The Oncologist's Guide to Synoptic Reporting: A Primer

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Short Title: The Oncologist's Guide to Synoptic Reporting

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Abstract

Synoptic reporting in tumour pathology is defined by (1) completeness in terms of data elements as well as (2) a specific, laboratory value-like format. Adoption of synoptic reporting leads to more complete reporting of essential parameters, improved standardization of diagnostic criteria and terminology as well as easier retrieval of information. It is therefore associated with a high degree of satisfaction among end users including surgeons and oncologists and contributes to improvement of clinical care. Furthermore, synoptic reporting is an important step towards higher levels of data capture, which facilitate data exchange and analysis for quality assurance, cancer epidemiology and clinical and basic research. Increased interest in and adoption of synoptic reporting on a global level is stimulated by the International Collaboration on Cancer Reporting (ICCR) which publishes freely available, evidence-based datasets for reporting a increasing number of different cancer types.

These developments pave a path for increased future application of synoptic reporting across the entire field of oncologic medicine, where it will likely deploy similar benefits as in pathology. Given that synoptic reporting can be considered the most precise means for reporting of medical findings available, it may be predicted to be critical for the promises of precision medicine to become real.

The need for complete and standardized reporting in Oncologic Pathology

Oncologic pathology reports have a key role in diagnostic work-up, therapeutic management and post-therapeutic follow-up of every cancer patient. Given the multidisciplinarity of current oncologic management, it is natural that various specialists rely of different types of information. These specialists include, but are not limited to medical and radiation oncologists, surgeons, diagnostic and interventional radiologists, nuclear medicine physicians and pathologists themselves. Additional stakeholders include cancer registries, clinical researchers, biobanking experts and qualitity managers. Furthermore, it is increasingly acknowledged that patients demand access to their reports – which in turn may influence how the information therein should be presented [1].

It would require almost supranatural abilities from a pathologist to keep all these stakeholders in mind when signing out reports and to address their needs – or even to know what all of these actually are in the context of each specific cancer type, histological subtype, type of specimen, tumour stage, eligibility for (neo-) adjuvant therapies, etc.

An additional level of complexity arises from the fact that is insufficient for a pathologist just to describe what they see under the microscope: Cut-offs for a biomarker to be reported as positive or negative may vary depending on the context. For different organs there may be subtle differences in the diagnostic criteria for vascular invasion or in the definition of involvement of surgical margins. Furthermore, these classifications change over time – or there may be competing classifications or definitions at a given time point. Therefore, even a report given by the hypothetical near-supranatural pathologist mentioned above might lead to confusion, when it remains unclear what the underlying classifications and criteria were.

Synoptic reporting

Pathologists have long acknowledged these challenges and recognized *Synoptic Reporting* (derived from ancient Greek “syn-opsis” – overview) as a means to address them[2]. It was realized early on that the decision process which parameters to include was critical and non-trivial [3, 4]. Among a number of institutions, which have published protocols for synoptic reports in the past, two main players have emerged in the past years. The College of American Pathologists (CAP) publishes the most comprehensive set of synoptic cancer protocols as of now [5]. Their use has been mandatory for CAP accredited laboratories which has been a major driver for synoptic reporting in the United States and internationally. More recently, an International Collaboration on Cancer Reporting (ICCR), sponsored by a variety of international pathology organizations, has been launched [6-8]. ICCR has started to publish sets of protocols for various cancer types with the aim to cover the major cancer types. Both CAP and ICCR follow a strictly defined process for dataset development and consultation to ensure a broad consensus, expertise and reflection of the best evidence available.

Format of Synoptic Reporting

Initially, the term “synoptic” simply meant to indicate any structured format other than running text, usually with different data elements mentioned in separate lines [2]. CAP defines SR more narrowly [5], in that synoptic reports must not only encompass a set of required data elements (RDE), but also adhere to a “paired format”, where the designation of each RDE is followed by a “response”. In essence, this is the way how clinical laboratory values are reported (Table 1). Separate RDE must be displayed in separate lines.

