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Optimizing Surgical Documentation: Evaluating the Impact of Synoptic Operative Notes on Efficiency and Compliance at Kaiser Permanente Mid-Atlantic States

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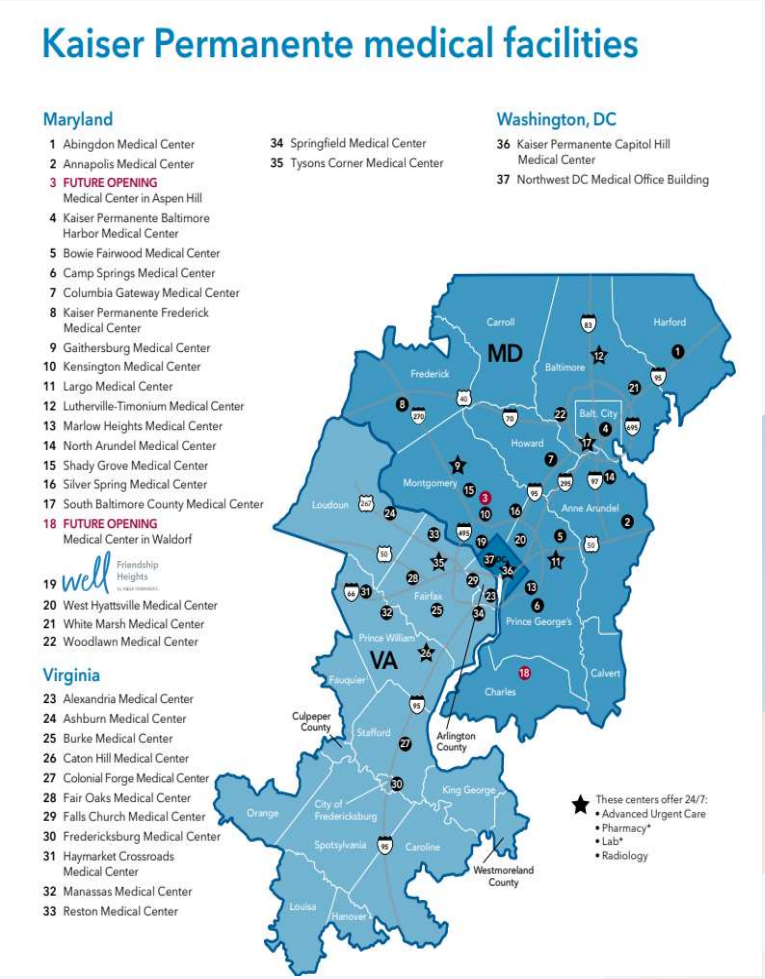
Disclosures

- No financial or conflict of interest to disclose

Kaiser Permanente Mid-Atlantic States (KPMAS)

- The American College of Surgeons (ACS) Commission on Cancer (CoC) was accredited since 2018
- The ACS National Surgical Quality Improvement Program (NSQIP) participant since 2020
- Maryland, Washington, District of Columbia (DC), and Northern Virginia
- Over 800,000 members
- Over 1,700 Mid-Atlantic Permanente Medical Group physicians spanning 50-plus subspecialties
- Over 6,000 employees
- 37 medical facilities - Hub and spoke model with 7 hubs
- 7 Ambulatory Surgery Centers
- 24 hours / 7 days / 365 days care available
- Fully supported by Comprehensive Electronic Medical Record (EMR)



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Overview: Synoptic Operative Notes

- Since May 2021, synoptic operative notes have been adapted as a standard by KPMAS
- Provides ease of use and improved efficiency
- Standard templates enhance documentation accuracy and completeness
- Converts unstructured data into structured data that can be analyzed to provide insights
- Utilizes Smart Data Elements, aligning with ACS CoC standards

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Synoptic Operative Note Example: Standard 5.3: Breast Sentinel Node Biopsy for Breast Cancer

Synoptic Operative Report: Mastectomy with Axillary Sentinel Lymph Node Biopsy

Procedure Date: 7/22/2021

Surgeon: Surgeon(s): Characters from "*House MD*"
GREGORY HOUSE, M.D.
ERIC FOREMAN, M.D.

