Regional quality groups in the Society for Vascular Surgery® Vascular Quality Initiative

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The Society for Vascular Surgery Vascular Quality Initiative (SVS VQI) was launched in February 2011 and provides benchmarked reports of key quality measures for high-impact vascular procedures to drive regional quality assurance and quality improvement.1 The SVS VQI operates under the auspices of the SVS Patient Safety Organization (PSO), which allows participants to collect and analyze data for the purposes of quality improvement in a protected and confidential environment. The data are collected through Clinical Data Pathways, a web-based data collection and analysis system currently maintained by M2S, Inc, which has been contracted by the SVS. As of August 2012, there were 192 participating institutions (Fig) and 10 regional quality improvement groups participating in VQI across the United States, with at least eight additional groups in formation (Table). An updated list of regional quality groups can be found at the VQI website (http://www.vascularqualityinitiative.org/components/regional-quality-groups/current-groups).

RATIONALE FOR REGIONAL QUALITY GROUPS

National registries such as the SVS VQI provide a method for physicians and centers to collect and analyze process and outcome measures at a granular level and to benchmark these results with others. The resulting national dataset provides a powerful mechanism for risk adjustment and research, which require a large number of procedures to analyze. National registries have been used successfully by several medical societies,2-4 however, translating national data into quality improvement is not straightforward. Participants may not have a sense of engagement in the quality improvement process because they do not directly participate in the process except by submitting data and receiving reports. Alternatively, smaller, regional units have demonstrated the ability to transform data into specific quality improvement initiatives and have stimulated regional ownership of the process. The Northern New England Cardiovascular Disease Study Group pioneered this method beginning in the 1980s,5,6 and the Vascular Study Group of New England (VSGNE) now has extensive experience with specific quality and process improvement initiatives, combined with maintenance of interest and participation in a regional group.1,7 For this reason, the SVS VQI is organized as a national data registry that is composed of a distributed network of regional groups that are charged with implementing quality improvement.

A regional collaborative approach provides alternative insights into the quality challenges faced by various institutions, both academic and community, in varying socioeconomic and geographic situations. The regional approach...
also allows for the involvement of a variety of health care professionals, including physicians, nurses, physician assistants, quality assurance officers, epidemiologists, and statisticians. Ultimately, the collaborative approach allows for a pooling of available resources and expertise. The regional structure also serves as a motivating factor for each participating institution to contribute data, ensure long-term patient surveillance, and participate in quality improvement projects. Finally, one of the most important benefits of a multicenter registry is the ability to accumulate a large sample size in a short amount of time. The large sample size allows increased power to analyze outcomes on a regional level.

Regional groups allow organized quality improvement projects to be initiated across multiple centers, drawing on the skill and enthusiasm of multiple members in a working group. Analysis of variation in outcomes or processes across centers in VSGNE has led to specific quality projects to improve usage of medications known to improve outcomes in vascular patients. The VSGNE was able to increase preoperative β-blocker use in the region from 68% to 88% over a period of 3 years. The VSGNE has achieved similar results with antiplatelet agents and statins. After adopting patching during carotid endarterectomy (CEA) as a best practice and increasing the regional use of patching from 87% to 96%, VSGNE decreased the incidence of clinically significant restenosis within 1 year after CEA. Similarly, VSGNE was able to use 4587 CEA cases in its registry to show that protamine reduces serious bleeding requiring reoperation during CEA without increasing the risk of myocardial infarction, stroke, or death and has now adopted use of protamine as a best practice across the region. The experience of working together on these quality improvement efforts has fostered a collaborative spirit among centers and, at the same time, has benefited from the natural competition of individual practitioners who all are striving for the best results.

STARTING A REGIONAL QUALITY GROUP

The initial step in starting a regional quality group is identifying interested participants. Initial phone or e-mail conversations can identify those who are interested, followed by a conference call and/or introductory meeting. The first meeting should be framed around the importance of the SVS VQI and determination of how the program can fit into the interested physician’s or group’s practice. A major concern of most interested physicians is the cost of participation in the VQI. Discussions surrounding cost and contracting are often best raised at the initial meeting. Knowledge of the case volume and mix of the interested group will be helpful for determining the ultimate direct cost of participation. Inclusion of the M2S staff in this discussion is helpful because multiple factors determine the cost of involvement in the program. The initial meeting should also review the SVS PSO governance policies concerning regional groups, and review of the experience of existing regional groups can be useful.

