the CNS as noted in the AJCC 8th edition Table 72.2 where WHO grade is not documented in the record
Grade Pathological	Brain	Diagnosis: Anaplastic Oligodendroglioma

Data Item	Schema	Education/Clarification
		Per AJCC 8th edition Table 72.2, this diagnosis is a Grade III. Do not code based on the "anaplastic." Per **Note 4:** CNS WHO classifications use a grading scheme that is a "malignancy scale" ranging across a wide variety of neoplasms rather than a strict histologic grading system that can be applied equally to all tumor types • Code the WHO grading system for selected tumors of the CNS as noted in the AJCC 8th edition Table 72.2 where WHO grade is not documented in the record
Chromosome 1p Status & Chromosome 19q	Brain	If only "molecular testing" is documented, do not assume that it is for Chromosome 1p status. The specific test must be documented • One of the cases listed "molecular testing" was done and several participants coded 7 for test done, results not in chart • Since Chromosome 1p status was not mentioned, unknown would be the appropriate code
Primary Site	Breast	SEER Manual, Appendix C: Breast Coding Guidelines https://seer.cancer.gov/manuals/2018/AppendixC/Coding_Guidelines_Breast_2018.pdf Per Appendix C of the SEER manual, Breast Coding Guidelines, the following priority order is used when there is conflicting information 1. Operative Report 2. Pathology Report 3. Mammogram, ultrasound (ultrasound becoming more frequently used) 4. Physical examination
Histology	Breast	Solid Tumor Rules Manual: Breast, pg. 22 https://seer.cancer.gov/tools/solidtumor/STM_2018.pdf Table 2: Histology Combination Codes To use 8522/3: Both histologies, ductal and lobular, must have the same behavior code • For the case in the reliability study, there was invasive lobular carcinoma with DCIS present. This case assigned histology code 8520/3, for invasive lobular carcinoma. Per the Solid Tumor Rules, the DCIS component is ignored since it is not the same behavior as the lobular
EOD Primary Tumor	Breast	Skin involvement (regional tumor) Per one of the cases, the surgeon noted some slight thickening of the skin overlying the mass
EOD Regional Nodes	Breast	If regional nodes are determined negative clinically and there is no pathological evaluation, use code 000 (clinical code) If lymph nodes are evaluated pathologically, codes 030, 050, and 070 are to be used when there is no evidence of regional lymph node involvement • Code 030: Pathological assessment only. Negative nodes, ITCs only (malignant cell clusters no larger than 0.2 mm) in regional lymph node(s) • Code 050: Pathological assessment only. Positive molecular findings by reverse transcriptase polymerase chain reaction (RT-PCR), no ITCs detected

Data Item	Schema	Education/Clarification
		• Code 070: Pathological assessment only. No regional lymph node involvement pathologically, (lymph nodes removed and pathologically negative) WITHOUT ITCs or ITC testing unknown **Note:** Sentinel lymph node biopsy qualifies for pathological assessment. So, if only a sentinel lymph node biopsy is done, and nodes are determined to be negative, codes 030, 050, or 070 must be used • Code 070 is the default for when it is not known if ITCs or RT-PCR are present
Sentinel Lymph Nodes Examined & Sentinel Lymph Nodes Positive	Breast	1. Lymph node, needle core biopsy is not the same thing as a sentinel node biopsy. It must be documented as a "sentinel node biopsy" a. Sentinel Lymph Nodes are measured using a blue dye. Look for operative/surgical reports if it's not clear whether there is a lymph node biopsy/resection or a sentinel lymph node biopsy b. If it is unclear whether it is a sentinel lymph node biopsy, assume that it is not 2. Per the SEER Manual, Sentinel Nodes Examined, #1: Document the total number of nodes sampled during the sentinel node procedure in this data item when both sentinel and non-sentinel nodes are sampled during the sentinel node biopsy procedure; i.e., record the total number of nodes from the procedure regardless of sentinel node status a. Surgical pathology report: Re-excision and SLN biopsy: 1 R axillary SLN & 1/2 L axillary LN excision; both showed metastatic malignant melanoma. This rule would apply and Sentinel Lymph Nodes Examined would be 3
Grade Clinical	Breast	**Per Note 5:** All invasive breast carcinomas should be assigned a histologic grade. The Nottingham combined histologic grade (Nottingham modification of the SBR grading system) is recommended. The grade for a tumor is determined by assessing morphologic features (tubule formation, nuclear pleomorphism, and mitotic count), assigning a value from 1 (favorable) to 3 (unfavorable) for each feature, and totaling the scores for all three categories. A combined score of 3-5 points is designated as grade 1; a combined score of 6-7 points is grade 2; a combined score of 8-9 points is grade 3 • Having Nottingham documented is the preferred information; however, if the only information is G1, G2, or G3, assume this is Nottingham and code appropriately
ER & PR Percent Positive	Breast	Unlike other SSDIs that measure a percentage, these two data items are set up for whole numbers only (no decimal point) General Rounding rules would be followed (found in the SSDI manual "General Rules for Entering Lab Values and Other Measurements" section). • Per the SSDI manual: Check coding instructions for special rules for rounding numbers. AJCC sometimes provides test- and site-specific rounding rules that are of clinical significance. In the absence of a special rule, round 0-4 down and 5-9 up. • There are no special rounding rules for ER and PR o Example: ER 75.6%. Code as 076 (76%) (Round up since the digit after the decimal is in the range of 5-9) o Example: PR 32.4%. Code as 032 (32%) (Round down since the digit after the decimal is in the range of 0-4)

