Establishing a Local Cardiovascular Sonography Society

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Citation

Abstract
This project sought to discover the feasibility of and the steps required to establish a local cardiovascular sonography society in the Northeast Tennessee region. A local cardiovascular sonography society could facilitate the growth of the associated professions and provide continuing education and networking opportunities. Forty-six cardiology related professionals responded to the survey and provided input to determine if there is a sufficient demand for the local society and what steps must be in place in order for the society to succeed. Overall, the results demonstrated that eighty-three percent of the respondents to the locally developed survey would join the cardiovascular sonography society and the survey provided input as to what requirements are needed for their participation.

INTRODUCTION
Echocardiography is a specialized field of ultrasound medicine that has become increasingly expansive in terms of the number of exams ordered (Teixeira, O., personal communication, March 1, 2010). According to Ward (2009) “diagnostic imaging services reimbursed under Medicare’s physician fee schedule have grown more rapidly than any other type of physician service” (p. 60). Included in this category of diagnostic imaging are services such as echocardiography, vascular sonography, and computed tomographic scanning. Echocardiography accounted for “57% of Medicare expenditures for all cardiac imaging in 1999, decreasing to 48% in 2004” (Ward, 2009, p.60). This is a substantial number of diagnostic tests for one category and may explain why the demand for education within the echocardiography realm is very significant.

The training and education for both physicians and technologists is technical in nature and continues throughout their careers and local professional organizations (imaging societies) often provide access to such training. According to Garcia (2010), the purpose of local imaging societies is to provide specialty education, networking, and leadership to a broader range of imaging professionals. Rigling (2007) wrote that “we attend local society meetings to socialize and share common professional issues but the primary reason for attending the local society meetings is education” (p. 24A).

LITERATURE REVIEW

PROFESSIONAL ORGANIZATIONS
There is no definitive date or time period in which professional organizations rose to prominence but we do know that they exist in numerous forms. Many organizations, including professional organizations, use different methods to shape the structure and direction of their business. The National Council on Public History (NCPH) uses a blend of by-laws, codes of ethics and professional conduct, and a long range plan in order to manipulate the outcome of their professional organization. Within the NCPH’s long range plan, they have set in motion goals and objectives that will set the course of their organization for the future and success depends upon “the implementation of those plans” (National Council on Public History, 2010, para. 2).

The practices of professional organizations are defined by their mission and vision statements. According to the Center for Business Planning (n.d.), a mission statement “…should be a clear and succinct representation of the enterprise’s purpose for existence” (para. 1). For example, the mission statement for the Society of Vascular Ultrasound (SVU) (n.d.) is “To represent the best interest of SVU members and promote quality vascular ultrasound services by providing educational, scientific, and literary activities to our members, patients, and the public” (para. 1). A vision statement, such as the one illustrated by the Mountain States Health Alliance (n.d.), describes their organization as one where “We passionately pursue healing of the mind, body and spirit as
we create a world-class healthcare system” (para. 2). A vision statement is important because it “captures the long-term picture of what the organization wants to become” (California Office of Systems Integration, n.d., para. 5).

In addition to the mission statement, the professional organization’s code of ethics guides members. A code of ethics, or situational ethics, is defined as “a system of ethics by which acts are judged within their contexts instead of by categorical principles” (Merriam-Webster’s Collegiate Dictionary, 2007). The Society for Vascular Ultrasound (2006) wrote that their code of ethics “is intended to set forth and promote the highest guidelines of professional and moral conduct among its members” (para. 2). Another example is that of the Society for Professional Journalists. That organization listed their codes of ethics as to seek the truth and report it, minimize harm, act independently, and be accountable. This information directly assists the formation of the society proposed in this capstone project by defining what its intentions are and how they will serve its clients and the public.

