

# Standardized Terminologies for Data Interoperability in Health Information Exchange

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## EXECUTIVE SUMMARY

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Accessible and shareable health information is an accepted prerequisite of good healthcare<sup>1</sup>. Sharable health information requires interoperability and a structured, concept-oriented approach achieved by standardized terminologies. Standardized terminology is essential to the knowledge-based healthcare environment. The value of standardized healthcare terminologies is the ability to collect and document comparable healthcare data concepts. This allows insight into the health care and services required to achieve optimal patient health outcomes. The use of standardized terminologies strengthens clinical decision-making in information systems as data congruency increases between technology, business and management capabilities. Congruent, consistent, accurate and interoperable data is fundamental to the process to improve U.S. healthcare quality and population health outcomes. An accurate representation of a patient's clinical status through standardized terminologies provides consistent information flows. A recommendation to the Office of the National Coordinator for Health Information Technology (ONC) Interoperability Standards Advisory is to recognize a standardized nursing terminology. The Clinical Care Classification (CCC) System, nursing terminology, was developed with federal-funding, 1990-1992. The value of standardized terminologies in interoperability includes consistent data for strategic and clinical decision-making and a return on investment from data consistency in the documentation of healthcare outcomes. Standardized terminologies allow the rapid retrieval of information; collect comparable data to assess the quality of health care and services and provide standardized data with which to assess the efficacy of treatment models.

## PROBLEM STATEMENT

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The United States ranks highest in healthcare spending per capita as measured by the Gross Domestic Product (GDP). Currently, the U.S. healthcare system does not reflect a correlation of population health outcomes in proportion to spending<sup>2</sup>. Standardized terminologies are needed to establish consistency in the health data concepts exchanged among multiple organizations to improve shared and actionable healthcare data for patient safety and improved outcomes. The role of standardized terminologies is to reduce unstructured, inconsistent health information exchanged between and among multiple health information exchange networks and healthcare providers. The availability of accurate and accessible health information benefits the provider, patient and healthcare organization at the point of service in delivering appropriate healthcare services based on consistent data for improved healthcare outcomes.

Standard terminologies are essential in the accurate communication of data in the health information exchange and to healthcare interoperability specifications. The Office of the National Coordinator for Health Information Technology (ONC) recognizes standardized terminologies as a vital requirement in establishing quality conformance measures to achieve comparable health data across diverse health information systems. Standardized terminologies normalize health communication with accessible, available, consistent, congruent, unambiguous understanding of a patient's current and past medical history and care. The availability of accurate interdisciplinary patient care communication for current and future clinical decision-making for healthcare services depends on the representation of health data using standardized terms<sup>3</sup>.

## PURPOSE

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The purpose of this White Paper is to discuss the value of standardized terminologies in the exchange and documentation of health information from the viewpoints of the clinician, patient and healthcare organization.

## BACKGROUND

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Clinicians and healthcare professionals plan, collect, store, retrieve, and communicate healthcare data<sup>4</sup>. An important role of standardized terminologies is to effectively manage the structured data underlying all aspects of health care delivery. Standardized terminologies are comprised of structured data sets of clinical concepts crucial to evaluating healthcare quality across diverse health information systems and care settings. The use of standardized terminologies in the clinical decision-making promotes evidence-based practice and strengthens clinical information systems as the standardized terminologies increase the congruency between technology, business processes, and management. Standardized terminologies can also achieve a common business-focused approach through the mapping of system requirements to business processes<sup>5</sup>. Standardized terminologies support the surveillance of population health through the exchange of standardized data between and among internal and community healthcare partners. With the use of standardized terminologies patient care interventions for prevention of illness and disease management may have greater visibility and there may be a reduction in the loss of accessible care information for longitudinal studies, clinical trials, and population health surveillance to advance evidence-based practice.

## DISCUSSION

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Interoperability is the ability of health information systems to work together within and across organizational boundaries in order to advance the effective delivery of healthcare for individuals and communities<sup>6</sup>. A common representation of data is explicit in a standardized terminologies approach. Electronic Health Records (EHRs) supports the documentation of clinical practice at the point of service. Frequently EHR data is collected without the use of an information model and concepts are expressed in local lexicons based on the unique clinical requirements of an organization. These local code sets result in significant non-standard variations in logical data organization, physical formats and clinical concepts for patient conditions that produce serious inconsistency within and across health information sources. Congruent, consistent, accurate data communication is needed to evaluate healthcare quality and achieve practice-based evidence for improvements in U.S. healthcare outcomes from a wide variety of information sources. For example: The Observational Medical Outcomes Partnership (OMOP), public-private partnership between the U.S. Food and Drug Administration (FDA), Foundation for the National Institutes of Health and pharmaceutical companies, found disparate coding systems can be harmonized with minimal information loss to standardized terminology for better data outcomes<sup>7</sup>.