Data Item	Schema	Education/Clarification
		• Note: A value of 99.5%-99.9% would be coded as 100 (100%)
ER & PR Allred Score	Breast	See the SSDI manual, under "Estrogen and Progesterone Receptor" There is a table in the Manual (copied from the CAP protocol) that defines the proportion score and the intensity score Proportion Score (% positive cells) • 0%-0 proportion score • Less than 1%-proportion score 1 • 1% to 10%-proportion score 2 • 11% to 33%-proportion score 3 • 34% to 66%-proportion score 4 • Greater than or equal to 67%-proportion score 5 The registrar may use this guide to determine the proportion based on the percent positive. Note: If ranges are documented that cross over the cut offs, then a proportion score cannot be determined • *Example*: Percent positive 60%-70%. Since proportion score 4 ends at 66 and proportion score 5 starts at 67, a proportion score cannot be calculated • Do not assign the higher proportion score Intensity Score • None-intensity score 0 • Weak-intensity score 1 • Intermediate/moderate-intensity score 2 • Strong-intensity score 3 The intensity score (description: none, weak, intermediate/moderate, strong) must be documented by the pathologist. If the intensity score (description) is not documented, then the Allred Score cannot be assigned • Do not "assume" an intensity score based on the percent positive • If intensity score is listed as "weak to intermediate," or "moderate to strong," you can use the value for the higher intensity score
HER2 Overall Summary	Breast	Using information from the IHC and FISH data items, record the results based on the following priority • Code 1: Positive • Code 2: Negative, equivocal
Ki-67	Breast	Ki-67 is a percentage by default. If the "%" is not documented, treat the number included as being a percentage. *Example*: Ki-67 0.38. This would be interpreted as 0.38% • Using the general rounding rules (found on pg. 20 in the SSDI Manual, Version 1.7), 0-4 down and 5-9 up • Code 0.4 (0.4%)
Lymph Nodes Positive Axillary Level I-II	Breast	Code results from either a lymph node core biopsy, lymph resection or Sentinel Lymph Node Biopsy. This field must be equal to or less than Regional Nodes Examined • This field does not include supraclavicular lymph nodes. All other regional nodes may be included

Data Item	Schema	Education/Clarification
		• Since supraclavicular nodes are normally not biopsied, this field will usually be equal to the regional nodes positive data item
Multigene Signature Method & Multigene Signature Results	Breast	**Per Note 2:** Multigene signatures or classifiers are assays of a panel of genes from a tumor specimen, intended to provide a quantitative assessment of the likelihood of response to chemotherapy and to evaluate prognosis or the likelihood of future metastasis myRisk and BRCA are tests that determine a patient's risk for developing cancer and would not be collected in this data item The following note were added Multigene Gene Data Items for the SSDI Manual, Version 1.7 (pgs. 203 and 205) • Only record tests done on tumor tissue that help determine if the cancer is likely to recur. Do not include other tests, such as those that evaluate hereditary mutations that influence a patient's risk of developing cancer (e.g. myRisk, BRCA)
Oncotype Dx Recurrence Score-DCIS	Breast	1. For invasive cancers, this would be XX6 2. If the only information available is "low," "intermediate," or "high," code XX7: Test ordered, results not in chart
Oncotype Dx Recurrence Score-Invasive	Breast	1. For in situ cancers, this would be XX6 2. If the only information available is "low," "intermediate," or "high," code XX7: Test ordered, results not in chart
Oncotype Dx Risk Level – DCIS	Breast	For invasive cancers, this would be 6
Oncotype Dx Risk Level-Invasive	Breast	For in situ cancers, this would be 6
Response to Neoadjuvant Therapy	Breast	Response to Neoadjuvant therapy is a combination of pathological and clinical findings. If the only information available is from the pathology report, then code unknown. SSDI will be reviewing this data item for more clarifications and updates for 2021.
Primary Site	Colon and Rectum	SEER Manual, Appendix C: Colon Coding Guidelines; Rectosigmoid, Rectum Coding Guidelines https://seer.cancer.gov/manuals/2018/AppendixC/Coding_Guidelines_Colon_2018.pdf https://seer.cancer.gov/manuals/2018/AppendixC/Coding_Guidelines_Rectosigmoid_2018.pdf Per the coding guidelines from SEER, the following priority order for assigning primary site for Colon is • Resected cases o Operative report with surgeon's description o Pathology report o Imaging • Non-resected cases o Polypectomy or excision without resection o Endoscopy report Operative report, which takes priority, states the tumor is near the splenic flexure just on the descending side of the splenic flexure

