



Defining Standardization in Healthcare

By: Samantha Zarzuela, Nicole Ruttan-Sims, Lisa Nagatakiya and Kevin DeMerchant

Introduction

Standardization is a hot topic in today's healthcare industry. Proclaimed as the most effective method of reducing supply costs for hospitals, standardization is said to promote quality patient care at a cost effective price. However, some clinical users are still resistant to standardization initiatives. Being that healthcare professionals strive to provide optimal patient care, their opposition indicates a lack of belief in the ability of standardization to positively impact patient outcomes. Thus, there is a disparity between hospital management and supplier interpretation of standardization and that of clinical end-users. Without a concrete definition or clear evidence of its impact on patient care, there is little hope of encouraging cooperation of standardization between these affected individuals. Using the data from our research, we are proposing a formal definition of standardization for the healthcare industry in order to unify the perception of all key stakeholders.

History of Standardization

The root of standardization comes from the word "standard" (Timmermans & Epstein, 2010). The concept of a "standard" can be traced as far back as the fifteenth century (Timmermans & Epstein, 2010), but it was not until the turn of the 20th century that it became a common term (Brunsson, Rasche, & Seidl, 2012). During this time standards were primarily used in industrial product design, providing a benchmark for the basic requirements of manufactured goods (Brunsson et al., 2012). As more industries developed, standards began to grow, encompassing a wider array of disciplines (Brunsson et al., 2012). By mid century, The International Organization of Standardization (ISO) was founded to develop and publish international standards. ISO promotes multidisciplinary standardization of products, services and practices, developed through global consensus (ISO, 2013).

According to ISO, a standard "provides requirements, specifications, guidelines or characteristics that can be used consistently to ensure that materials, products, processes and services are fit for their purpose" (2013). Standards are meant to regulate collective behavior by indicating the most appropriate action to achieve optimal results (Brunsson et al., 2012). In general, standards are lauded as aspirations for which to achieve (Timmermans & Epstein, 2010). Conversely, the perception of standardization, the process by which a standard is attained, is more derogatory in nature (Timmermans & Epstein, 2010). Standardization is often associated with the concept of sameness, suppression and/or uniformity (Timmermans & Epstein, 2010). In other words, standardization is thought to promote control and restraint of freedom (Timmermans & Epstein, 2010).

Despite the perceived dichotomy, standards and standardization are inherently intertwined; the existence of one implies the existence of the other (Timmermans & Epstein, 2010). So the question remains, why are standards held in such high regard, while standardization is so heavily criticized?

The problem can be traced back to the fact that standardization lacks a clear definition (Timmermans & Epstein, 2010). If you Google standardization, over 6 million results are found. A closer look shows many variant definitions. For example, the first result, coming from Princeton University's lexical database (2013), describes standardization as "the condition in which a standard has been successfully established". Next, Wikipedia (2013) states that standardization is "the process of developing and implementing technical standards". Furthermore, "to bring into conformity with a standard" is the definition provided by Merriam-Webster (2013). But little meaning or relevancy are borne from these definitions; their description of standardization remain vague.

The reason for this ambiguousness is attributed to the scope in which standardization is defined. Being a ubiquitous term, standardization lurks in the background of many disciplines, thus making it difficult to succinctly describe. Overarching definitions, like the ones above, only add to the misconception standardization. When these definitions use words like "condition", "implement" and "conformity", standardization's many negative connotations can be understood. These words are authoritative in nature; they imply control and suppression. What is missing from these definitions are the specifics of what is being controlled, what is being suppressed and why it is being done. These questions can only be answered when standardization is placed in a specific context. Thus, to find clarity in standardization, one must choose a particular discipline and specifically define the term within that domain.

While some disciplines have taken this knowledge to heart, providing clear and concise definitions for standardization within their contexts, other disciplines have failed to follow suit. In particular, the healthcare industry has yet to outline a set definition of standardization. This is curious since standardization is a popular buzzword among professionals in the field. When a term like standardization is used so freely in healthcare without a definition, individuals are left to interpret it's meaning in their own manner. Judging from the general understanding, this interpretation is mostly negative. It is no wonder, then, that there is a resistance to standardization by healthcare professionals. What is needed in the healthcare industry is a distinct definition of standardization, one that clearly describes its purpose and intent. In order to come to this definition, it is important to first understand the theory behind standardization and how it develops.

The Standardization Process

Standardization is a process that involves two phases: **generation** and **diffusion**. Generation is the initiation of standardization, where key stakeholders come together to outline the purpose and goals of the initiative. Diffusion is the dissemination of standardization among the affected individuals. These phases occur in recursive cycles where both feed off of and develop from one another (Botzem & Dobusch, 2012). According to Botzem and Dobusch (2012), “standardization should be understood as an organized and potentially infinite process”. Therefore, standardization should not be seen as an end-process, but as a cycle that oscillates between the phases of generation and diffusion (Botzem & Dobusch, 2012).