Apart from this, CAP accepts a broad variety of possible formats and text markups. Of note, the range of acceptable formats includes low-technology implementations such as filling in and printing the protocols in Microsoft Word format of even photocopying protocols in order to fill them in manually. Similarly, the International Collaboration on Cancer Reporting (ICCR) provides its protocols in portable document format (PDF) which can be printed and filled in manually. CAP specifically permits to present the RDE in any order and to include additional data elements at each institution's and/or pathologist's discretion[5]. Furthermore, additional narrative sections are acceptable.

Terminology: safety issues and uniformity

Neither CAP, nor ICCR have published detailed information on how specific wordings are chosen for data elements or responses. A number of recurrent themes emerges, however, when comparing the various protocols and their development over time: Generally, there is a strong tendency toward uniformity within and across protocols. Positive findings, for example, are usually reported as "present" rather than "yes" or "positive". Similarly, CAP protocols uniformly use the term "extranodal extension" rather than "extracapsular extension".

Negative findings are usually reported as "not identified" rather than "absent" along the line of the statement that "absence of evidence is not evidence of absence" and acknowledging the insight that in medicine the latter can rarely be provided. Of note, biomarkers for which the positive result reflects the normal situation are reported e.g. as "Intact nuclear expression" vs. "Loss of nuclear expression" rather than "positive"/"negative".

Different responses to one data element are usually designed not to differ only by a single word, which might be accidentally omitted and thereby invert the intended meaning, e.g. "not identified" rather than "not present". Also, there is a tendency towards some degree of redundancy, such as in the case of grading, i.e. "G2, moderately differentiated" rather than just "G2".

All of the above conventions aim at minimization of risks associated with misinterpretations of reports. Such considerations should be kept in mind while implementing synoptic protocols locally or translating them to different languages.

Advantages of Synoptic Reporting:

A major advantage of synoptic over narrative reporting is an increase in completeness of data elements, as demonstrated by a number of studies across various cancer types, including – but not limited to – colorectal, lung, breast and prostate cancer as well as cutaneous malignant melanoma [9-16]. One study of cutaneous malignant melanoma found completeness of reports to increase not only in non-specialised, but also in a specialized setting [11]. A meta-analysis on the effects of synoptic reporting [16] found an increase in completeness in 13 out of 14 studies. This in increase in completeness is critical, as lack of core data elements may affect quality of cancer care [10, 17]. Of note, the actual rates of completeness achieved by synoptic reporting varies significantly between studies, indicating that the characteristics of implementation may be an important factor. Furthermore, synoptic reporting may contribute to increased awareness of quality indicators and thereby improve quality of pathologic evaluation. Interestingly, the meta-analysis mentioned above [16] found an increase in numbers of lymph nodes obtained from colorectal cancer resections as well as a higher percentage of specimens reaching the minimum of 12 lymph nodes upon introduction of synoptic reporting.

Overall, synoptic reporting is associated with a high degree of satisfaction in pathologists, surgeons and oncologists [18, 19]. This satisfaction seems to be associated with perceived completeness of reports for the purpose of clinical decision making as well as ease of finding relevant information [18] (Figure 1).

Limitations of Synoptic Reporting

The overall high level of satisfaction with synoptic reporting notwithstanding, a similarly recurrent theme across various studies is that pathologists need more time to complete synoptic as compared to narrative reports [18]. Generally, however, the increment in time was moderate and considered acceptable when considering the benefits of synoptic reporting.

An additional issue may be the length of reports. Most of the CAP protocol files extend over several pages, while the more compact format adopted by ICCR may be challenging to render within an existing laboratory information system. In part, increased length of reports is an intrinsic consequence of completeness in terms of RDE as well as of the synoptic format itself. Nevertheless, overly long reports can be avoided by a number of means: First, many RDE are conditional, i.e. they may be mandatory only in a subset of cases (e.g. nuclear grading does not apply to chromophobe renal cell carcinoma). In that case, it is acceptable to omit the pertinent line completely, rather than reporting the RDE as “not applicable”. Second, most CAP and ICCR protocols contain a number of optional data elements, which may or may not be reported at each pathologist’s or institution’s discretion. It may be prudent in this context, to refrain from including “everything”, but rather to keep readability of reports in mind. Along the same line, some hesitance may be advisable with regard to including additional data elements on a local basis.