Data Item	Schema	Education/Clarification
		Code 185: Splenic Flexure
EOD Primary Tumor	Colon and Rectum	Invasion of the visceral peritoneum (serosa) is included in Code 500. It does not have to state "invasion through the visceral peritoneum" Invasion of/through visceral peritoneum is coded to 500 • Code 500 has been changed to "Invasion of/through the visceral peritoneum"
EOD Primary Tumor	Colon and Rectum	Invasion into pericolonic tissue (Code 300 or 400). Both derive a T3, but code 300 derives a Summary Stage Localized while code 400 derives a Summary Stage Regional Three out of fives cases in the reliability study had "invasion into pericolonic/pericolorectal tissue" as part of their extension information Further review of records indicated 1. One record stated "non-peritonealized pericolic/perirectal tissues invaded" (code 300) 2. One record stated further in the path report that the mesentery was also involved (code 400) Per AJCC, pericolorectal tissue is stated to also be called subserosal tissue or adventia (code 300). When terminology like this is used, look further into the record to see if further information can be found regarding the invasion. Additional guidelines for coding 300 versus 400 have been included in SEER*RSA, Version 1.7, Colon and Rectum Schema: EOD Primary Tumor.
EOD Regional Nodes	Colon and Rectum	**Per Note 2:** For Colon and Rectum ONLY, any unnamed nodes that are removed with a colon or rectal resection are presumed to be regional pericolic or perirectal lymph nodes and are included in the EOD Regional Nodes code 300 (pericolic for sites C180 - C189, C199 and perirectal for sites C199 or C209). This site-specific instruction applies only to colon and rectum tumors and was verified with subject matter experts. • If a colon resection is done and lymph nodes are removed, and the lymph nodes are not named, apply Note 2 and code to 300 for the specific lymph nodes. Code 800 should be used sparingly.
Summary Stage 2018	Colon and Rectum	Invasion of the visceral peritoneum (serosa) is included in Code 2 (Regional). It does not have to state "invasion through the visceral peritoneum).
Summary Stage 2018	Colon and Rectum	Invasion "through the muscularis propria" without any further description of invasion is included in Code 1 (Localized)
Summary Stage 2018	Colon and Rectum	For Colon, the assignment of AJCC T3 can be either localized or regional, depending on the invasion of the tumor The main difference between the two is the invasion of the mesentery or the serosa • For Localized tumors: Invasion of the pericolorectal tissues (T3) would include: invasion of the non-peritonealized tissues or the subserosa • For Regional tumors: Invasion of the pericolorectal tissues (T3) would include: invasion of the mesentery • If a distinction cannot be made, default to code 1 for Localized