Ethical codes serve as guidelines for a professional organization; however, by-laws dictate their boundaries. The Ohio State University (n.d.) further defined by-laws by “Outlining the scope and boundaries gives the organization an arena in which to operate that can be expanded or reduced as the needs of the organization change” (para. 9). Furthermore, The Ohio State University document answered the questions of who, what, where, when, why, and how? To facilitate this illustration, an example from the American College of Cardiology (ACC) will be used. To answer the question of who, the ACC defines their membership under Article Two which lists practitioners including Fellows and Administrators. Why is described by the ACC’s objectives in Article One which outlines their mission as “…to advocate for quality care – through education, research promotion, development and application of standards and guidelines – and to influence health care policy” (2007, para. 1). Where falls under the umbrella of Article Seven, meetings, in which they detail the locations and facilities where business will be conducted. When also is categorized as part of the meetings section in Article Seven and gives the example as annually or whenever deemed necessary by the Board of Trustees. The question of what is located within Article Two and its membership section and expresses the ACC’s contingency as cardiology related professionals or professionals with an interest in cardiology. Finally, how manifests itself in the remainder of the document by detailing such items as ethics and discipline, parliamentary procedures, committees, roles, and dissolution.

As professional organizations continue to evolve, so do their structure and design. Campbell and Goold (2002) said “Organizational structures rarely result from systematic, methodical planning. Rather, they evolve over time, in fits and starts, shaped more by politics than by policies” (p. 117). When focusing particularly on cardiovascular sonography, getting the right fit is essential. To ensure that any society or professional organization will succeed, it is important to test the design of the organization to see if it fits the company’s market strategy. For instance, would a cardiovascular sonography society fit into the market of cardiovascular sonography and/or cardiology in general? Campbell and Goold (2002) described a second point in an article concerning structure and design and discussed whether “…enough attention to each market segment” (p. 117) was given. When analyzing a potential cardiovascular sonography society, enough attention must be focused on each specific piece of material used for presentations and conferences to ensure that no party or person is excluded. According to Campbell and Goold (2002), this can be a fatal design or structure flaw; “You will need to evaluate such situations carefully, making judgments about whether the division of responsibilities will allow sufficient attention to be focused on the segment” (p. 117).

Local societies are prone to challenges that other professional organizations face. McNamara (n.d.) wrote about Founder’s Syndrome and stated “Developing this infrastructure often requires a change in the nature of the founder’s leadership from that of a highly reactive, individualistic style to a more proactive, consensus-oriented style” (para. 11). McNamara went on to describe Founder’s Syndrome by stating that “Many founders cannot make this transition. As a result, the organization remains managed, not in a manner that provides reliable services to customers, but according to the personality of the founder” (para. 11). This issue can be applied to the founding of a local cardiovascular sonography society.

The Business Improvement Architects (BIA) (n.d.) wrote about how organizations can tackle business challenges that confront analysts by acknowledging the issues they face. These issues are:

- Project changes are poorly managed
- Project does not address all stakeholder needs
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• Poor project management skills
• Test strategy not well defined
• Project not linked to organizational goals (para. 3).

This information is further outlined by the two bar graphs provided by the BIA:

**Figure 1**

Figure 1. What are the top 3 challenges your organization faces in managing your business requirements? Adapted from “How Organizations Can Tackle the Top 4 Business Challenges Facing Business Analysts,” by Unknown Author, n.d., para. 3

![Bar Graph](image1.png)

These two graphs demonstrate the challenges organizations face when managing projects and when managing the business’ requirements. The top three items that would benefit project management the most are training project sponsors, advanced project management skills, and leadership training. The top three challenges that organizations face when managing your business requirements are a lack of clarity in the scope of the business functions, business requirements are not well defined, and not bringing in business analysts in sufficient time. These graphs serve to support the arguments surrounding the complexity of professional organizations.

**NATIONAL CREDENTIALING ORGANIZATIONS**

The American Registry of Diagnostic Medical Sonographers (ARDMS) and Cardiovascular Credentialing International (CCI) are the two not-for-profit organizations that are responsible for national and international credentialing in both cardiac and vascular ultrasound. The ARDMS is “…the globally recognized standard of excellence in sonography and has certified more than 65,000 individuals” (ARDMS, n.d., para 3). They currently administer examinations and offer credentials in these following categories:

• RDMS – Registered Diagnostic Medical Sonographer
• RDCS – Registered Diagnostic Cardiac Sonographer
• RVT – Registered Vascular Technologist
• RPVI – Registered Physician in Vascular Interpretation

The ARDMS has published their mission statement as promoting “…quality care and patient safety through the certification and continuing competency of ultrasound professionals” (ARDMS, n.d., para. 1). The ARDMS has also earned accreditation for certifying bodies from the International Organization for Standardization, American National Standards Institute, and the National Commission for Certifying Agencies (ARDMS, n.d., para. 8).