Finally, synoptic protocols may not fit well very specific circumstances, such as two different histologic tumour types (e.g. carcinoma and lymphoma) occurring in the same resection specimens. Usually, however, such issues can be addressed in a satisfactory manner, and the possibility to include free text provides sufficient flexibility.

How to read synoptic reports

In most instances, synoptic reports should be sufficiently self-explanatory in order to be well understandable to physicians with at least some understanding of the respective medical field. In particular, preferences of individual pathologists with respect to wording should be less of an issue than with narrative reports. Furthermore, as cancer protocols are continuously updated, synoptic reports will usually contain the information required for patient management in current terminology and with sufficient granularity. When very specific information is required, the notes accompanying each cancer or biomarker protocol may be a useful resource. CAP protocols contain a “Notes” section, which gives very detailed information on diagnostic criteria, cut-offs, grading schemes, etc. ICCR protocols are available in bookmarked and hyperlinked versions containing similar information. The respective documents are freely available on the CAP and ICCR websites. Ideally, a synoptic report should contain information, to which version of which protocol it refers. This is of particular relevance with regard to future users, given that classifications change over time.

Synoptic reporting on the path towards higher levels of data capture

As discussed by Ellis and Srigley [20], synoptic reporting has a middle position regarding the degree to which data is structured and is classified as Level 3 in a 6-tiered system:

- Level 1: Narrative report (no defined content)
- Level 2: Narrative report with standardized content (e.g. by using a checklist for dictation)
- Level 3: Synoptic report – adds a specific format, but not necessarily any underlying software implementation
- Level 4: Synoptic report with electronic reporting tools
- Level 5: Standardised structured report with underlying database structure
- Level 6: Standardised structured report with binding terminology in order to facilitate data exchange

According to Ellis and Srigley, implementation of Level 3, primarily benefits immediate clinical needs, while higher levels of data capture are necessary for synoptic reporting to unfold its full potential for pathologists and secondary users. An underlying database structure will allow pathologists to easily monitor statistical distribution of findings and thereby identify potential deviations from expected frequencies, which in turn might point towards issues on a technical or interpretational level.

Ultimately, linking synoptic reports and databases with a uniform terminology, such as SNOMED-CT, will allow third parties including biobanks and cancer registries to access large datasets with unprecedented granularity.

Nevertheless, synoptic reporting according to Level 3 in the Ellison/Srigley classification has an important role within the path towards higher levels of data capture: It serves one particular purpose, i.e. clinicians' needs, already very well. Furthermore, it can be implemented relatively more easily, fast and without major financial implications. Finally, it may be a very significant step on a psychological level, as it trains users to adhere to a standardized format and terminology and fosters precision in reporting.

Synoptic reporting in oncology beyond pathology

While the historic origin and widest application of synoptic reporting are in oncologic pathology, its concepts are spreading non-neoplastic pathology [21, 22] as well as oncologic specialities other than pathology. Main areas of application of synoptic reporting include radiology [23-27] and operative reports in surgery [28-33]. While the overall number of studies addressing the effects of synoptic reporting is considerably lower than in pathology, they tend to show similar outcomes; completeness of reports increases with the use of synoptic reporting, while at the same time the amount of non-essential information is reduced [34-36]. A web-based synoptic reporting tool for thyroid surgery was found to achieve 100% completeness of essential prognostic factors while completeness varied between 3% and >95% for various parameters in descriptive operative reports [37]. Of note, initiatives for synoptic reporting in radiology or oncologic surgery are mostly driven by single academic centres. In contrast to pathology, so far there is only a limited role of national or international

professional or scientific societies. One exception is the American Thyroid Association, which has issued a statement regarding essential elements of perioperative information in relation to thyroid surgery and endorsed use of synoptic operative reports [31].