The driving force behind this cycle is legitimacy. Legitimacy gives authenticity to a standard. It is a necessary factor in promoting day-to-day adherence as well as long term compliance (Botzem & Dobusch, 2012). The more legitimacy a standard achieves, the better chances there are for standardization to take effect. There are two types of legitimacy: **input legitimacy** and **output legitimacy**. It is important to note that these legitimacies are not static, input legitimacy influences output legitimacy and vice versa (Botzem & Dobusch, 2012).

Input legitimacy is derived from the generation phase. When the individuals involved in creating a standardization initiative are experts in their field, input legitimacy is created (Botzem & Dobusch, 2012). When the individuals who are directly affected by standardization have the ability to participate in its creation, standardization is given more credibility in the eyes of potential adopters (Botzem & Dobusch, 2012).

Output legitimacy is derived from the diffusion phase. When the individuals who are subjected to standardization judge it to be effective in its goals, output legitimacy is created (Botzem & Dobusch, 2012). When the affected parties deem it desirable or proper, they will more willingly adhere to standardization, thereby lending it more influence (Botzem & Dobusch, 2012). This creates a feedback loop where high adoption of standardization contributes to positive output legitimacy, which then leads to long term success (Botzem & Dobusch, 2012).

Overall, the standard (re-)formation process is directly linked to the mutual dependence of the two phases of standardization (generation and diffusion), which in turn fosters distinct legitimacies (input legitimacy and output legitimacy) whose continual interactions contribute to the potentially endless cycle of standardization (Botzem & Dobusch, 2012).

Purpose of the Defining Standardization in Healthcare Study

Standardization is a varied concept that spans multiple domains. As previously outlined, it is the experts of these domains who shape the standardization process. With each domain containing different people, practices and theories, it is

impossible for standardization to be held to a single definition. Thus, standardization must be clearly defined in each domain. But most importantly, those individuals who have a vested interest in its outcome, that is, those who create and adopt said standards, must define standardization. For the healthcare industry, this means that hospital managers, suppliers, clinical users and patients must collaborate to derive a robust definition of standardization. The purpose of this study was to define standardization in the healthcare industry through consultation with the aforementioned key stakeholders.

Study Design

This study took a three-pronged approach consisting of a literature review, a survey and key stakeholder interviews. These occurred from May to August of 2013.

a) Literature Review

The literature review included a robust search of nursing databases such as CINAHL, Pubmed, Ovid (Medline and Embase), The Cochrane Library and Proquest Nursing & Allied Health Source. As well, business databases such as Business Source Complete, Proquest Business Collection and ABI/Inform Complete were consulted. Any material discussing standardization definitions, managerial and healthcare professional perceptions, and potential patient impact within the last 10 years were included. The main search terms included the MESH (Medical Subject Heading) terms “standardization”, “equipment and supplies”, “patient care”, “patient safety”. Furthermore, key text terms such as “healthcare products/equipment”, “patient outcomes” and “standards” (see Appendix A for a complete list of terms) were also referenced. Multiple searches were completed in each database to capture relevant literature (see Appendix B for individual search strategies). The themes arising from the literature were tracked and are outlined below.

b) Survey

The survey was based on the themes generated from the literature review. There was a strong focus on determining key stakeholder perception and definition of standardization. The survey consisted of 11 questions with clear choices and the opportunity to provide further details (see Appendix C for survey questions). The time demand for completing the survey was 5-10 minutes and the sample population consisted of clinical users and supply chain/standardization experts. A total of 75 surveys were returned. The strategy for recruitment included email and direct approach with a follow-up after one week in cases of non-response. Ranking the most frequent responses and consolidating any free text or expanded comments, the survey data was analyzed and is outlined below.

c) Interviews

Key stakeholder interviews were completed during the same timeframe as the survey, although the questions differed from that of the survey. Participants were contacted via email to take part in a 15 minute interview to gather their perspectives on standardization (see Appendix D for interview questions). There were three categories of participants: patients, clinicians and suppliers. Each

category included 10 participants, making a total of 30 interviews. Those chosen for the clinician and supplier interviews were also invited to participate in the survey. Common themes from each of the three participant classes were identified and are outlined below.

