

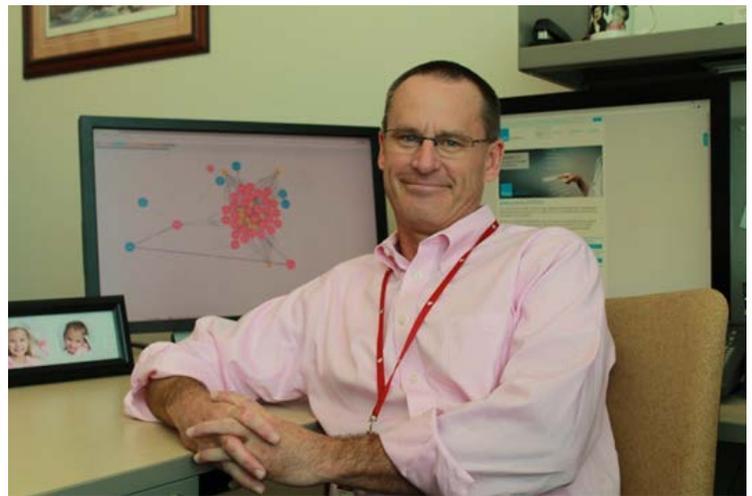


CAMPBELL'S INTERNATIONAL COMPUTABILITY

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May 24, 2017

Our own jet-setting scientist, Scott Campbell, Ph.D., has delivered live and virtual seminars on cancer representation within electronic health records to renowned scientists throughout the world, including England, Uruguay, Canada, Australia, and New Zealand. In these presentations, Dr. Campbell shows the power of the translatable and computational pathology report.



Cancer is a disease without borders and each nation is attempting to identify the disease, improve patient care, utilize effective treatments, and find cures for specific cancer types. The pathology report generated by anatomic and molecular pathologists contains critical pieces of information to characterize the cancer such as tumor site, size, type, staging information, as well as the presence of genetic variants that may indicate treatment options for patients and other prognostic information.

A universal problem pertaining to the pathology report is the ability, or lack thereof, to apply computational techniques to abstract data from the pathology report for use in patient care, decision support, and translational research. The work that Dr. Campbell and others are performing at UNMC is to use data standards and terminologies to represent the words, i.e., natural language in the pathology report so that the data is readily accessible through computers for use by humans. Encoding data at the time of the diagnostic reporting process prepares the data for multiple uses without manual chart reviews. The information electronically exchanges between clinical information systems used for population health management and for research through the simple act of pairing computable terminology with common humanly readable documents.

At UNMC, we employ Systematized Nomenclature of Medicine - Clinical Terms (SNOMED CT) and Logical Observation Identifiers Names and Codes (LOINC) for this work as both terminologies apply worldwide. Our research focus is on encoding the cancer synoptic worksheets as published by the College of American Pathologists (CAP). These reports are required for cancer reporting in the US and Canada, while other countries use similar reports such as in the UK and Australasia where they are referred to as tissue pathways. Furthermore, we are identifying the minimum data elements that need to be in any cancer report is the purpose for the [International Collaboration on Cancer Reporting \(ICCR\)](#).

In essence, we are driving the computability of the cancer report, while others are working on the alignment of these reports across borders. We at UNMC are working with CAP to coordinate and extend this work to users in the US and Canadian. Internationally, we are working with the national colleges of pathology in the UK, Australasia, and Sweden. This effort began with UNMC's involvement with [SNOMED International](#), which provides a venue to collaborate with the various nations interested in this work and allows a platform to extend this work to the various professional societies operating in

other nations. Several nations are attempting to develop some mechanism to render pathology reports in computable fashion. However, not all users or systems designers approach the problem in the same fashion. Some simply want codes to go with the reports, but others, like UNMC, want the codes to carry meaning that enrich the code and establish the base to support robust data queries now and in the future. Working with various levels of user requirements, depth of knowledge or systems capabilities presents interesting challenges, but it also offers great opportunity to develop great solutions.

UNMC enjoys a collaborative relationship with the [US National Library of Medicine](#) (NLM). In conjunction with the NLM as the US licensor for SNOMED CT in the US, all computable terminology developed at UNMC is available for download and review with a valid NLM UMLS license.

Dr. Campbell's vision is coming to fruition with the funding of his U01 grant from the NIH. This endeavor will develop the pancreatic registry, longitudinal follow-up and rapid autopsy models and refine the data encoded standards while extending the clinical standards domain to support translational research without compromising representation of the standards' primary domains. Dr. Campbell's unique view and innovative vision are advancing the collaborative translation of medical records not only for the coordination of care for the patient and opens the door for doctors to collaborate nationally and internationally and discuss cases in relatable terminology.