Patient Information

Name: PATIENT X
Date of Birth: xx/xx/xxxx
Gender: female

MRN: xxxxxxxx
Age: 44 yr old

Operative Information

Location: OR-ASC-LARGO
Assistant(s): Lisa Cuddy, MD
Pre-Op Diagnosis: Pre-Op Diagnosis Codes:
* FEMALE BREAST CANCER, UNSPECIFIED SITE OF LEFT BREAST [C50.912]

Anesthesia: General

Post-Op Diagnosis: Post-Op Diagnosis Codes:
* FEMALE BREAST CANCER, UNSPECIFIED SITE OF LEFT BREAST [C50.912]

Procedure Performed: Procedure(s) (LRB):
NIPPLE SPARING MASTECTOMY SIMPLE W SENTINEL NODE BIOPSY (Left)
NIPPLE SPARING MASTECTOMY SIMPLE (Right)
BREAST RECONSTRUCTION with tissue expander (Bilateral)

Synoptic Note Elements

Antibiotics: Cefazolin 2g

VTE prophylaxis: Sequential compression devices

Foley catheter: Yes

Operation performed with curative intent: Yes

Tracer(s) used to identify sentinel nodes in the upfront surgery (non-neoadjuvant) setting (select all that apply): Radioactive tracer

Tracer(s) used to identify sentinel nodes in the neoadjuvant setting (select all that apply): N/A

All nodes (colored or non-colored) present at the end of a dye-filled lymphatic channel were removed: Yes

All significantly radioactive nodes were removed: Yes

All palpably suspicious nodes were removed: N/A

Biopsy-proven positive nodes marked with clips prior to chemotherapy were identified and removed: N/A

Synoptic Operative Report: Lumpectomy with Axillary Sentinel Lymph Node Biopsy

Procedure Date: 7/21/2021

Surgeon: Surgeon(s): Characters from "*Doogie Howser*"
DOOGIE HOWSER (M.D.), M.D

Patient Information

Name: PATIENT X
Date of Birth: xx/xx/xxxx
Gender: female

MRN: xxxxxxxx
Age: 52 yr old

Operative Information

Location: OR-ASC-TYSONS
Assistant(s): Mary Margaret Spaulding R.N
Pre-Op Diagnosis: Pre-Op Diagnosis Codes:
* FEMALE BREAST INFILTRATING DUCTAL CARCINOMA, LEFT LOWER-OUTER QUADRANT [C50.512]
* ESTROGEN RECEPTOR NEGATIVE STATUS [Z17.1]

Anesthesia: General

Post-Op Diagnosis: Post-Op Diagnosis Codes:
* FEMALE BREAST INFILTRATING DUCTAL CARCINOMA, LEFT LOWER-OUTER QUADRANT [C50.512]
* ESTROGEN RECEPTOR NEGATIVE STATUS [Z17.1]

Procedure Performed: Procedure(s) (LRB):
BREAST LUMPECTOMY W RADAR LOCALIZATION AND SENTINEL LYMPH NODE BIOPSY (Left)

Synoptic Note Elements

Antibiotics: Cefazolin 2g

VTE prophylaxis: Sequential compression devices

Foley catheter: No

Operation performed with curative intent: Yes

Tracer(s) used to identify sentinel nodes in the upfront surgery (non-neoadjuvant) setting (select all that apply): Dye and Radioactive tracer

Tracer(s) used to identify sentinel nodes in the neoadjuvant setting (select all that apply): Dye, Radioactive tracer and N/A

All nodes (colored or non-colored) present at the end of a dye-filled lymphatic channel were removed: Yes

All significantly radioactive nodes were removed: Yes

All palpably suspicious nodes were removed: Yes

Biopsy-proven positive nodes marked with clips prior to chemotherapy were identified and removed: N/A

CoC Template

Element	Response Options
Operation performed with curative intent.	Yes; No.
Tracer(s) used to identify sentinel nodes in the upfront surgery (non-neoadjuvant) setting *(select all that apply)*.	Dye; Radioactive tracer; Superparamagnetic iron oxide; Other *(with explanation)*; N/A.
Tracer(s) used to identify sentinel nodes in the neoadjuvant setting *(select all that apply)*.	Dye; Radioactive tracer; Superparamagnetic iron oxide; Other *(with explanation)*; N/A.
All nodes (colored or non-colored) present at the end of a dye-filled lymphatic channel were removed.	Yes; No *(with explanation)*; N/A.
All significantly radioactive nodes were removed.	Yes; No *(with explanation)*; N/A.
All palpably suspicious nodes were removed.	Yes; No *(with explanation)*; N/A.
Biopsy-proven positive nodes marked with clips prior to chemotherapy were identified and removed.	Yes; No *(with explanation)*; N/A.