CCI has the vision “To be the recognized credentialing organization for Cardiovascular Technology and emerging medical professionals” (CCI, n.d., para. 1). Their mission is “To be an innovative, cost-effective organization, driven by professional ethics and integrity, through the representation of the profession(s) in providing recognized high quality, competency-based examinations” (CCI, n.d., para. 2). CCI currently administers examinations and offers credentials in these categories:
CCT - Certified Cardiographic Technician
RCES - Registered Cardiac Electrophysiology Specialist
RCIS - Registered Cardiovascular Invasive Specialist
RCS - Registered Cardiac Sonographer
RVS - Registered Vascular Specialist
RCCS - Registered Congenital Cardiac Sonographer
RPhS - Registered Phlebology Sonographer
CRAT - Certified Rhythm Analysis Technician

CCI is governed by a Board of Trustees which is composed of cardiovascular professionals and members from the following Advisory Bodies: American College of Cardiology, American Society of Echocardiography, British Society of Echocardiography, Society of Invasive Cardiovascular Professionals and the Society for Vascular Ultrasound (CCI, n.d., para. 4).

Although there are two national and international credentialing bodies that exist for cardiovascular sonographers, there is not any state level licensing body that governs the credentialing of these same sonographers. Both cardiac and vascular sonographers are free to practice their trade either with or without any credentials until new legislation is produced that demands otherwise.

ECHOCARDIOGRAPHY

Once echocardiography became an easily achievable bedside exam, the technology continued to grow and offer technologists and physicians a multitude of diagnostic tools. The new wave of echocardiography offers tissue Doppler, contrast echocardiography, strain rate and imaging, and three-dimensional anatomical evaluation.

In order to perform this new age of stopping real-time echocardiography, there will be a need for sufficient training. An echocardiogram requires both a trained, licensed sonographer, and a physician. Typically, the sonographer performs the exam while the physician interprets the study. However, there are physicians who have also been trained to perform echocardiograms and do so routinely (Frickler, 2009).

ESTABLISHMENT OF A LOCAL CARDIOVASCULAR SONOGRAPHY SOCIETY

The Northeast Tennessee region is surrounded by the Appalachian Mountains and bordered by the states of Kentucky, Virginia and North Carolina. The U.S. Census Bureau (2008) estimated the Tri-Cities Tennessee/Virginia regional population to be 500,538. The region includes the cities of Bristol, Elizabethton, Greeneville, Kingsport, and Johnson City and is served by East Tennessee State University’s Quillen College of Medicine. This medical college boasts a selective cardiology program accepting only six Fellows each year (ETSU, n.d., para. 1). Secondly, East Tennessee State University also offers a Nurse Practitioner’s program which supplies the region with another resource for potential members for a local society. Locally, there is one Cardiovascular Sonography program offered by Northeast State Community College (NSCC, n.d.). Together, this university and community college offer the base of demand and potential participants to develop a local sonography society.

The Society for Vascular Ultrasound (2007) has outlined a series of guidelines and suggestions in order to establish a local society:

- “Assess need
- Organize the initial meeting
- Establish the Interim Officers
- Divide the necessary work into committees
- Create society by-laws
- Conduct the primary educational meeting
- Contact the IRS to file the society under a Tax-Exempt Status [501 (c)(3)], if applicable” (p. 6-7).