Study Results

The literature review, survey and interviews were completed in July and August of 2013.

a) Literature Review Findings

According to the Canadian Institute for Health Information (CIHI), total health expenditure has greatly escalated over the past twelve years (2012). In Canada, health spending has more than doubled from 2000 to 2012, going from \$98.5 billion to estimated \$207 billion (CIHI, 2012). Hospitals represent the largest cost component of national healthcare, encompassing approximately 29.2% of the total healthcare expenditure, which is equivalent to around \$62 billion (National Health Expenditure Database, 2005). Medical and non-medical supplies make up 31% of these hospital costs (Montgomery & Schneller, 2007). As the price of healthcare products continues to rise, hospital administrators have turned to standardization to reduce expenditures by regulating medical devices and negotiating procurement and contracting agreements to obtain competitive pricing from suppliers (Montgomery & Schneller, 2007).

The impact of standardization on an individual differs from person to person. This may be a result of how the affected individual perceives standardization. Without a clear definition of the term in healthcare, both negative and positive connotations are associated with standardization, and it is important to understand where they come from and why they exist. The rational next step is to examine the various perspectives in healthcare.

Supplier Perspective

Suppliers see standardization as a logical method of cost reduction (Neil, 2005). Focusing on profitability and the ability to meet customer needs (McKone-Sweet et al, 2005), suppliers view standardization as a critical tool for increasing revenue (Neil, 2005). According to the literature, suppliers lack clinical insight, thus they have difficulty looking beyond the financial implications of standardization to its potential patient impact (Neil, 2005). Due to the nature of their profession, for suppliers, standardization is more about business and less about patient care (Neil, 2005).

Hospital Management Perspective

Hospital management sees standardization as a means of efficiency associated with an “overall good” (Ellingsen, 2004). From their perspective, standardization promotes timeliness and reduces disparity in care (Kurtin & Stucky, 2009). Assessing every process that could lead to a mistake is crucial, that is why standardization is ideal in preventing errors. Standardization limits possibilities for

errors to occur, significantly reducing patient risk (Rodkin, 2007). Healthcare managers believe that standardization fosters an environment of quality patient care by creating a workplace that is resilient to inevitable human error with the benefit of reduced expenditure (Clarke, 2007).

Physician Perspective

Physicians see standardization as a means of control (Ellingsen, 2004). Due to the autonomous nature of their profession, it is difficult for physicians to accept standardization, especially when it goes against their own interests (Ellingsen, 2004). Physicians do not feel comfortable adopting a standardization initiative unless there is transparent evidence of the impact it has on patient outcomes (Kurtin & Stucky, 2009).

Nurse Perspective

Nurses see standardization as means of saving time (Rodkin, 2007). Lack of hours spent providing actual nursing care is a common complaint amongst nurses (Rodkin, 2007). Standardization removes variation of medical supplies so that less time is spent hunting for proper equipment or replacing inadequate medical materials, and more time is spent with patients (Rodkin, 2007). Job satisfaction improves when nurses are able to do the job for which they were trained (Rodkin, 2007). Increased job satisfaction of nurses improves their job performance and thus has a positive effect on patient care (Rodkin, 2007).

Patient Perspective

Patients have a different perspective of standardization. Without direct consultation, patients are made to bear the impact of standardization as it affects their quality of care (Kurtin & Stucky, 2009). Patients' perception of quality of care can influence their overall health outcomes (Reeves et al., 2008). Patients who have positive care experiences are more likely to have positive clinical outcomes correlated with compliance to medical orders (Reeves et al., 2008). This is translated into lower re-admission rates (Reeves et al., 2008). For patients, quality care means "good service", "attentive care", "friendly/caring staff" and "customer service". Therefore patients focus more on the manner in which they are treated and not the methods which are used to treat them (Reeves et al., 2008). This suggests that the effect of standardization on the practice and demeanor of clinical users can directly affect patient care outcomes.

Survey and Interview Findings

The data gathered from the survey and interview findings provide a more in depth understanding of standardization. The first hand perspective of key stakeholders varies from the findings in the literature review.

Supplier Perspective

Although the suppliers maintain that standardization focuses on cost savings, they also recognize the importance of patient care outcomes. Survey data shows that 84% of suppliers believe cost savings is the main component of standardization.

However, of those suppliers, 79% indicated that patient safety is another significant objective of standardization. Interview responses find that, for suppliers, standardization represents choosing the best product to suit a hospital's needs. According to suppliers, standardization is an asset to clinicians since, when given proper education, these products drive efficiency and familiarity in clinical practice, leading to an improvement in patient care. Having been aware of their lack of clinical insight, many suppliers find that input from clinicians is the most useful strategy when implementing standardization initiatives. This is attributed to the fact that clinicians can share first hand experiences with products and outline any concerns they may have. All of the interviewed suppliers specify that without clinician collaboration, communication and buy-in, standardization initiatives are unsuccessful.