## VALUE OF STANDARDIZED TERMINOLOGIES TO PHYSICIANS AND NURSES

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Clinical documentation is important to every patient encounter. Standardized terminologies provide structured sets of data concepts to reflect the clinical scope of care and services provided to patients. The accurate representation of a patient's clinical status through the use of standardized terminologies allows for consistency in information flows and permits the accurate comparability of data underlying quality reports, claims reimbursement, public health data, and population health trending<sup>4</sup>. Standard terminologies normalize the diagnostic process and establish consistency in patient data for outcomes research. Physicians and nurses often prepare detailed clinical documentation and patient instructions. Standardized terminologies reduce the clinical workload required to describe similar patient care. With the use of standardized terminologies, there is an important relationship between data quality and documentation effort. The convergence of clinical care, documentation, and coding in standardized terminologies are essential to improving national health outcomes and enhance clinical information exchanges among all members of the healthcare team including clinicians providing clinical care and services to a patient in the future.

Other standardized terminology value to Physicians and Nurses include: a) unambiguous interpretations of data in contrast to free text, b) shared business-focused approach to patient care delivery, c) minimal spontaneous data entry, d) access to congruent and consistent clinical care documentation; e) access to data on medical orders consumption of human resources i.e. correlation of order patterns to healthcare resources and costs; f) standard documentation of population health outcomes measure for prediction; g) atomic data element information for each patient-provider encounter; h) increased pace of data entry at the point of service, and i) supports consistent evaluation of the clinical efficacy of treatment models.

## VALUE OF STANDARDIZED TERMINOLOGIES TO PATIENTS

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Standardized terminologies while establishing consistency in clinical data provide value for patients including: a) less unstructured text or natural language to interpret, b) enables key concept electronic health record inquires and c) expedites knowledgebase responses to potential emergency situations.

## VALUE OF STANDARDIZED TERMINOLOGIES TO HEALTHCARE ORGANIZATIONS

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The American Recovery and Reinvestment Act (ARRA) established incentives to stimulate investments in health information management and technology (Health IM/IT) specifically Meaningful Use (MU). In MU legislation, standardized terminology intended to link clinical encounters together for individual patients over time (longitudinal patient data). The ONC recommended standardized terminologies to collect structured data elements at high-level of concept granularity for population health disease surveillance, bioterrorism, and medical specificity. The ONC established metrics and organization incentives for MU to achieve the cost, quality, and health improvement goals set forth by ARRA and advanced the national adoption of standardized terminologies by diverse clinicians, healthcare practices, and organizations<sup>8</sup>.

## RECOMMENDATION

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The collection of structured data elements at a high-level of concept granularity is a vital component of healthcare encounters. Nurses are legally responsible for a patient's care plan and documentation of a patient's progress toward planned healthcare outcomes or goals. A 2019 recommendation of this White Paper is for the inclusion of a nursing terminology standard, the Clinical Care Classification (CCC) System, in the ONC Interoperability Standards Advisory. The CCC System was developed with federal-funding in 1990-1992. The CCC System terminology structure is based on J.J. Cimino's (1989) description of twelve desiderata for the design of controlled healthcare vocabulary content. An ISA nursing terminology could contribute to the knowledge-based healthcare environment and accelerate the documentation of care for healthcare outcomes research. The value of standardized nursing terminology is an ability to collect comparable healthcare data to assess quality in healthcare delivery and provide insight into the essential clinical resources to achieve optimal outcomes.

## CONCLUSION

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Standardized terminologies accelerate the interoperability of health information by establishing clinical data congruency between systems, organizations, business, and management capabilities. The value of standardized terminologies in health interoperability includes consistent data for strategic and clinical decision-making and a return on investment in data consistency for the documentation of healthcare outcomes. Standardized terminologies allow the rapid retrieval of information; collect comparable data to assess the quality of health care and services and provide standardized data with which to assess the efficacy of treatment models.

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