One method for organizing a regional quality group is to use the structure of an existing regional vascular society. For example, the Southern California Vascular Outcomes Improvement Collaborative (So Cal VOICe) was formed using the Southern California Vascular Surgery Society as a platform and continues to function as a part of the Southern California Vascular Surgery Society. The initial meeting to gauge interest was an informal lunch discussion held at the annual Southern California Vascular Surgery Society meeting. Similarly, the Florida Vascular Study...
A third approach is to collaborate with the regional vascular society in certain efforts. The VSGNE has not used the New England Society of Vascular Surgery for organizational or structural purposes. However, the VSGNE does collaborate with the New England Society of Vascular Surgery in potential clinical trials.

**Regional group size.** At least three institutions are required to form a VQI-accredited group, because this is the minimum number that allows anonymous institutional benchmarking. Ultimately, the appropriate size of a regional quality group, in terms of numbers of sites and geographic size, should be determined by the participants in the region. The VSGNE elected to limit its geographic region to New England, allowing members to drive to a daylong meeting, arriving at 10 AM and leaving at 4 PM. Slides from previous VSGNE meetings describing the content covered during this 6-hour period are available (http://www.vascularweb.org/regionalgroups/vsgne/Pages/VSGNE-Meeting-Slides.aspx). The VSGNE participants also felt that this size (now 30 institutions) would allow all members to have meaningful participation in the discussions at semiannual meetings, thereby promoting enthusiasm, collegiality, collaboration, and ownership. Geography may determine different solutions for other regions, as might long-term affiliations or other professional relationships. The SOVONET decided to link the southern states into one group over a multistate area due to the relative paucity of vascular surgeons and wide dispersion of the population in these states. This network will form the framework with which smaller vascular surgery groups and single practitioners could align. The second phase is to extend the VQI through each of the hospital systems linked to each of the academic groups and to the hospital in which multiple private groups practice.

The concept of regional groups includes the understanding that circumstances and practice patterns may change over time. For instance, a regional group may also elect to include institutions outside of the geographic region that request to join because of a lack of other participants in their area. Regional group boundaries may also

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### Table. Regional quality groups of the VQI

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<thead>
<tr>
<th>Group</th>
<th>Medical director</th>
<th>Contact information</th>
</tr>
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<tbody>
<tr>
<td>Carolinas Vascular Quality Group</td>
<td>John W. Hallett, MD</td>
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<td>Improvement Collaborative (So Cal VOICe)</td>
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</tr>
</tbody>
</table>

VQI, Vascular Quality Initiative.

Regional groups are in formation in the following regions: Chesapeake Valley, Indiana, Michigan, Mid-Atlantic, Minnesota, Northern California, Ohio, Tennessee/Mississippi, Upstate New York. To join one of these groups, please visit: http://www.vascularqualityinitiative.org/contact/contact-svs-psa-about-joining-or-forming-regional-quality-group.
change over time as groups form and more convenient geographic affiliations are made. Finally, it is possible for institutions to participate in more than one regional quality group. For example, an institution might wish to participate not only in their geographic regional group but also in a group of similar-sized or academically affiliated institutions in a separate region.

Financial considerations. The SVS VQI uses a web-based data management service that is maintained by an outside vendor, M2S, under the direction of the SVS PSO. Participation in the SVS VQI has a direct external cost related to web-based data services, which are separate from the costs of PSO services from SVS, as well as the indirect internal cost of data entry. Direct costs of participation are related to the number of procedure types for which data are collected, as well as the number of those procedures performed within a particular institution. Estimated annual cost to an institution or individual practitioner based on case volume and mix is available (http://www.vascularqualityinitiative.org/about/cost).

The approach to obtaining funding for VQI participation must be individualized to each institution. Various aspects of the VQI may have more traction at different centers. For example, academic centers may be motivated by the ability to obtain regional nonidentifiable data for research. The quality improvement mission of the VQI and the opportunity to reduce complications and costs of care by reducing variation should motivate all institutions to participate. In some cases, a “trial” period of participation can be used to demonstrate successful and feasible data collection and use of the data to inform practice and improve quality. In some cases, physician groups have elected to provide the funding from within their own practices if their hospitals are initially reluctant to join the VQI. Although the results from benchmarking data cannot be used for marketing purposes, the fact that an institution participates in the VQI can certainly be made public. The VQI provides certificates and posters for participating physicians that can be displayed in the hospital and in the physician’s office for that purpose. As increasingly more centers join the VQI, some initially reluctant centers may recognize the importance of participating in this national VQI.