Hospital Management Perspective

For hospital management, standardization represents efficiency in the workplace. From the survey, 100% of management appoints efficiency as the main benefit of standardization. Since standardization decreases variation, management believes that staff can be thoroughly trained in using specific key products, resulting in less misunderstanding when providing care. However, they acknowledge that there is a limit to standardization. Interviews reveal that while management appreciates the efficiency, time savings and cost savings, they understand that standardization should focus on clinical appropriateness in order to maintain quality patient care. They recognize that when clinicians feel a product is inadequate, it affects the success of their practice and negatively impacts patient care. Healthcare management believes that efficiency needs to be balanced with product quality in order to reap the benefits of standardization.

Physician Perspective

As indicated in the literature review, other parties target physicians as the main opponent to standardization. Interviews show that 96% of clinicians (including physicians) and suppliers recognize that physicians are unsupportive of standardization. However, interviews also show that despite physicians' inclination towards certain products, they are willing to standardize if the initiatives are well supported in evidence-based practice. Physicians indicate that, at times, they feel as if standardization is being thrust down their throat without appropriate rationale. Therefore, much like in the literature, when standardization initiatives are well planned and are implemented in a way that presents clear justification for the proposed changes (i.e. improved patient outcomes), physicians are more likely to be supportive.

Nurse Perspective

Nurses find that standardization is about cost savings first, efficiency second and patient safety last. From the survey, 93% point to cost savings as the driving force behind standardization, 85% find efficiency to be an important factor and only 50% indicate that patient safety plays a role in standardization. Although nurses understand the benefit of standardization from a savings perspective, both in

dollars and in time, they do not always believe that it is done for the benefit of the patient. From the interviews, nurses indicate that standardization is only beneficial when it takes into account cost along with quality. Some nurses find that better quality products are passed up in favour of their cheaper counterparts. The benefit of the cost saved from this type of standardization is counteracted when the standardized product is inadequate. Furthermore, the efficiency of practice is lost when it requires twice the amount of time to perform a single procedure using an inferior product. However, nurses find that when implemented with the right reasons in mind, standardization makes clinical practice more consistent and less complex. To ensure that standardization is completed in a responsible manner, nurses want more of a voice in the standardization process.

Patient Perspective

Patients have faith that standardization is done for their benefit. Interviews find that although 90% of patients indicate that hospital management as the main supporter of standardization, 70% believed that clinicians are predominate supporters as well. Most patients trust that hospitals do not standardize to sub-quality products that could compromise their care. As a result, they indicate that clinicians should be the most vested parties involved in standardization since their practice is that which is most affected by standardization. For the most part, patients are unaware of the way standardization impacts their care while in the hospital, but upon further reflection, 20% indicate that the use of familiar products from one floor to another was comforting to them. On the other hand, 10% find that certain products were lacking during their care, as a result they had to make do with replacements that were not meant for their situation. Another 20% indicate that nurses who seemed “frazzled” or “rushed” were usually in search of products and short on time, situations they relate to lack of product standardization. In general, patients agreed that standardization is appropriate when it benefits the majority of the population, without compromising care.

Discussion

The ultimate goal of standardization is the same among key stakeholders: to provide better patient care. Although suppliers and hospital management are thought to focus on the cost savings and efficiency aspects of standardization, they actually strive to promote patient safety, along with clinicians. Patients have difficulty seeing the effects of standardization on their care, but find it beneficial for both themselves and their clinicians.

The process of standardization is important to consider when implementing an initiative. Buy-in from key stakeholders in the generation phase is necessary to achieve success. Suppliers find that clinician support provides input legitimacy and lends credibility to their initiative. When standardization is disseminated in the diffusion phase, clinicians who feel that they have a voice in the process are more likely to support the initiative, providing output legitimacy.

Standardization that emerges from practice is more meaningful to healthcare professionals than standardization for its own sake. Outlining the goal of standardization in a way that is purposeful to healthcare professionals will aid in the adoption of an initiative. Ideally, promoting patient safety as the ultimate goal provides the most positive feedback. Since limitation of resources requires that healthcare professionals alter their practice to adhere to supply availability, products must be heavily scrutinized for equivalency to past products so as not to compromise patient care. The restriction of products must also be shown to have no negative impact on patient safety.

Conclusion

Standardization is a misunderstood term in the healthcare industry. With hospital budgets getting tighter, standardization is ideal for operating under cost constraints. But the negativity associated with the term makes it difficult for suppliers and hospital management to promote standardization to clinical end users.

However, misunderstandings may be cleared up. Findings from the literature review, survey, and interviews have indicated that standardization is not an inherently negative term; it is simply misunderstood. To unify the healthcare industry in their understanding of standardization, we propose the following definition to best describe it's meaning:

Standardization is the process by which healthcare products/services are chosen by a committee of key stakeholders, taking into account evidence-based results, to ensure quality patient care while adhering to fiscal responsibility.