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Synoptic Operative Note Example: Standard 5.4: Axillary Lymph Node Dissection for Breast Cancer

KPMAS Template

Synoptic Operative Report: Modified Radical Mastectomy

Procedure Date: 7/20/2021

Surgeon: Surgeon(s): Characters from "*Scrubs*"
CHRIS TURK (M.D.), M.D.
THE TODD (M.D.), M.D.

Patient Information

Name: PATIENT X
MRN: xxxxxxxxx
Date of Birth: xx/xx/xxxx
Age: 48 yr old
Gender: female

Operative Information

Location: OR-ASC-TYSONS
Anesthesia: General, Local, Regional
Pre-Op Diagnosis: Pre-Op Diagnosis Codes:
* FEMALE BREAST CANCER, UNSPECIFIED SITE OF LEFT BREAST [C50.912]
Post-Op Diagnosis: Post-Op Diagnosis Codes:
* FEMALE BREAST CANCER, UNSPECIFIED SITE OF LEFT BREAST [C50.912]
Procedure Performed: Procedure(s) (LRB):
MODIFIED RADICAL MASTECTOMY (Left)
TISSUE EXPANDER INSERTION (Left)

Synoptic Note Elements

Antibiotics: Cefazolin 2g

VTE prophylaxis: Sequential compression devices

Foley catheter: Yes

Operation performed with curative intent: Yes

Resection was performed within the boundaries of the axillary vein, chest wall (serrated anterior), and latissimus dorsi: Yes

Nerves identified and preserved during dissection (*select all that apply*): Long thoracic nerve/thoracodorsal nerve

Level III nodes were removed: No

Indications

PATIENT X is a 48 yr old female who was found on biopsy to have left breast cancer. She presented for Multidisciplinary Breast Cancer Clinic consultation, and after discussion of surgical options chose Procedure(s) (LRB):
MODIFIED RADICAL MASTECTOMY (Left)
TISSUE EXPANDER INSERTION (Left). Risks, benefits and alternatives to the procedure were discussed at length, all questions were answered, and the patient elected to proceed.

Operative Finding

CoC Template

Element	Response Options
Operation performed with curative intent.	Yes; No.
Resection was performed within the boundaries of the axillary vein, chest wall (serratus anterior), and latissimus dorsi.	Yes; No *(with explanation)*.
Nerves identified and preserved during dissection *(select all that apply)*.	Long thoracic nerve; Thoracodorsal nerve; Branches of the intercostobrachial nerves; Other *(with explanation)*.
Level III nodes were removed.	Yes *(with explanation)*; No.

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Methods

Analysis Methods

- Distribution analysis
- Wilcoxon Rank Sum (WRS) test for completion time differences
- Focus on compliance and efficiency metrics

Developed Synoptic Operatives Notes for:

- Lumpectomy (ACS CoC standard, implemented July 2021)
- Mastectomy (ACS CoC standard, implemented July 2021)
- Wide excision for melanoma (ACS CoC standard, implemented January 2022)
- Appendectomy
- Cholecystectomy
- Inguinal hernia repair

Integrated feedback and CoC standards

- Users are provided feedback for improvements; key theme was an option/choice/default selection for drop-down selections

Procedure specific feedback

General feedback

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Comparison of "Time to Completion" for Synoptic & Regular Operative Notes (Data between January 2019 to August 2024)

Procedure Type	Synoptic Template used Y/N	Number of Notes	Median 'Time to Completion' per note (minutes)	Wilcoxon Rank Sum test p-value
APPENDECTOMY	N	718	4.6	<0.0001
	Y	810	3.3	
CHOLECYSTECTOMY	N	1518	4.5	<0.0001
	Y	1763	3.5	
INGUINAL HERNIA	N	1555	5.2	<0.0001
	Y	2134	3.6	
LUMPECTOMY	N	1104	6.6	<0.0001
	Y	1636	5.4	
MASTECTOMY	N	1135	8.9	0.221
	Y	788	8.7	
MELANOMA	N	175	7	0.510
	Y	83	5.6	

The time to completion was defined as the total time spent working on a note

The median time to completion for synoptic notes is lower than non-synoptic operative notes for all procedure types

WRS test showed significant differences in completion times between synoptic and non-synoptic notes (except for mastectomy and melanoma)

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Compliance By Procedure: Standards 5.3 & 5.4
Sentinel Node Biopsy and Axillary Lymph Node Dissection for Breast Cancer