Data Item	Schema	Education/Clarification
		Additional guidelines for coding 1 versus 2 have been included in SEER*RSA, Version 1.7, Colon and Rectum Schema: Summary Stage, and the online Summary Stage manual
Grade (All three)	Colon and Rectum	Grade for Colon and Rectum uses the standard (historical) definition, which is based on nuclear grading. To record grade, the use of G1, G2, or G3 does not have to be documented in the pathology report. G1, G2, G3 can be assigned based on the following descriptions • Well differentiated (G1) • Moderately differentiated (G2) • Poorly differentiated (includes anaplastic) (G3)
CEA Pre Tx Lab Value and Pre Tx Interpretation	Colon and Rectum	**Note 2:** Record the lab value of the highest CEA test result documented in the medical record **prior to treatment or polypectomy**. The lab value may be recorded in a lab report, history and physical, or clinical statement in the pathology report. Two of the cases in the reliability study had CEAs done after surgery • Per Note 2, CEAs done after polypectomy or initial treatment (surgery, chemotherapy, etc.) cannot be coded in these two fields
Circumferential Resection Margin	Colon and Rectum	**Per Note 8:** Use code **XX.9** (CRM not mentioned) if the pathology report describes only **distal and proximal margins, or margins, NOS**. • **Only specific statements about the CRM are collected in this data item** If the only information available is "All margins clear," assign code XX.9 • To use code XX.1: Margins clear, distance from tumor not stated; Circumferential or radial resection margin negative, NOS; the pathology report must indicate that the CRM margins are clear Note: Mesocolonic margin is another name for mesenteric (CRM).
Microsatellite Instability	Colon and Rectum	There are two tests that are being recorded in this data item: MSI and MMR • MSI is "Microsatellite Instability". This is usually recorded as stable (negative), low or high (unstable) • Looks at "informative markers" to see if there is unusual replication of genes. May be documented as "instability seen in 0/5 informative markers" (which would be MSI-S, code 0) • MMR is "Mismatch Repair Genes" and is looking at microsatellite markers. The most common markers are: MLH1, MSH2, MSH6, PMS2 • For MMR, the terminology used is "no loss of nuclear expression (or no loss of immunoreactivity, negative)" (code 0), or "loss of expression (or loss of immunoreactivity" (code 2)
Microsatellite Instability	Colon and Rectum	The statement "low probability for MSI-H" is usually associated with MMR reporting. If this is the diagnosis, and there is no other information, code as 0 • This has been confirmed with AJCC and CAP *Example* from reliability study: Intact nuclear expression (MMR evaluation), low probability for MSI-H • Code 0 based on the "intact nuclear expression" for MMR
Histology	Lung	Per the Solid Tumor Rules for Lung, Histology instructions: Do not code histology when described as: Architecture, Foci/focus, Pattern Solid Tumor Rules for Lung, Table 3: This is when the word "predominant" is used

Data Item	Schema	Education/Clarification
		• Per the CAP protocol, the term predominant is acceptable for specific subtypes of adenocarcinoma • Do not use this table when architecture, foci/focus or patterns is used to describe a histology
EOD Primary Tumor	Lung	When assigning codes for localized tumors based on size, there was confusion regarding the differences between codes 100, 200, and 300 • Code 100: Minimally invasive **adenocarcinoma** (2 criteria) o 5 mm or less in greatest dimension (0.5 cm) (coded 005) o Predominantly **lepidic pattern** AND tumor is less than or equal to 3 cm • Code 200: This is for a superficial spreading tumor. The pathology report must state that it is superficially spreading. Per EOD, these types of tumors are uncommon, and this code should be used very sparingly. If in doubt, do not use this code • Code 300: This is for a localized lung cancer where size is determining the extension. There is no involvement of adjacent structures (including adjacent lobe(s)) or invasion of the pleura o This is a "NOS" code, but for tumors confined to lung with no other invasion, this is the appropriate code Additional guidelines for coding 100, 200, and 300, have been included in SEER*RSA, Version 1.7, Lung Schema: EOD Primary Tumor
EOD Primary Tumor	Lung	If "pleura invasion" is noted and there is no designation of PL1, PL2 or PL3, code 450. This code includes pleura invasion, NOS • Code 450 can be used when pleural invasion, NOS is diagnosed via imaging Code 450 has been updated to read "Visceral pleura (PL1, PL2, or NOS)"
EOD Regional Nodes	Lung	A mediastinal dissection, even with positive lymph nodes, does not mean that mediastinal nodes (code 400) are involved. Review the pathology report to look for the specific lymph nodes involved • Code 300 is for N1 nodes • Code 400 is for N2 nodes • Code 600 and 700 are for N3 nodes
EOD Mets	Lung	"Nodules" in the contralateral lung is not diagnostic of metastatic disease unless the physician specifically states they are involved, or stages the patient as M1 disease
Separate Tumor Nodules	Lung	There can be other "nodules" that are not the primary. If the nodules are mentioned in a radiology report, but are not referenced later, especially in staging, do not code them. The presence of other nodules is not always indicative of cancer; however, they can also indicate the presence of cancer When in doubt how to code separate tumor nodules, check the staging from the physician. If no staging is possible, review the radiology report and see if the terminology used is consistent with reportability terms accepted, especially for ambiguous terminology If only "nodules" is used and there is no additional information, assume these are not separate tumor nodules and code as "none" (Code 0)
Visceral Pleural Invasion	Lung	There must be microscopic confirmation to code this data item, preferably from a surgical resection; however, a biopsy can be used • If pleural invasion is identified by imaging, code 9