Future Research

There is potential for further research in follow up studies of standardization initiatives. Studies to determine the level of continual adherence to standardization and the process of recursive phases (the re-evaluation and re-formation of standards based on legitimacy) may provide greater insight into the flow of standardization initiatives. There is also a lack of literature on the nurse perspective of standardization in comparison to physician perspective studies. Further research on how standardization affects nurses as frontline end-users is required.

References

- Botzem, S. & Dobusch, L. (2012). Standardization cycles: A process perspective on the formation and diffusion of transnational standards. *Organization Studies*, 33(5/6), 737-762.
- Brown, M. M., & Brown, G. C. (2013). Update on value-based medicine. *Current Opinion in Ophthalmology*, 24(3), 183-189.
- Brunsson, N., Rasche, A., & Seidl, D. (2012). The dynamics of standardization: Three perspectives on standards in organization studies. *Organization Studies*, 33(5/6), 613-632.
- Clarke, J. R., Lerner, J. C., & Marella, W. (2007). The role for leaders of health care organizations in patient safety. *American Journal of Medical Quality*, 22(5), 311-318
- Canadian Institute for Health Information (2012). Canada's health care spending growth slows. In *Canadian Institute for Health Information*. Retrieved September 26, 2013, from http://www.cihi.ca/CIHI-ext-portal/internet/en/Document/spending+and+health+workforce/spending/RELEASE_30OCT12
- Ellingsen, G. (2004). Tightrope walking: Standardisation meets local work practice in a hospital. *International Journal of IT Standards and Standardization Research*, 2(1), 1-22.
- International Organization for Standardization (2013). About ISO. In *ISO*. Retrieved July 10, 2013, from <http://www.iso.org/iso/home/about.htm>.
- Kurtin, P., & Stucky, E. (2009). Standardize to excellence: Improving the quality and safety of care with clinical pathways. *Pediatric Clinic of North America*, 56, 893-904.
- McKone-Sweet, K.E., Hamilton, P. & Willis, S.B. (2005). The ailing healthcare supply chain: A prescription for change. *The Journal of Supply Chain Management*, 41(1), 4-17.
- Montgomery, K. & Schneller, E. S. (2007). Hospitals' strategies for orchestrating selection of physician preference items. *The Milbank Quarterly*, 85(2), 307-335.
- National Health Expenditure Database (2005). Hospital Trends in Canada – Results of a Project to Create a Historical Series of Statistical and Financial Data for Canadian Hospitals over Twenty-Seven Years. In *Canadian Institute for*

- Health Information*. Retrieved September 26, 2013, from https://secure.cihi.ca/free_products/Hospital_Trends_in_Canada_e.pdf
- Neil, R. (2005). Taking control of supply spending. *Hospital & Health Networks*, 79.6, 44-6, 48-50.
- Obremsky, W. T., Dail, T., & Jahangir, A. A. (2012). Value-based purchasing of medical devices. *Clinical Orthopedics and Related Research*, 470, 1054-1064.
- Reeves, J., Binder, J., & Gnida, J. C. (2008). More is not necessarily better. *Marketing Health Services*, 28(4), 24-29.
- Rodkin, S. (2007). Purchasing for safety: Standardization in intravenous equipment. *British Journal of Nursing*, 16(19), 1186-1190.
- Standardization. (2013, June 19). In *Wikipedia, The Free Encyclopedia*. Retrieved July 19, 2013, from <http://en.wikipedia.org/w/index.php?title=Standardization&oldid=56067219>
- Standardization. (2013). In *WordNet*. Retrieved July 19, 2013 from, <http://wordnetweb.princeton.edu/perl/webwn?s=standardization>
- Standardize. (2013). In *Merriam-Webster.com*. Retrieved July 19, 2013, from <http://www.merriam-webster.com/dictionary/standardization>
- Timmermans, S. & Epstein, S. (2010). A world of standards but not a standard world: Towards a sociology of standards and standardization. *Annual Review of Sociology*, 36, 69-89.

APPENDIX A
Literature Search Terms

Mesh Terms:

- Equipment and Supplies [Standards, Economics, Supplies and Distribution]
- Materials Management, Hospital [Economics, Organization and Administration, Methods]
- Quality Control
- Consumer Product Safety
- Patient Care
- Quality of Healthcare
- Healthcare Quality, Access and Evaluation
- Outcome Assessment (Healthcare)
- Medical Errors [Prevention and Control]
- Comparative Effectiveness Research
- Risk Management [Methods, Organization and Administration]
- Health Services Research
- Treatment Outcome
- Medical Staff, Hospital [Organization and Administration]
- Hospital Administration
- Health Services Administration
- Healthcare Facilities, Manpower and Services
- Interdisciplinary Communication
- Decision Making, Organizational
- Purchasing, Hospital
- Hospital Shared Services
- Healthcare Economics and Organizations
- Cost Effectiveness
- Value Based Purchasing
- Reference Standards (i.e. Standardization)