- Regional Medical Director, Perioperative Service/NSQIP Surgeon Champion, and the chiefs review monthly for continued compliance
- Will need 70% compliance in 2024 for CoC Std 5.3-5.6
- Will need 80% compliance by 2025 for CoC Std 5.3-5.6

KPMAS 2024 annual rate (data as of 1/9/2025)

✓ 93.4% Lumpectomy (Std 5.3)
✓ 97.2% Mastectomy (Std 5.4)
✓ CoC Elements within Synoptic Operative Notes overall is 94.8%

Compliance Tracking *(Last 2 Year(s))*

Procedure Gr..	1/1/2024	1/1/2025
Grand Total	94.6% (750/793)	100.0% (18/18)
Lumpectomy	93.4% (511/547)	100.0% (10/10)
Mastectomy	97.2% (239/246)	100.0% (9/9)

ASC Level *(Last 2 Year(s))*

	BALT		DCSM			NOVA	
	LUTHERVILLE	SO BALT	GAITHERSBURG	KENSINGTON	LARGO	CATON HILL	TYSONS
Curative Intent	58/58 (100.0%)	79/79 (100.0%)	158/159 (99.4%)	11/11 (100.0%)	167/167 (100.0%)	94/94 (100.0%)	199/201 (99.0%)
Tracer Upfront (Mutli-select)	40/40 (100.0%)	61/64 (95.3%)	115/120 (95.8%)	1/1 (100.0%)	139/143 (97.2%)	62/67 (92.5%)	129/144 (89.6%)
Tracer Neoadjuvant (Multi-select)	39/40 (97.5%)	62/64 (96.9%)	102/120 (85.0%)	1/1 (100.0%)	133/143 (93.0%)	63/67 (94.0%)	95/144 (66.0%)
Colored Non-colored Nodes Removed	40/40 (100.0%)	63/64 (98.4%)	115/120 (95.8%)	1/1 (100.0%)	137/143 (95.8%)	64/67 (95.5%)	118/144 (81.9%)
Radioactive Nodes Removed	40/40 (100.0%)	62/64 (96.9%)	117/120 (97.5%)	1/1 (100.0%)	139/143 (97.2%)	63/67 (94.0%)	117/144 (81.3%)
Suspicious Palpable Nodes Removed	40/40 (100.0%)	63/64 (98.4%)	117/120 (97.5%)	1/1 (100.0%)	138/143 (96.5%)	63/67 (94.0%)	101/144 (70.1%)
Biopsy Proven Nodes Removed	40/40 (100.0%)	62/64 (96.9%)	116/120 (96.7%)	1/1 (100.0%)	139/143 (97.2%)	64/67 (95.5%)	98/144 (68.1%)
Resection within Boundaries	1/1 (100.0%)	1/1 (100.0%)	4/5 (80.0%)		1/1 (100.0%)		1/1 (100.0%)
Nerve Dissection	1/1 (100.0%)	1/1 (100.0%)	4/5 (80.0%)		1/1 (100.0%)		1/1 (100.0%)
Level III Nodes Removed	1/1 (100.0%)		4/5 (80.0%)		1/1 (100.0%)		1/1 (100.0%)

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Compliance By Procedure Continued: Standard 5.5 Wide Local Excision for Primary Cutaneous Melanoma

- Regional Medical Director, Perioperative Service/NSQIP Surgeon Champion, and chiefs continue to work together to further increase awareness and compliance
- Will need 70% compliance in 2024 for CoC Std 5.3-5.6
- Will need 80% compliance by 2025 for CoC Std 5.3-5.6

KPMAS 2024 annual rate (data as of 1/9/2025)

✓95.0% Wide Local Excision (Std 5.5)

✓CoC Elements within Synoptic Operative Notes overall is 98.5%

Compliance Tracking *(Last 8 Year(s))*

Procedure Groups	1/1/2024	1/1/2025
Grand Total	95.0% (19/20)	100.0% (5/5)
Melanoma	95.0% (19/20)	100.0% (5/5)

ASC Level *(Last 2 Year(s))*

	BALT				DCSM		NOVA
	LUTHERVILLE	OR-OPS-LUTHER..	OR-OPS-SO BALT	SO BALT	GAITHERSBURG	LARGO	TYSONS
Curative Palliative	1/1 (100.0%)	3/3 (100.0%)	1/1 (100.0%)	6/6 (100.0%)	15/15 (100.0%)	4/4 (100.0%)	20/20 (100.0%)
Breslow Thickness	1/1 (100.0%)	3/3 (100.0%)	1/1 (100.0%)	6/6 (100.0%)	15/15 (100.0%)	4/4 (100.0%)	18/20 (90.0%)
Depth of Excision	1/1 (100.0%)	3/3 (100.0%)	1/1 (100.0%)	6/6 (100.0%)	15/15 (100.0%)	4/4 (100.0%)	19/20 (95.0%)
Clinical Margin Width	1/1 (100.0%)	2/3 (66.7%)	1/1 (100.0%)	6/6 (100.0%)	15/15 (100.0%)	4/4 (100.0%)	18/20 (90.0%)