Data Item	Schema	Education/Clarification
		• If "pleural invasion" is mentioned in the pathology report, but there is no designation of PL1, PL2, or PL3, code 4
Primary Site	Lymphoma -CLL/SLL	Hematopoietic Manual, Module 3: Chronic lymphocytic leukemia/Small lymphocytic lymphoma-PH5, PH6, pg. 43 https://seer.cancer.gov/tools/heme/Hematopoietic_Instructions_and_Rules.pdf • Per Rule PH5: If the bone marrow and/or peripheral blood is involved, primary site must be C421. Other sites, including lymph nodes, may be involved as well, but do not make a difference of primary site • Per Rule PH6: Code to the lymph node(s) or organs involved. Bone marrow and peripheral blood must not be involved (or unknown if involved) o To assign the appropriate primary site, See Module 7, pg. 48
EOD Primary Tumor	Lymphoma -CLL/SLL	If peripheral blood smear is positive, or there is bone marrow involvement, for CLL/SLL, then EOD Primary Tumor is 800. This is because there is blood involvement, which is systemic • "Peripheral blood" added to EOD Primary tumor code 800
Regional Nodes Positive	Lymphoma -CLL/SLL	Always coded to 99 for "not applicable" Same for Regional nodes examined
Summary Stage	Lymphoma -CLL/SLL	If peripheral blood smear is positive, or there is bone marrow involvement, for CLL/SLL, then Summary Stage 2018 is 7. This is because there is blood involvement, which is systemic • "Peripheral blood" added to Summary Stage 2018 code 7
Anemia	Lymphoma -CLL/SLL	**Do not assume anemia not present if not mentioned** • Per **Note 5:** If there is no mention of anemia, or relevant lab results, code 9 Anemia is defined as Hgb less than 11, or a physician's statement that the patient has anemia (code 6) A statement from the physician that the "red blood cells are low" does not meet the criteria for anemia; the physician must state that the patient has anemia A statement of "elevated white blood count (WBC)" is not enough to state patient has anemia
Adenopathy	Lymphoma -CLL/SLL	**Do not assume adenopathy not present if not mentioned** • Per **Note 4:** This data item is determined from physical exam alone. If a physical exam cannot be used to detect adenopathy due to issues related to the patient's obesity, a physician statement of peripheral adenopathy based on a CT scan can be used. A physician's statement of adenopathy based on CT/PET findings may also be used
B Symptoms	Lymphoma -CLL/SLL	**Do not assume no B symptoms if not mentioned** Per **Note 3:** Pruritus alone does not qualify for B classification, nor does alcohol intolerance, fatigue, or a short, febrile illness associated with suspected infections • Per this note, fatigue is not a B symptom Per **Note 2:** Each stage should be classified as either A or B according to the absence or presence of defined constitutional symptoms, such as: • **Fevers:** Unexplained fever with temperature above 38 degrees C

Data Item	Schema	Education/Clarification
		• **Night sweats**: Drenching sweats that require change of bedclothes • **Weight loss:** Unexplained weight loss of more than 10% of the usual body weight in the six months prior to diagnosis
HIV Status	Lymphoma -CLL/SLL	**Do not assume HIV negative if not mentioned** • Per **Note 4:** Code 9 if there is no mention of HIV/AIDS in the medical record. Do not assume that the patient is HIV negative • A statement that the patient has had no recent exposure to HIV is not enough to code HIV negative
Lymphocytosis	Lymphoma -CLL/SLL	**Do not assume lymphocytosis not present if not mentioned** • Per **Note 5:** If there is no mention of lymphocytosis, or relevant lab results, code 9 Per **Note 3:** Record this data item based on a blood test (CBC and differential) performed at diagnosis (pre-treatment). In the absence of the lab test, a physician's statement can be used • In the absence of lab results (CBC and differential), a physician's statement may be used (code 6 if that is the only information available) May be documented as • Absolute Lymphocyte Count • Lymphocyte Abs
NCCN International Prognostic Index (IPI)	Lymphoma -CLL/SLL	The physician **must state NCCN IPI** to code this data item. If low/intermediate, or high risk features is mentioned and NCCN is not documented, assume these are references to the RAI Stage and code this data item to unknown • NCCN IPI applies to non-Hodgkin lymphomas only. For Hodgkin lymphomas, a different index is used (IPS), which is no longer collected by cancer registries The following statement was in one of the cases "low/intermediate risk RAI stage 0/1 CLL." This is not a statement about the NCCN IPI. This was about the RAI stage, which includes: adenopathy, anemia, lymphocytosis, organomegaly, thrombocytopenia. "High risk features" is usually associated with RAI Stage as well NCCN is based on the following factors • Age greater than or equal to 60 years • Serum LDH greater than normal • Performance status 2-4 • Stage III or IV • Extranodal involvement greater than 1 site
Organomegaly	Lymphoma -CLL/SLL	**Do not assume organomegaly not present if not mentioned** • **Per Note 5:** If there is no mention of organomegaly (present or absent), code 9 Per **Note 3:** Organomegaly is defined as presence of enlarged liver and/or spleen on physical examination and is part of the staging criteria • This data item only looks at the liver and the spleen, information on other organs is not needed