SUMMARY

With the advancements in the field echocardiography, a local society can become an avenue to gain input to increase professionalism and boost notoriety. Local chapters can be utilized by promoting cardiovascular education, providing a forum to discuss cardiovascular disease, and gain affiliation with the national American Society of Echocardiography. After reviewing the literature and various organizations that regulate echocardiography, it has become apparent that the relevance of echocardiography in the medical community has become increasingly important. Ciampi and Villari
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(2007) wrote about the vital role echocardiography plays, specifically in heart failure. “Echocardiography represents the “gold standard” in the assessment of LV systolic dysfunction and in the recognition of systolic heart failure, since dilatation of the LV results in alteration of intracardiac geometry and hemodynamics leading to increased morbidity and mortality” (para. 1). Although this may be only one parameter of echocardiography, it still displays the dependence and fundamentals this imaging modality can achieve. Thus, relating the importance of the echocardiography field of medicine to the on-going initiative to promote its education throughout Northeast Tennessee and the need for a local society.

STATEMENT OF THE PROBLEM
Currently, there is no local cardiovascular sonography society located within the Northeast Tennessee region. Geographically the closest local society is located in Asheville, North Carolina. The medical referral pattern found in the Tri-Cities Tennessee region includes patients from Northwestern North Carolina, Southwestern Virginia, and Southeastern Kentucky. The Northeast Tennessee region is home to multiple medical schools: East Tennessee State University, Virginia Tech Carilion School of Medicine, Edward Via Virginia College of Osteopathic Medicine, West Virginia School of Osteopathic Medicine, Pikeville College School of Osteopathic Medicine, and Lincoln Memorial University. This region also boasts numerous medical facilities of varying sizes and complexities. The Northeast Tennessee region is a medical referral center with an academic medical center, yet there is no local society for cardiovascular sonography. There may be sufficient demand for a local society.

METHOD
RESEARCH DESIGN
Although a survey was used to collect data, the resulting data were nominal in scale of measure. No purely quantitative data (interval or ratio) was gathered. This project’s focus was to determine if there is a demand for a local cardiovascular sonography society, does a population exist to support one, and how can this society succeed?

This project used nonprobability sampling including both a volunteer and convenience based survey. The volunteer based research design was chosen because the desired outcome is voluntary participation in the proposed society, rather than forced. Those who volunteer their input on the topic may be representative of those likely to attend a professional society. Secondly, the research design was convenience based (purposeful sampling) as well because attempts were made to contact all potential members for a local society negating the need for randomization.

POPULATION
The data was collected using an estimated population of two hundred cardiology related professionals. These professionals were targeted because of their direct contact with cardiovascular sonography. They were made up of cardiology related management personnel which included: nurses, technologists, physicians, fellows, residents, interns, nurse practitioners, and physician’s assistants. Their level of expertise ranged from the newly credentialed physician and technologist to the senior level practitioner with over thirty years of experience.

SURVEY INSTRUMENT DEVELOPMENT
Questions for the survey were developed to learn what requirements were deemed necessary by the participants for their participation in the local cardiovascular sonography society. This survey was limited by its geographical region and focus on cardiology related professionals. However, the survey was strengthened by the number of and narrow focus of the questions.

VALIDITY
The Northeast Tennessee region was chosen because of the two hundred estimated cardiology related professionals and the non-existence of a local cardiovascular sonography society. External validity lends itself particularly well to this project because it “is concerned with the ability to generalize the study results to other groups and settings beyond those in the current experiment” (Cottrell & McKenzie, 2005, p. 164). Gera et al. (2009) wrote that “…with health care expenditures for diagnostic imaging growing more rapidly than any other type of physician service” (p. 1375), it is clear that the impact on external groups, such as internal medicine, is profound, especially when “a recent study of Medicare beneficiaries between 1999 and 2004 demonstrated an annual growth rate in spending on echocardiography of 7.7%, consistent with the overall growth rate in medical services” (Chirinos et al., 2009, p. 55). This example demonstrates how echocardiography lends itself to external validity by detailing its importance beyond the boundaries of Cardiology and that echocardiography extends the management of patient care through to different modalities of healthcare such as Internal Medicine and Oncology. This project does not lend itself to
threats from internal validity.

