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## Advancing synoptic cancer reports beyond English: The University of Bern/PathoLink approach

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Letter to the Editor

Advancing synoptic cancer reports beyond English: The University of Bern/PathoLink approach

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Synoptic reporting (SR) increases completeness and improves the understanding of pathology reports for tumours as compared to the more traditional “narrative” style. Furthermore, it is an important step towards higher levels of structured data capture[4]. SR is defined by a set of required data elements (RDE) specific for each tumour type and a characteristic paired format of RDE and response. The College of American Pathologists (CAP) requires accredited pathology laboratories to report many cancer types in a synoptic format and for this purpose publishes a comprehensive set of protocols[1]. More recently, the International Collaboration for Cancer Reporting (ICCR) – sponsored amongst others by the European Society of Pathology – has started to publish synoptic protocols with the aim to “produce internationally standardised and evidence-based datasets for the pathology reporting of cancer”[2].

One arguably underestimated challenge with regard to widespread implementation of SR is that – with the noteworthy exception of Dutch protocols published by the PALGA foundation[3] – protocols are exclusively available in English. This does not only result in barriers to introduce SR for pathology departments that report in other languages, but also jeopardizes one of the main benefits of SR, i.e. uniformity of terminology between institutions, across country and language barriers. The Institute of Pathology at the University of Bern recently launched an initiative for SR of all major cancer types. Given that the Canton of Bern is bilingual (German and French) and that we report in both languages, we sought to define an approach for translating existing protocols to German as well as French, ensuring precision, clarity and consistency between protocols. Because of the currently much more comprehensive set of protocols, we opted to use CAP (rather than ICCR) protocols, which are freely available (with certain restrictions regarding integration into pathology information systems).

Importantly, we identified recurrent terms and ensured that these were translated consistently between the different protocols (Table 1). We sought to adhere as close as possible to the original English terminology, but found literal translation impracticable for some terms. We made a particular effort to ensure patient safety by avoiding terms prone to misinterpretation. For this purpose, for example, we translated “well differentiated” to German “gut differenziert” rather than the widely used alternative “hoch differenziert” – literally translated: “highly differentiated”. This was done to avoid confusion with “hochgradig” (“high grade”). We also made sure that positive and negative responses would not differ by only a single word, the accidental omission of which would invert the meaning. For instance, we translated “not identified” to German “nicht nachgewiesen” rather than the more customary term “nicht vorhanden” for a negative finding, which would differ from “vorhanden” (“present”) only by the negation “nicht”. Sample reports for the lung carcinoma protocol to highlight these points are provided as supplementary data.

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Based on our experience with two years of SR, 20 surgical and biomarker protocols adopted so far, and more than 1000 synoptic reports issued, we conclude that widespread implementation of SR in languages other than English is feasible, but neither a trivial nor an effortless endeavour.

All five Swiss academic pathology institutes collaborate to date on PathoLink, a common bilingual (German and French) structured reporting system to enhance data interoperability for cancer registration and data exchange in the frame of personalized health.

#### Compliance with ethical standards

The authors declare that they have no conflicts of interest.

Authors' contributions: YB, SB, AP and EH contributed to the University of Bern approach to translating and implementing synoptic protocols described herein. LdL, LRB, MT, HM and AP set up the medical and scientific framework of the PathoLink project. EH drafted the manuscript. All authors approved the final version of the manuscript.

English	German	French
<b>Recurrent Terms</b>		
Procedure	Art der Resektion	Type de pièce opératoire
Tumor Site	Tumorlokalisation	Localisation de la tumeur
Histological type	Histologischer Typ	Type histologique
Histological Grade	Histologischer Grad	Grade histologique
Tumor Size, Greatest Dimension	Maximaler Tumordurchmesser	Taille de la tumeur, Plus grande dimension
Margin	Resektionsrand	Berge d'exérèse
Treatment Effect	Therapie-Effekt	Réponse au traitement
Regional Lymph Nodes	Regionäre Lymphknoten	Ganglions lymphatiques régionaux
Tumor extension ( <i>Lymph Nodes etc.</i> ) submitted	Tumorausdehnung Eingesandte ( <i>Lymphknoten etc.</i> )	Extension tumorale ( <i>Ganglions etc.</i> ) soumis
( <i>Lymph Nodes etc.</i> ) examined	Untersuchte ( <i>Lymphknoten etc.</i> )	( <i>Ganglions etc.</i> ) examinés
( <i>Lymph Nodes etc.</i> ) involved	Befallen ( <i>Lymphknoten etc.</i> )	( <i>Ganglions etc.</i> ) envahis
Additional Pathologic Findings	Zusätzliche pathologische Befunde	Autres lésions histopathologiques
Mitotic rate	Mitoserate	Index mitotique
Ki-67 labeling index	Proliferationsrate (Ki-67)	Index de prolifération (Ki-67)
Perineural invasion	Perineuralscheideninfiltration	Infiltration périnerveuse
Not applicable	Nicht zutreffend	Non applicable
Cannot be assessed	Kann nicht beurteilt werden	Ne peut être évalué
Cannot be determined	Kann nicht bestimmt werden	Impossible à déterminer
<b>Recurrent Terms – Special considerations</b>		
Tumor focality	Anzahl Tumorherde <i>Literally: "Number of Tumor Foci"</i>	Nombre de foyers tumoraux <i>Literally: "Number of Tumor Foci"</i>
Extranodal Extension	Extrakapsuläre Ausbreitung <i>Widely used term</i>	Effraction capsulaire
Brisk / Non-brisk <i>Semiquantitative assessment of Tumour-infiltrating lymphocytes in melanoma</i>	Reichlich vorhanden ("brisk") / spärlich vorhanden ("non-brisk") <i>Established English terms in parentheses</i>	Intense ("brisk") / modéré ("non-brisk")
Uninvolved	Tumorfrei <i>Literally: "Free of Tumor"</i>	Sain <i>Literally: "Healthy"</i>
Well differentiated	Gut differenziert <i>Rather than "hoch differenziert" to avoid confusion with "high grade"</i>	Bien différencié
Moderately differentiated	Mässig differenziert	Moyennement différencié
Poorly differentiated	Wenig differenziert	Peu différencié
Present	Vorhanden	Présent
Not identified	Nicht nachgewiesen <i>Rather than "nicht vorhanden" in order not to differ from "vorhanden" only by one word</i>	Non identifié

Table 1: Examples of German and French translations for recurrent terms in the CAP protocols.

Comments in *italics*.

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3. Pathologisch-Anatomisch Landelijk Geautomatiseerd Archief. [www.palga.nl](http://www.palga.nl). Accessed 26/06/2018
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