Data Item	Schema	Education/Clarification
Thrombocyto-penia	Lymphoma -CLL/SLL	**Do not assume thrombocytopenia not present if not mentioned** • Per **Note 5:** If there is no mention of thrombocytopenia, or the relevant lab tests, code 9 Platelets are usually documented as three digits. To determine if patient has thrombocytopenia, multiple this by 1,000. Example: Platelet count documented as 106. Multiple by 1,000 to get 106,000 • Per Code 0: Thrombocytopenia not present, Platelets (Plt) >=100,000/µL Per **Note 4:** If the presence/absence of thrombocytopenia determined by available lab values differs from the physician's statement of thrombocytopenia, the lab value takes precedence • For the example above, the physician stated "mild thrombocytopenia;" however, per the definitions for Thrombocytopenia, this patient does not have it • Per Note 4, noted above, when this discrepancy occurs, go with the lab report
Tumor Size Clinical & Tumor Size Pathologic	Melanoma	Tumor size for Melanoma (Skin) is rarely done. The important issue for Melanoma Skin is Breslow's Depth, which is usually documented on the pathology report Breslow's Depth is always measured in millimeters If a size measurement is documented, and it is in millimeters (mm) and it is not clear if it is Breslow's Depth or Tumor Size, assume that it is Breslow's depth • This is for Melanomas of the Skin only For Tumor Size Path, a description of "no residual tumor found" on a wide excision is not describing the tumor size, it is describing the depth of the Melanoma (Breslow's Depth)
EOD Primary Tumor	Melanoma	If a Breslow's depth is given in the pathology report **and there is no other indication of involvement**, the following guidelines may be used **RELATIONSHIP BETWEEN THICKNESS, DEPTH OF INVASION, AND CLARK LEVEL** **(Use Only for Melanoma of the Skin; Vulva, Penis, and Scrotum)** (Note: This can be found in the Summary Stage Manual) Code 000: Level I: In situ Code 100: Level II (≤ 0.75 mm Breslow's Depth) Code 200: Level III (0.76 mm to 1.50 mm Breslow's Depth) Code 300: Level IV (> 1.50 mm Breslow's Depth) If a Clark's Level is documented in the medical record that is different than the guidelines above, go with the medical record (pathology report) The information above has been added to EOD Primary Tumor Melanoma in SEER*RSA Version 1.7 • Note: The levels were not added correctly to Version 1.7, but will be corrected in Version 2.0
EOD Regional Nodes	Melanoma	For skin primaries, it is difficult to determine all the regional lymph nodes. In one of the cases, there was a lower trunk primary site with axillary lymph node involvement. The physician documented a sentinel node biopsy (which is done only

Data Item	Schema	Education/Clarification
		for regional lymph nodes) and documented the appropriate N category based on the positive nodes. • In this situation, defer to the physician's documentation that these are regional nodes
Summary Stage	Melanoma	If a Breslow's depth is given in the pathology report **and there is no other indication of involvement**, the following guidelines may be used **RELATIONSHIP BETWEEN THICKNESS, DEPTH OF INVASION, AND CLARK LEVEL** **(Use Only for Melanoma of the Skin; Vulva, Penis, and Scrotum)** (Note: This can be found in the Summary Stage Manua1) Code 0: Level I: In situ Code 1: Localized • Level II (≤ 0.75 mm Breslow's Depth) • Level III (0.76 mm to 1.50 mm Breslow's Depth) • Level IV (> 1.50 mm Breslow's Depth) If a Clark's Level is documented in the medical record that is different than the guidelines above, go with the medical record (pathology report) The information above has been added to EOD Primary Tumor Melanoma in SEER*RSA Version 1.7. • Note: The levels were not added correctly to Version 1.7, but will be corrected in Version 2.0
LDH SSDIs	Melanoma	A statement of "normal labs" cannot be used to code these SSDIs. There must be documentation of LDH. • Note: Normal lab values could mean a lot of different things, and not necessarily LDH LDH is usually not tested until after a diagnosis of melanoma, which means that it is usually done **after** the shave/punch/excisional biopsy. • LDH done after the shave/punch/excisional biopsy can be used in these SSDIs; however, the LDH should be done prior to re-excision/sentinel lymph node biopsy, or adjuvant therapy
Primary Site	Ovary	If documentation for primary site states "tubo-ovarian" or "bilateral ovaries and tubes," and the CAP Protocol and Staging used are for Ovary and Fallopian Tube, look for further information in the record to determine if it is an ovarian or fallopian tube primary • Do not assign primary site to C578 as this will result in the wrong schema and all information regarding the staging will be lost
Histology	Ovary	Per the 2018 ICD-O-3 updates: "high grade serous carcinoma" is a new alternate name for 8461 (ICD-O-3 Terminology: Serous surface papillary carcinoma)
EOD Primary Tumor	Ovary	The presence of peritoneal carcinomatosis is coded in EOD Primary Tumor • EOD Primary Tumor codes updated for Ovary, Fallopian Tube and Primary Peritoneal Cancer schemas
EOD Mets	Ovary	The presence of peritoneal carcinomatosis is coded in EOD Primary Tumor • Only **extraperitoneal** carcinomatosis is coded in EOD mets • Updated code descriptions to be included in next EOD update
Clinical Grade	Ovary	For patients that are diagnosed with suspected/known Ovarian/Fallopian tube/Primary Peritoneal cancer and go straight to surgery, Clinical Grade would be 9 since no biopsy is done