Text Terms:

- Healthcare or “Healthcare” NEAR Device or Suppl* or Equipment or Product
- Patient or Clinical NEAR Care or Impact or Outcome or Safe* or Result* or Satisf* or ‘Risk Factor’ or Assessment
- “Value Analysis Team”
- “Shared Service Organization”

- “Supply Chain”
- “Group Purchasing Organization”
- Procurement
- “Lean Methodology”
- Cost NEAR Effective
- Standardization
- Standardization NEAR “Health Care” or Healthcare or Device or Supplier or Equipment or Product

APPENDIX B
Research Methodology

1. The initial search:

- a. STANDARDIZATION or Standardi?ation or Standardi*
- b. EQUIPMENT AND SUPPLIES or ((Medical or Healthcare or “Health Care”) NEAR (Equipment or Suppl* or Device* or Product*))
- c. PATIENT CARE or QUALITY OF CARE or PATIENT SAFETY ((Patient or Clinical or Treatment) NEAR (Care or Impact or Outcome or Safe* or Satisf* or Result or “Risk Factor”))

2. The administratively-focused search:

- a. STANDARDIZATION or Standardi?ation or Standardi*
- b. EQUIPMENT AND SUPPLIES or ((Medical or Healthcare or “Health Care”) NEAR (Equipment or Suppl* or Device* or Product*))
- c. PATIENT CARE or QUALITY OF CARE or PATIENT SAFETY ((Patient or Clinical or Treatment) NEAR (Care or Impact or Outcome or Safe* or Satisf* or Result or “Risk Factor”))
- d. HOSPITAL or MEDICAL STAFF, HOSPITAL or *HOSPITAL ADMINISTRATION* or HEALTH SERVICES ADMINISTRATION or *HEALTHCARE FACILITIES, MANPOWER AND SERVICES* or ((Supply NEAR Chain) or (Procurement) or (Shared NEAR Service) or (Group NEAR Purchasing))

3. The patient care-focused search:

- a. STANDARDIZATION or Standardi?ation or Standardi*
- b. EQUIPMENT AND SUPPLIES or ((Medical or Healthcare or “Health Care”) NEAR (Equipment or Suppl* or Device* or Product*))
- c. PATIENT CARE or QUALITY OF CARE or QUALITY CONTROL or CONSUMER PRODUCT SAFTEY or PATIENT SAFETY or OUTCOME ASSESSMENT or TREATMENT OUTCOME or HEALTH CARE QUALITY ACCESS AND EVALUATION or ((Patient or Clinical or Treatment) NEAR (Care or Impact or Outcome or Safe* or Satisf* or Result or Prefer*) or (Clinically NEAR Sensitive))
- d. HOSPITAL or RISK MANAGEMENT or RISK ASSESSMENT or COMPARATIVE EFFECTIVENESS RESEARCH or CLINICAL PROTOCOLS or (Risk NEAR Management or Assessment)

4. The cost analysis-focused search:

- a. STANDARDIZATION or Standardi?ation or Standardi*

- b. EQUIPMENT AND SUPPLIES or MATERIALS MANAGEMENT, HOSPITAL or ((Medical or Healthcare or “Health Care”) NEAR (Equipment or Suppl* or Device* or Product*))
- c. PATIENT CARE or QUALITY OF CARE or PATIENT SAFETY or ((Patient or Clinical or Treatment) NEAR (Care or Impact or Outcome or Safe* or Satisf* or Result))
- d. HEALTHCARE ECONOMICS AND ORGANIZATION or HEALTH SERVICES ADMINISTRATION or COST EFFECTIVENESS or COST BENEFIT ANALYSIS or PURCHASING or COST SAVINGS or ((Cost NEAR Effect* or Sav*) or (Value NEAR Analysis) or (Supply NEAR Chain) or (Procurement) or (Shared NEAR Service) or (Group NEAR Purchasing))

5. The purchasing focused search:

- a. STANDARDIZATION or Standardi?ation or Standardi*
- b. PRODUCT ACQUISITION [Standards] or QUALITY MANAGEMENT, ORGANIZATIONAL [Methods] or ((Product NEAR Acquisition or Choice) or (Quality NEAR Management or Assurance) or (Procurement) or (Competitive NEAR Process))