DATA COLLECTION PROCEDURES
Data was collected using a survey that was administered to as many cardiology-related professionals as possible. Johnson City, Tennessee served as the focal point from which the surveys were distributed and the distribution area did not extend beyond a fifty five mile radius. The researcher administered the survey by facsimile, e-mail, and hand delivery with return of the completed surveys using the same methods. The survey’s participants were located by visiting the area’s hospitals, schools, and physicians’ offices.

DATA ANALYSIS PROCEDURES
The data was analyzed by totaling the number of surveys that were completed to evaluate the level of demand for a local cardiovascular sonography society in Northeast Tennessee. Once all the surveys were gathered and the data was tallied, if those responding affirmative to the survey’s final question reached a threshold of eighty percent, it was considered sufficient demand. Furthermore, the data analysis determined what steps/factors must be in place in order for a local society to succeed.

ANALYSIS OF THE DATA
RESPONDENTS
The respondents to the project’s data collection instrument included three targeted demographic groups: sonographers, physicians, and students. While N for this population was not known, the researcher estimated a population of 200 cardiology related professionals targeted to provide input for the project. The data was collected during a two-week period from March 14 until March 28 of 2011. Forty-six responses were received (23% of the estimated population). Of the forty-six respondents, 54% were sonographers, 28% were physicians, and 17% were students.

Research Question 1: To determine if there is a demand for a local cardiovascular sonography society. Data illustrates the demand for a local society in Northeast Tennessee. More specifically, 83% of the respondents expressed an interest in joining the local society once it is established (See Table 1).

Research Question 2: To determine if there is a significantly large enough population of medical professionals located within the Northeast Tennessee region that would support a local society?

The data indicates that 54% of the respondents were sonographers and of those responding, 74% had earned credentials either through the ARDMS, CCI, or both. The researcher was also determined that all the respondents were indeed cardiology related medical professionals who would have a direct interest in the project’s purpose (See Tables 2 and 3).

Research Question 3: The final research question asked, what steps must be in place in order for a local society to succeed? Data indicated that potential members preferred that meetings be held at least quarterly and at most monthly, on at least Thursday and at most Wednesday evenings, between the hours of 4 till 8pm, in Johnson City. Annual dues for the meetings were the preference of 65% of the respondents to be less than forty dollars (See Tables, 4, 5, 6, 7, and 8).

Respondents indicated they preferred multiple forms of presentation material integrated into the quarterly societal meetings (See Table 9). Fifty-seven percent of the respondents show they are willing to present material during the meeting’s proceedings (See Table 10).

Seventy-eight percent of the participants indicated that CMEs are mandatory for attendance and 52% of those respondents stated they would like to see more than 2 CMEs offered at each meeting (See Tables 11 and 12).

Lastly, data confirmed that 52% of the respondents would like some form of affiliation with either with the American Society of Echocardiography, the Society of Vascular Ultrasound, or both (See Table 13).

SUMMARY OF FINDINGS
LOCAL DEMAND
Data indicated that there is sufficient demand for establishing a local cardiovascular sonography in Northeast Tennessee. Unfortunately, the project did lend itself to the limitation of identifying and communicating with potential members of the local society. For example, non-cardiology related professionals were not approached about joining a local cardiovascular society. The intent was to gather interest from the people whom would be closely affiliated with the focus of the meeting’s material.

ORGANIZATIONAL STRUCTURE
In addition to establishing local demand and logistics, the establishment of a legal and structural framework must be developed. Prior to scheduling the initial meeting a constitution and by-laws must be developed. These documents should be established in consultation with
national organizations and with the assistance of other local sonography organizations.