Perspective

Over more than a quarter of a century, the concept of synoptic reporting in pathology has matured from local initiatives [2] to international standardization with defined processes for design and maintenance of evidence-based reporting templates which are coordinated with the World Health Organization Classification of Tumours [6, 38, 39]. Data is increasingly structured and linked to ontologies such as SNOMED-CT and LOINC [40], facilitating unprecedented levels of integration with the potential to revolutionize their use with regard to clinical care, quality assurance, as well as clinical and basic research [41].

This development paves a path for future widespread applications of synoptic reporting (and higher levels of data capture) in other fields in oncology. Not only do the forces, which have driven this development in pathology – the need for complete, accurate and standardized information – act on all oncologic specialties, but also can synoptic reporting be predicted to be a major part of the respective solutions. Experience from pathology shows that high quality, evidence-based and timely consensus forms for reporting and their endorsement by national and international professional and scientific societies are critically important facilitators for widespread application of synoptic reporting.

For precision medicine not to remain an empty promise, precision has to be the *modus operandi* in the entire practice of oncologic medicine and synoptic reporting is the most precise type of communication available to us.

Statement of Ethics

The author has no ethical conflicts to disclose.

Disclosure Statement

The author has no conflicts of interest to declare.

References

1 Lee CI, Langlotz CP, Elmore JG: Implications of Direct Patient Online Access to Radiology Reports Through Patient Web Portals. J Am Coll Radiol 2016;13:1608-1614.
2 Markel SF, Hirsch SD: Synoptic surgical pathology reporting. Hum Pathol 1991;22:807-810.
3 Dworak O: Synoptic surgical pathology reporting. Hum Pathol 1992;23:85-86.
4 Chamberlain DW, Wenckebach GF, Alexander F, Fraser RS, Kolin A, Newman T: Pathological examination and the reporting of lung cancer specimens. Clin Lung Cancer 2000;1:261-268.
5 College of American Pathologists website,
6 International Collaboration on Cancer Reporting (ICCR) website

7 Bullock MJ, Beitler JJ, Carlson DL, Fonseca I, Hunt JL, Katabi N, Sloan P, Taylor SM, Williams MD, Thompson LDR: Data Set for the Reporting of Nodal Excisions and Neck Dissection Specimens for Head and Neck Tumors: Explanations and Recommendations of the Guidelines From the International Collaboration on Cancer Reporting (ICCR). Arch Pathol Lab Med 2018
8 Nicholson AG, Detterbeck F, Marx A, Roden AC, Marchevsky AM, Mukai K, Chen G, Marino M, den Bakker MA, Yang WI, Judge M, Hirschowitz L: Dataset for reporting of thymic epithelial tumours: recommendations from the International Collaboration on Cancer Reporting (ICCR). Histopathology 2017;70:522-538.
9 Messenger DE, McLeod RS, Kirsch R: What impact has the introduction of a synoptic report for rectal cancer had on reporting outcomes for specialist gastrointestinal and nongastrointestinal pathologists? Arch Pathol Lab Med 2011;135:1471-1475.
10 Haydu LE, Holt PE, Karim RZ, Madronio CM, Thompson JF, Armstrong BK, Scolyer RA: Quality of histopathological reporting on melanoma and influence of use of a synoptic template. Histopathology 2010;56:768-774.
11 Karim RZ, van den Berg KS, Colman MH, McCarthy SW, Thompson JF, Scolyer RA: The advantage of using a synoptic pathology report format for cutaneous melanoma. Histopathology 2008;52:130-138.
12 Aumann K, Amann D, Gumpp V, Hauschke D, Kayser G, May AM, Wetterauer U, Werner M: Template-based synoptic reports improve the quality of pathology reports of prostatectomy specimens. Histopathology 2012;60:634-644.
13 Aumann K, Kayser G, Amann D, Bronsert P, Hauschke D, Palade E, Passlick B, Werner M: The format type has impact on the quality of pathology reports of oncological lung resection specimens. Lung Cancer 2013;81:382-387.
14 Aumann K, Niermann K, Asberger J, Wellner U, Bronsert P, Erbes T, Hauschke D, Stickeler E, Gitsch G, Kayser G, Werner M: Structured reporting ensures complete content and quick detection of essential data in pathology reports of oncological breast resection specimens. Breast Cancer Res Treat 2016;156:495-500.
15 Maley A, Patrawala S, Stoff B: Compliance with the College of American Pathologists Protocol for Melanoma in Synoptic and Non-Synoptic reports: A cross-sectional study. J Am Acad Dermatol 2016;74:179-181.