6. The barriers against standardization search:

- a. STANDARDIZATION or Standardi?ation or Standardi*
- b. EQUIPMENT AND SUPPLIES or ((Medical or Healthcare or “Health Care”) NEAR (Equipment or Suppl* or Device* or Product* or Risk Factor))
- c. ADVERSE HEALTH CARE EFFECTS or RISK MANAGEMENT or ((Barriers NEAR Against)) or (Clinic* NEAR Prefer* or Choice) or (Resource* or Limitation) or (Resource* NEAR Limitation))
- d. *PATIENT CARE or QUALITY OF CARE or PATIENT SAFETY or ((Patient or Clinical or Treatment) NEAR (Care or Impact or Outcome or Safe* or Satisf* or Result))*

7. The advantages of standardization search:

- a. STANDARDIZATION or Standardi?ation or Standardi*
- b. ORGANIZATIONAL EFFICIENCY or Advantage*
- c. HOSPITALS or ORGANIZATIONAL EFFICENCY [Economics- Major] or HUMANS or ((“Health Care” or Healthcare) or (Hospital*) or (Quality NEAR Care))
- d. Supply Chain Management or Purchasing
- e. EQUIPMENT AND SUPPLIES [Economics- Major] or ((Medical or Healthcare or “Health Care”) NEAR (Equipment or Suppl* or Device* or Product*))

8. The healthcare definition of standardization search:

- a. STANDARDIZATION or Standardi?ation or Standardi*

- b. HOSPITAL or HEALTH CARE or ((Healthcare or “Health Care” or Hospital or (Healthcare or “Health Care” NEAR Environment or Setting*) or (Clinic* or Hospital) or (Clinical NEAR User))
- c. Defin* or Concept or Understand* or Implica* or Mean* or Context* or Value or Pract*])

9. The business database search:

- a. STANDARDIZATION or Standardi?ation or Standardi*
- b. Medical equipment
- c. Quality of care or Safety Management or Medical Errors or Health Care Delivery [major] or Safety or Health Care Administration or Patient* or Human Factors or Patient Safety
- d. Equipment purchasing or Purchasing or Supply Chain Management

APPENDIX C
Survey Questions

My field of employment is:

- Materials Management
- Hospital based Purchasing Dept.
- Supplier
- Consultant
- GPO
- SSO
- Clinician based in a purchasing Dept.
- Physician
- Nurse
- Other: _____

I have a clear understanding of what standardization means in the health care environment:

- Yes
- No
- Other: _____

I have a clear understanding of who creates and implements each product standardization initiative:

- Yes
- No
- Other: _____

I believe that the members of Standardization Committees/Value Analysis Teams properly represent their fields of expertise:

- Yes
- No
- Other: _____

I have the ability to participate in the creation and implementation of standardization initiatives that relate to my field of expertise:

- Yes
- No
- Other: _____

I feel that I am given appropriate rationale to support a standardization initiative before its implementation:

- Yes
- No
- Other: _____

I am able to provide feedback on standardization initiatives that I have participated in:

- Yes
- No
- Other: _____

I believe that the development of standardization initiatives is (choose all that apply):

- | | |
|---------------------|------------------|
| • Inclusive | • Exclusive |
| • Multidisciplinary | • Single Partied |
| • Collaborative | • Uncoordinated |
| • Credible | • Unreliable |
| • Transparent | • Unclear |

In my opinion, standardization represents (choose all that apply):

- Control
- Efficiency
- Time Savings
- Cost Savings
- Minimization of errors
- Patient safety
- Other: _____

Product/Process/Equipment standardization efforts in my organization are reflected by one or more of the following (choose all that apply):

- Formal standardization process(es)/policy(ies)
- Standardization Committee(s)
- Standardization Expert(s)
- A culture that supports standardization
- Other: _____

In my opinion, the main goal of standardization is to promote:

APPENDIX D
Interview Questions

Patient Questions

1. Have you ever heard of the term “standardization”?

Yes

1. Please describe your understanding of the term
 - a. In what context have you heard the term being used?
 - b. How would describe its meaning?

No

Description

Standardization comes from the word standards. A standard is an ideal target for which to strive for. Standardization is the process of meeting that target.

Example 1: McDonald’s

- McDonald’s hamburgers taste the same no matter which location you go to. They taste the same in Hamilton as in Toronto as in New York as in Hong Kong
- This is because McDonald’s has set certain standards that all their products must meet
- They have a 600 page training manual that provides clear and detailed descriptions of these standards, which include where the sauce should be spread on the bun or how thick every piece of pickle should be
- McDonald’s has taken these standards and implemented them globally at all of their chain locations, thus “standardizing” their products
- As a result of their standardization, McDonald’s food is guaranteed to have the same quality and taste worldwide

Does that clarify the term? Yes/**No**

Example 2: Ford Company

- Henry Ford used standardization to make automobiles in the early 1900’s
- Ford created a standard car, the “Model T”
- Ford standardized the production of the “Model T” and future cars by using identical parts to manufacture each vehicle

- He also creating an assembly line to put together each car where workers carried out the same, single operation along a conveyor belt ensuring the production of the exact same car each time

Standardization Questions

2. Now that you understand standardization, what are your thoughts on the subject?
 - a. How do you think standardization can be beneficial? How is it a positive concept?
 - b. How do you think standardization can be detrimental? How is it a negative concept?
 - c. Why do you think organizations would want to standardize their products or processes?
 - d. What effects do you think this standardization has on the consumer/end-user?