Data Item	Schema	Education/Clarification
Pathological Grade	Ovary	A statement of "IC3" is a stage and not grade
CA-125 (Carbohydrate Antigen 125) Pretreatment Interpretation	Ovary	On the main Ovary page of the SSDIs, this is listed as CA-125 PreTx Lab Value • This is incorrect and will be fixed in the next update • Only the interpretation is recorded, not the lab value Per **Note 5:** Normal values may vary with patient age and from lab to lab. The typical human reference ranges are 0 to less than or equal 35 units per milliliter (U/mL). This is equivalent to kU/L. • If a CEA lab value is available and there is no documentation stating whether it is elevated or not, this guideline may be used (anything above 35 would be elevated)
FIGO Stage	Ovary	Per **Note 2:** If a stage group is stated but it does not specify that it is a FIGO stage, assume that it is a FIGO stage and code it • *Example*: Pathologic Stage 1C3 (pT1c3, pN0, M0) • FIGO Stage would be 1C3
Residual Tumor Volume Post Cytoreduction	Ovary	The operative report must state that there was cytoreductive surgery or a "debulking" procedure done • Just stating that standard operative procedures were done does not qualify for cytoreduction or debulking Per **Note 2**, It is performed when there is widespread evidence of advanced stage of ovarian cancer with obvious spread to other organs outside the ovary • For localized cancers (Stage I or II), cytoreduction surgery is usually not done
General	Prostate	One dose (shot) of Lupron does not qualify for neoadjuvant treatment • The Lupron would still be coded as first course of treatment; however, it would not qualify for neoadjuvant therapy. One dose of Lupron is not going to have an affect on the tumor, which is why it does not qualify for neoadjuvant therapy • Per AJCC, 4-6 doses of hormones are needed to affect the tumor Avodart: This is a drug that is commonly used for benign prostatic hypertrophy (BPH). A history of taking Avodart does not mean a patient has been diagnosed with prostate cancer. • One of the reliability cases had a patient with multiple prostate biopsies over a 10 year period (all negative). Five years prior to the prostate cancer diagnosis, the patient was started on Avodart. • Received comments back that this was a chemotherapy and based on that, this patient had a recurrence of prostate cancer and that none of the data items were applicable • Confirmed that the Avodart was used for the BPH since there was not a histologically confirmed diagnosis of cancer until 2018
Histology	Prostate	Per Solid Tumor Rules for "Other Sites," Rule H10 • Code 8140 (adenocarcinoma, NOS) for prostate primaries when the diagnosis is acinar (adeno)carcinoma
Tumor Size Clinical	Prostate	Do not include measurements of the core lengths, or the size of the tumor nodules • Tumor Size Clinical for Prostate is rarely documented and is not relevant for staging A negative rectal exam does not mean that there is no evidence of tumor