16 Sluijter CE, van Lonkhuijzen LR, van Slooten HJ, Nagtegaal ID, Overbeek LI: The effects of implementing synoptic pathology reporting in cancer diagnosis: a systematic review. Virchows Arch 2016;468:639-649.
17 Verleye L, Ottevanger PB, Kristensen GB, Ehlen T, Johnson N, van der Burg ME, Reed NS, Verheijen RH, Gaarenstroom KN, Mosgaard B, Seoane JM, van der Velden J, Lotocki R, van der Graaf W, Penninckx B, Coens C, Stuart G, Vergote I: Quality of pathology reports for advanced ovarian cancer: are we missing essential information? An audit of 479 pathology reports from the EORTC-GCG 55971/NCIC-CTG OV13 neoadjuvant trial. Eur J Cancer 2011;47:57-64.
18 Lankshear S, Srigley J, McGowan T, Yurcan M, Sawka C: Standardized synoptic cancer pathology reports - so what and who cares? A population-based satisfaction survey of 970 pathologists, surgeons, and oncologists. Arch Pathol Lab Med 2013;137:1599-1602.
19 Hammond EH, Flinner RL: Clinically relevant breast cancer reporting: using process measures to improve anatomic pathology reporting. Arch Pathol Lab Med 1997;121:1171-1175.
20 Ellis DW: Surgical pathology reporting at the crossroads: beyond synoptic reporting. Pathology 2011;43:404-409.
21 Benton SJ, Lafreniere AJ, Grynspan D, Bainbridge SA: A synoptic framework and future directions for placental pathology reporting. Placenta 2019;77:46-57.
22 Edwards PC: Is it time to extend synoptic reporting to include potentially preneoplastic oral epithelial and lichenoid lesions? Oral Surg Oral Med Oral Pathol Oral Radiol 2017;124:105-106.
23 Panicek DM, Hricak H: Recommendations for the Initial Cancer Staging MRI Report. J Magn Reson Imaging 2019
24 Patel A, Rockall A, Guthrie A, Gleeson F, Worthy S, Grubnic S, Burling D, Allen C, Padhani A, Carey B, Cavanagh P, Peake MD, Brown G: Can the completeness of radiological cancer staging reports be improved using proforma reporting? A prospective multicentre non-blinded interventional study across 21 centres in the UK. BMJ Open 2018;8:e018499.
25 Kennedy ED, Milot L, Fruitman M, Al-Sukhni E, Heine G, Schmocker S, Brown G, McLeod RS: Development and implementation of a synoptic MRI report for preoperative staging of rectal cancer on a population-based level. Dis Colon Rectum 2014;57:700-708.
26 Spiegle G, Leon-Carlyle M, Schmocker S, Fruitman M, Milot L, Gagliardi AR, Smith AJ, McLeod RS, Kennedy ED: Development of a synoptic MRI report for primary rectal cancer. Implement Sci 2009;4:79.
27 Dhillon RS, King JA, Goldschlager T, Wang YY: Synoptic reporting of pituitary magnetic resonance imaging. ANZ J Surg 2018;88:460-463.
28 Ehrlich PF: Reply to: Synoptic operative reports for quality improvement in pediatric cancer care: Surgical protocol violations in children with renal tumors provides an opportunity to improve pediatric cancer care: A report from the Children's Oncology Group. Pediatr Blood Cancer 2018;65:e27277.
29 Cundy TP, Kirby CP, Kirby ML: Synoptic operative reports for quality improvement in pediatric cancer care. Pediatr Blood Cancer 2018;65:e27238.
30 Brower ST, Katz M, Pisters P, Merchant N, Weber S, Posner M: Electronic synoptic operative reporting for pancreatic resection. J Am Coll Surg 2011;212:425-426; author reply 426.