Healthcare Industry Questions

3. How do you think standardization can be applied to the healthcare industry?
 - a. What do you think it means to standardize in healthcare?
4. What are your thoughts about product standardization in the healthcare industry?
 - a. Why do you think healthcare products would need to be standardized?
 - b. Who do you think would push for standardization?
 - c. Who do you think would be affected by product standardization (hospital management/physicians/nurses/patients)?
 - d. How are they affected by standardization?
5. From your experience as a patient, how do you think that you have been affected by standardization of *healthcare products*?
 - a. Did the impact of standardization on your physicians impact your care?
 - b. Did the impact of standardization on your nurses impact your care?
 - c. Was your care improved by standardization?
 - d. Was your care compromised by standardization?
 - e. Did you not notice any impact at all?
6. In general, do you believe that standardization of healthcare products is good or bad for patients? Why?
7. In one sentence, can you describe the purpose of standardization in the healthcare industry?

Supplier/Clinician Questions

2. Have you ever heard of the term “Standardization”?

Yes

3. Please describe your understanding of the term
- In what context have you heard the term being used?
 - How would describe its meaning?

No

Description

Standardization comes from the word standards. A standard is an ideal target for which to strive for. Standardization is the process of meeting that target.

Example 1: McDonald’s

- McDonald’s hamburgers taste the same no matter which location you go to. They taste the same in Hamilton as in Toronto as in New York as in Hong Kong
- This is because McDonald’s has set certain standards that all their products must meet
- They have a 600 page training manual that provides clear and detailed descriptions of these standards, which include where the sauce should be spread on the bun or how thick every piece of pickle should be
- McDonald’s has taken these standards and implemented them globally at all of their chain locations, thus “standardizing” their products
- As a result of their standardization, McDonald’s food is has the same quality and taste worldwide

Does this clarify the term? Yes/**No**

Example 2: Ford Company

- Henry Ford used the concept of standardization to make automobiles in the early 1900’s
- Ford created a standard car, the “Model T”
- Ford standardized the production of the “Model T” and future cars by using identical parts to manufacture each vehicle
- He also creating an assembly line to put together each car where workers carried out the same, single operation along a conveyor belt ensuring the production of the exact same car each time

Standardization Questions

4. Now that you understand standardization, what are your thoughts on the subject?
- How do you think standardization can be beneficial? How is it a positive concept?
 - How do you think standardization can be detrimental? How is it a negative concept?

- c. Why do you think organizations would want to standardize their products or processes?
- d. What effects do you think this standardization has on the consumer/end-user?

5. Have you ever encountered standardization in your organization? Yes/No

Personal Experience Questions

- 6. Can you think of a successful standardization experience in your organization?
 - a. What characteristics made it positive?
 - b. What tools/techniques were used to achieve success?
 - c. Do you know who was involved in the standardization process?
 - d. Do you know why those people were involved?
 - e. Who was impacted by this standardization? How?
 - f. Where you impacted by this standardization? How?
- 7. Can you think of an unsuccessful standardization experience in your organization?
 - a. What characteristics made it negative?
 - b. What tools/techniques were used that lead to its lack of success?
 - c. Do you know who was involved in the standardization process?
 - d. Do you know why those people were involved?
 - e. Who was impacted by this standardization? How?
 - f. Were you impacted by this standardization? How?

Healthcare Industry Questions

- 8. Using your previous experience with standardization, how do you think standardization can be applied to the healthcare industry?
 - a. What do you think it means to standardize in healthcare?
- 9. What are your thoughts about product standardization in the healthcare industry?
 - a. Why do you think healthcare products would need to be standardized?
 - b. Who do you think would push for standardization?
 - c. Who do you think would be affected by product standardization (hospital management/physicians/nurses/patients)?
 - d. How are they affected by standardization?
 - e. From your experience or in your opinion, is standardization beneficial or detrimental to patient care? Why?
- 10. How do you think that standardization can be achieved in the healthcare industry?
 - a. Do you think that changes must be made in process to achieve standardization?
 - b. What sorts of changes do you suggest?
 - c. Who do you think supports standardization in healthcare? Why?
 - d. Who do you think opposes standardization in healthcare? Why?
- 11. In one sentence, can you describe the purpose of standardization in the healthcare industry