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Compliance By Procedure Continued: All Procedures

Compliance Tracking *(Last 4 Year(s))*

Procedure Gr..	1/1/2022	1/1/2023	1/1/2024	1/1/2025
Grand Total	93.5% (2,321/2,483)	91.7% (2,343/2,554)	93.7% (2,474/2,640)	89.9% (363/404)
Melanoma		43.3% (13/30)	95.0% (19/20)	100.0% (5/5)
Appendectomy	92.5% (246/266)	91.2% (271/297)	87.9% (268/305)	77.6% (38/49)
Cholecystectomy	92.5% (568/614)	92.4% (592/641)	93.2% (627/673)	86.9% (86/99)
Lumpectomy	92.9% (537/578)	93.5% (504/539)	93.4% (511/547)	97.4% (75/77)
Inguinal Hernia	95.0% (736/775)	90.9% (718/790)	95.4% (811/850)	91.7% (122/133)
Mastectomy	93.7% (237/253)	95.4% (247/259)	97.2% (239/246)	90.5% (38/42)

ASC Level *(Last 4 Year(s))* *(Click any cell to see analysis by surgeon)*

Procedure Gro..	BALT		DCSM			NOVA		Grand Total
	LUTHERV..	SO BALT	GAITHER..	KENSING..	LARGO	CATON HI..	TYSONS	
Grand Total	96.4% (477/495)	94.1% (637/677)	89.5% (1,145/1,279)	95.3% (522/548)	88.2% (1,703/1,930)	92.8% (869/936)	97.0% (2,150/2,216)	92.8% (7,501/8,081)
Melanoma	36.4% (4/11)	43.8% (7/16)					92.9% (26/28)	67.3% (37/55)
Appendectomy	94.1% (32/34)	72.5% (37/51)	85.8% (145/169)	95.2% (20/21)	91.5% (183/200)	84.1% (95/113)	94.5% (311/329)	89.7% (823/917)
Cholecystectomy	95.1% (97/102)	99.2% (120/121)	79.1% (250/316)	93.2% (191/205)	91.7% (374/408)	93.7% (329/351)	97.7% (512/524)	92.4% (1,873/2,027)
Lumpectomy	99.3% (144/145)	97.3% (183/188)	98.2% (324/330)	100.0% (38/38)	82.4% (399/484)	95.1% (97/102)	97.8% (444/454)	93.5% (1,627/1,741)
Inguinal Hernia	98.8% (158/160)	96.4% (190/197)	90.4% (282/312)	96.0% (261/272)	88.4% (554/627)	94.0% (315/335)	97.2% (627/645)	93.7% (2,387/2,548)
Mastectomy	97.7% (43/44)	96.2% (101/105)	94.8% (145/153)	100.0% (12/12)	91.5% (194/212)	94.3% (33/35)	97.5% (233/239)	95.1% (761/800)

- Only the procedures with “Melanoma” and “Wide Local Excision” procedures should be included
- Removed cases with Basal Cell Carcinoma or BCCA in the procedure title
- Reviewed cases with “Skin Lesion” in the procedure names, were not melanoma cases
- Thank you to the Cancer Surgery Standards Program (CSSP) for providing informative webinars that offered valuable clarification on these procedures

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Lessons Learned & Key Takeaways

Evaluation by Cancer Committee and KPMAS Leaders:

- Promote further adoption of the synoptic operative notes
- Enhance user training and engagement
- Integral to KPMAS and Mid-Atlantic Permanente Medical Group (MAPMG) regional accreditation projects
  - NSQIP pilot program
  - CoC accreditation compliance maintenance
- Explore expansion to additional procedures
- Standardize operative notes regionally to other procedures
- Enhance clinical documentation accuracy and completeness, streamline functions like registry extraction and compliance, and reduce completion time

Key Takeaways:

- Synoptic operative note improves efficiency and documentation quality
- High compliance rates indicate successful integration
- Continued efforts are needed for standardization and adoption

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Thank You!

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