31 Carty SE, Doherty GM, Inabnet WB, 3rd, Pasieka JL, Randolph GW, Shaha AR, Terris DJ, Tufano RP, Tuttle RM, Surgical Affairs Committee Of The American Thyroid A: American Thyroid Association statement on the essential elements of interdisciplinary communication of perioperative information for patients undergoing thyroid cancer surgery. Thyroid 2012;22:395-399.
32 Badruddoja M: Electronic synoptic operation report. J Am Coll Surg 2011;212:271-272.
33 Temple WJ, Chin-Lenn L, Mack LA, Cancer Surgery A: Evaluating population-based breast cancer surgical practice in real time with a web-based synoptic operative reporting system. Am J Surg 2014;207:693-696; discussion 696-697.
34 Eng JL, Baliski CR, McGahan C, Cai E: Completeness of breast cancer operative reports in a community care setting. Breast 2017;35:91-97.
35 King S, Dimech M, Johnstone S: Structured pathology reporting improves the macroscopic assessment of rectal tumour resection specimens. Pathology 2016;48:349-352.
36 Maniar RL, Hochman DJ, Wirtzfeld DA, McKay AM, Yaffe CS, Yip B, Silverman R, Park J: Documentation of quality of care data for colon cancer surgery: comparison of synoptic and dictated operative reports. Ann Surg Oncol 2014;21:3592-3597.
37 Chambers AJ, Pasieka JL, Temple WJ: Improvement in the accuracy of reporting key prognostic and anatomic findings during thyroidectomy by using a novel Web-based synoptic operative reporting system. Surgery 2009;146:1090-1098.
38 Ellis DW, Srigley J: Does standardised structured reporting contribute to quality in diagnostic pathology? The importance of evidence-based datasets. Virchows Arch 2016;468:51-59.
39 Comperat E, Babjuk M, Algaba F, Amin M, Brimo F, Grignon D, Hansel D, Hes O, Malavaud B, Reuter V, van der Kwast T: SIU-ICUD on bladder cancer: pathology. World J Urol 2019;37:41-50.
40 Campbell WS, Karlsson D, Vreeman DJ, Lazenby AJ, Talmon GA, Campbell JR: A computable pathology report for precision medicine: extending an observables ontology unifying SNOMED CT and LOINC. J Am Med Inform Assoc 2017
41 Banz Y, Berezowska S, de Leval L, Rubbia-Brandt L, Tolnay M, Moch H, Perren A, Hewer E: Advancing synoptic cancer reports beyond English: the University of Bern/PathoLink approach. Virchows Arch 2018;473:655-656.

Table

Narrative	Synoptic
Upon incubation with the patient's serum, immunofluorescence microscopy shows staining of neutrophils in a perinuclear pattern. This is still visible when the serum is diluted 1:320, but not at 1:640 dilution	ANCA: positive (p-ANCA); Titer 1:320
The synoptic format of data element, paired with a response recapitulates the way clinical laboratory values are reported. This example of immunofluorescence illustrates that it would appear unusual to physicians to receive such test results in narrative text, even though there may be a similar type of analysis underlying the test result.	
… with lymph node metastases detected in 3 out of 12 lymph nodes, largest diameter 1.2 cm, without evidence of extracapsular extension …	Number of lymph nodes submitted: 12 Number of lymph nodes involved: 3 Largest diameter of lymph node metastasis: 1.2cm Extranodal extension: not identified
Example of typical elements from a surgical pathology report. Most readers would likely find it more easy to extract a particular piece of information from the synoptic as compared to the narrative report.	
15% of tumour cells are positive for Mum-1.	Mum-1 (immunostaining): negative
15% of tumour cells are positive for p53.	p53 (immunostaining): wildtype pattern
15% of tumour cells are positive for Ki-67.	Ki-67 proliferation index: 15%
In particular for biomarkers, specific criteria may have to be applied for interpretation of a given finding. 15% of stained tumour cell nuclei would not qualify for Mum-1 expression in the context of the Hans Algorithm for determining cell of origin in diffuse large B cell lymphoma. Depending on how the immunostaining is set up, 15% of nuclear p53 staining would likely indicate wildtype TP53. In contrast, for Ki-67 the percentage of positive nuclei is reported (with specific recommendations on how many nuclei to count for some tumour types).	