**Figure 3**
Table 1 Percentage of respondents likely to join

<table>
<thead>
<tr>
<th>Likely to join?</th>
<th># of Respondents</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>38</td>
<td>82.61</td>
</tr>
<tr>
<td>No</td>
<td>8</td>
<td>17.39</td>
</tr>
</tbody>
</table>

**Figure 4**
Table 2 Types of cardiology related professionals

<table>
<thead>
<tr>
<th>Profession of Respondent</th>
<th># of Respondents</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sonographer</td>
<td>25</td>
<td>54.34</td>
</tr>
<tr>
<td>Physician</td>
<td>13</td>
<td>28.26</td>
</tr>
<tr>
<td>Student</td>
<td>8</td>
<td>17.39</td>
</tr>
</tbody>
</table>

**Figure 5**
Table 3 Percentage of respondents with one type of credential, both, or none

<table>
<thead>
<tr>
<th>Type of Credential</th>
<th># of Respondents</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARDMS</td>
<td>15</td>
<td>32.61</td>
</tr>
<tr>
<td>CCI</td>
<td>12</td>
<td>26.09</td>
</tr>
<tr>
<td>None</td>
<td>12</td>
<td>26.09</td>
</tr>
<tr>
<td>Both</td>
<td>7</td>
<td>15.22</td>
</tr>
</tbody>
</table>

**Figure 6**
Table 4 Recurrence of the society’s meetings

<table>
<thead>
<tr>
<th>Frequency of Meetings</th>
<th># of Respondents</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quarterly</td>
<td>15</td>
<td>32.61</td>
</tr>
<tr>
<td>Monthly</td>
<td>13</td>
<td>28.26</td>
</tr>
<tr>
<td>Every other month</td>
<td>12</td>
<td>26.09</td>
</tr>
<tr>
<td>Annually</td>
<td>6</td>
<td>13.04</td>
</tr>
</tbody>
</table>

**Figure 7**
Table 5 Day of the week meetings should be held

<table>
<thead>
<tr>
<th>Day of the Week</th>
<th># of Respondents</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thursday</td>
<td>10</td>
<td>21.74</td>
</tr>
<tr>
<td>Wednesday</td>
<td>9</td>
<td>19.57</td>
</tr>
<tr>
<td>Saturday</td>
<td>8</td>
<td>17.39</td>
</tr>
<tr>
<td>Tuesday</td>
<td>6</td>
<td>13.04</td>
</tr>
<tr>
<td>Friday</td>
<td>6</td>
<td>13.04</td>
</tr>
<tr>
<td>Monday</td>
<td>5</td>
<td>10.87</td>
</tr>
<tr>
<td>Sunday</td>
<td>2</td>
<td>4.35</td>
</tr>
</tbody>
</table>

**Figure 8**
Table 6 Time of the day meetings should be held

<table>
<thead>
<tr>
<th>Time Period of the Day</th>
<th># of Respondents</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-8pm</td>
<td>21</td>
<td>45.65</td>
</tr>
<tr>
<td>12-4pm</td>
<td>14</td>
<td>30.43</td>
</tr>
<tr>
<td>8am-12pm</td>
<td>11</td>
<td>23.91</td>
</tr>
</tbody>
</table>

**Figure 9**
Table 7 Location for society’s meetings

<table>
<thead>
<tr>
<th>Location for Meetings</th>
<th># of Respondents</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johnson City</td>
<td>24</td>
<td>52.17</td>
</tr>
<tr>
<td>Kingsport</td>
<td>12</td>
<td>26.09</td>
</tr>
<tr>
<td>Bristol</td>
<td>5</td>
<td>10.87</td>
</tr>
<tr>
<td>Elizabethon</td>
<td>5</td>
<td>10.87</td>
</tr>
</tbody>
</table>
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**CONCLUSIONS**

Four conclusions can be drawn from this study:

There is a sufficient demand for a local cardiovascular sonography society in Northeast Tennessee.

There exists a population of medical professionals that can support this local sonography society.

The proper steps have been outlined and detailed in order for the society to succeed.

The establishment of a local cardiovascular sonography society is feasible in Northeast Tennessee.

**RECOMMENDATIONS FOR FURTHER STUDY**

This project excluded medical professionals from the Asheville, North Carolina area. A data analysis should be made to investigate any potential interest from that area and to define that geographical location.

Non-cardiology related medical professionals were not approached for their interest into the local society. A measure of interest should be conducted on this broad group to obtain possible membership from this vast resource of professionals.

Once this project has become a society, its members should be surveyed to determine if the society is meeting its objectives.
References

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