Data Item	Schema	Education/Clarification
		• A negative rectal exam only means that the tumor is not clinically apparent
EOD Primary Tumor	Prostate	Per **Note 3,** 2nd bullet: Clinically apparent tumors are palpable. If a clinician documents a "tumor," "mass," or **"nodule"** by physical examination, this can be **inferred as apparent**. "Tumor," "mass," or "nodule" on imaging can only be used by the registrar if the managing clinician/urologist uses it. **Note**: If it is documented that only one lobe is involved; however, the extent of the involvement is not noted (Code 200: Involves one-half of one side or less or Code 210: More than one-half of one side but not both sides) and there is no T value assigned, go with the lower code. • In this situation, it is better to default to the lower code than to assign code 300. Codes 200 and 210 indicate that a tumor is clinically apparent, while code 300 states it is not known if the tumor is clinically apparent or not Per **Note 4:** This field is based on the DRE whether the tumor is clinically apparent or inapparent. Do not use biopsy results to code this field UNLESS they prove extraprostatic extension. EOD Primary Tumor cannot be coded based on the positive cores, there must be a DRE or other information regarding extension/involvement
Prostate Path Extension	Prostate	Margins are no longer part of staging for Prostate • Do not count involvement of structures that have positive margins only
Gleason Pattern Tertiary	Prostate	If the pathology report states “not applicable” for Gleason Pattern Tertiary, assign code X9 • X8 is only to be used when this data item is not required by the Standard Setter
Gleason Pattern Tertiary	Prostate	Per **Note 3:** Record the tertiary pattern documented on prostatectomy or autopsy only. Record the tertiary pattern prior to neoadjuvant treatment. • If a tertiary pattern is documented on needle core biopsy or transurethral resection of prostate (TURP), it should be disregarded
Number of Cores Examined	Prostate	Per **Note 3,** bullet 2: Information from the gross description of the core biopsy pathology report can be used to code this data item when the gross findings provide the actual number of cores and not pieces, chips, fragments, etc. • The number of cores examined is not always documented correctly in the pathology report • Review the gross description to get a final count of cores examined, provided they are not described as pieces, chips, fragments, etc.
Histology	Soft Tissue Abdomen and Thoracic	Dermatofibrosarcoma protuberans: Although this is a histology commonly associated with skin primary sites (C440-C449), it can also have a primary site of C47_ or C49_, for the case in the reliability study, the primary site was clearly documented as connective tissue. • Verified primary site and histology with SEER’s Solid Tumor Rules expert
EOD Primary Site	Soft Tissue Abdomen and Thoracic	With a soft tissue primary site (C47_, C49_), the involvement of the deep dermis would be involvement of an adjacent organ
EOD Regional Nodes	Soft Tissue Abdomen and Thoracic	Per **Note 2:** Regional lymph node involvement is rare. For this schema, if there is no mention of lymph node involvement clinically, assume that lymph nodes are negative. Code unknown (999) only when there is no available information on the extent of the patient's disease, for example when a lab-only case is abstracted from a biopsy report and no clinical history is available.

Data Item	Schema	Education/Clarification
		For Soft Tissues (including GIST), if there is no obvious involvement of lymph nodes, then can "assume" they are negative and code as none • This instruction is from AJCC and is included in the AJCC 8th manual for the Soft Tissue Chapters
Summary Stage 2018	Soft Tissue Abdomen and Thoracic	With a soft tissue primary site (C47_, C49_), the involvement of the deep dermis would be involvement of an adjacent organ, which is regional
Primary Site	Tongue Anterior	Solid Tumor Rules Manual: Head and Neck, pg. 89 https://seer.cancer.gov/tools/solidtumor/STM_2018.pdf Per the 2018 Solid Tumor Rules for Head and Neck, the priority order for assigning primary site is: 1. Tumor Board: No information from Tumor Board 2. Tissue/pathology from tumor resection or biopsy: Anatomic site: right lateral tongue 3. Scans 4. Physician documentation Per SEER: Assign C023 for lateral tongue without further information. The tongue has a midline on the dorsal surface and the frenulum on the ventral surface which divide the tongue into left and right halves. Anything on the left half or on the right half can be referred to as "lateral." A lesion arising on the left or right lateral tongue could be on the dorsal surface, the ventral surface, or on the border. See SEER Inquiry 20041032. (https://seer.cancer.gov/seerinquiry/index.php?page=search)
Histology	Tongue Anterior	Per Clarification from SEER: The 4th Ed WHO tumors of H&N no longer includes keratinizing SCC and non-keratinizing SCC in the chapter. The histology tables in the Solid Tumor Rules are based on the 4th Ed which is why these two histologies are not listed. Pathologists are discouraged from using these terms, however it takes awhile for this to happen in the real world. Since both histologies have different codes from SCC, NOS they are subtypes/variants
LN Size	Tongue Anterior	Per the CAP protocol, the size of the lymph node mets is to be coded
Extranodal Exten H&N Path	Tongue Anterior	A statement of ENE "Present: ENEmi (<= 2 mm)" is the definition for ENEmi • If this is the only information given, then code XX.2: ENE microscopic, size unknown, Stated as ENE (mi) A statement of ENE "Present: ENEma (> 2mm)" is the definition for ENEma • If this is the only information given, then code XX.3: ENE major, size unknown, Stated as ENE (ma)

Appendices

- Appendix 1: 2019 EOD/SS/SSDI Reliability Study-Protocol
- Appendix 2: 2019 EOD/SS/SSDI Reliability Study-Final Answers and Rationale
- Appendix 3: 2019 EOD/SS/SSDI Reliability Study-Major vs Minor Errors
- Appendix 4: 2019 EOD/SS/SSDI Reliability Study-Answer Distribution