Table 1. Examples of information that might be found in laboratory or pathology reports in narrative and synoptic format.

Figure

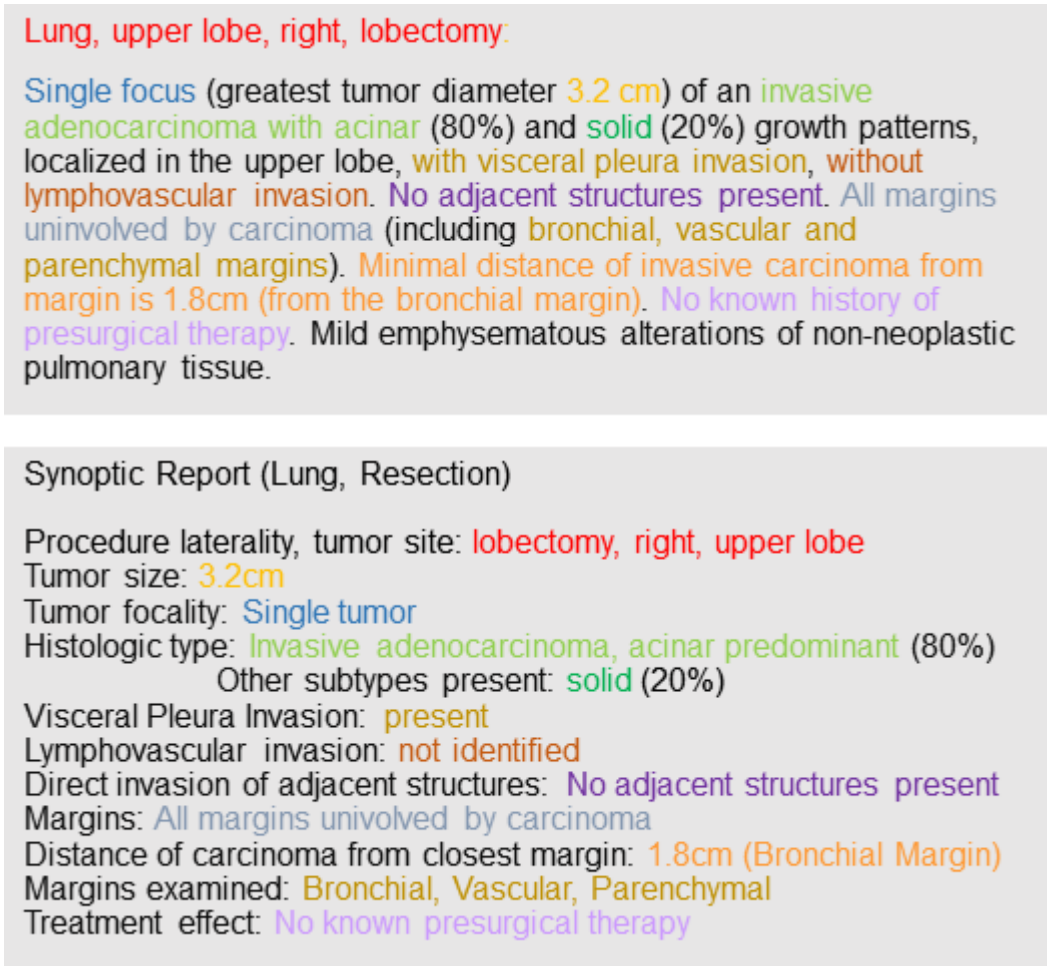

Figure 1. Color-coded representation of data elements (according to the College of American Pathologists template for lung cancer) in narrative (top) and synoptic (bottom) formats. Even when complete in terms of required data elements, narrative reports tend to be shorter than synoptic reports. Finding a particular piece of information, however, is easier with the synoptic format. As in this example, narrative reports tend to include more non-essential data of little clinical relevance (mild emphysematous change) than synoptic reports, while essential data elements are often incomplete.