Data entry. Each data point has a definition, and help text describing this definition is available to the user on the data entry screen. Webinars are held regularly by VQI personnel to discuss specific modules and answer any questions that may arise regarding a particular data point. Questions regarding data entry can be submitted by contacting the VQI and are answered by VQI staff. The logistics of data entry vary widely among institutions and essentially depend on the number of procedures performed and the practitioner’s or group’s preference.

One method of entering data is to embed the data entry into the everyday workflow and incorporate it into the responsibilities of existing personnel and providers. For example, the person who schedules procedures would be the one who initiates the procedure entry in the database and enters basic demographic data. Nurses, physician assistants, or other providers who participate in the preoperative evaluation of the patient would enter the general clinical and history data. The physician then can enter the procedural data, and providers involved in the postoperative care of the patient and/or discharge process can enter the in-hospital follow-up data. Finally, providers who are involved in the follow-up visits would enter the outpatient follow-up data. The advantage of this method is that the people who are intimately involved in patient care and closest to the required information are entering the data, which likely improves the accuracy of the data and ease of entry. Although this data entry scheme avoids additional cost, it may be unrealistic, especially in high-volume centers. Of course, personnel who work part or full time in data entry to ensure that patients or data elements are not missed can supplement this type of data entry. Although multiple people are entering data in this scheme, one individual should ultimately be responsible for monitoring the database to ensure that data are entered completely and submitted for each patient. This aspect of data entry cannot be overemphasized. Whether this person is a data manager or one of the participating surgeons at the institution or practice group, oversight of the data entry to ensure the completeness and accuracy of the data is critical to the integrity of the data captured. Oversight may involve regular meetings with data entry personnel, random audits of the data, and/or 100% audit of the data. The logistics of exactly how this oversight is carried out will vary from institution to institution and should be a topic of discussion at regional meetings so that institutions can learn from one another.

The second method of entering data is using designated data entry personnel to review the charts after the patient is discharged. The advantage of this method is that it does not add any responsibilities to the workload of existing providers and personnel. However, this method incurs a significant cost, is more time consuming than data entry at the point of care, and may not be as accurate if all data are not available in the patient care record.

Organizational meetings. Representatives from VQI and M2S can attend the initial organizational meetings of a new regional group. Representatives from M2S are able to provide details regarding the contracting process and the cost of involvement. Representatives from VQI can provide insight into the logistics of the PSO and VQI. The contracting process generally requires more time than expected, especially if the institution is not familiar with the PSO concept and its ramifications. As a result, one can expect the number of institutions participating in the regional group to accumulate gradually. During the time that institutions are contracting and initiating their involvement, periodic conference calls can be helpful to monitor progress and discuss strategies for securing funding and integrating data entry workflow. For the So Cal VOICe and the Florida Vascular Study Group, a dedicated
time for a quality group update was added as a portion of the annual meeting of their regional vascular societies.

REGIONAL GROUP MEETINGS

The VSGNE and all current regional groups hold semiannual regional meetings. The regional meeting allows colleagues to become familiar with one another through open discussion and to share ideas in a collaborative environment. Each meeting generates considerable enthusiasm for the analyses and ongoing quality improvement efforts of the group. There is a natural decline in attention to these issues over time, and the VSGNE experience suggests that semiannual meetings are important to maintain enthusiasm and a sense of engagement with the regional process. The collegiality of these small group meetings has promoted regional collaboration, which encourages active participation in regional quality projects. The initial meeting of the regional quality group should be held after at least three sites have committed to entering data. Ideally, each site would send a physician representative, a hospital quality officer, and a data manager to the first meeting, but all interested individuals and institutions should be encouraged to attend. The initial meeting is largely organizational. Defining the mission of the group and its focus on regional quality improvement with local and regional ownership and responsibility is important.

Each regional quality group is required by the SVS PSO to have bylaws, which can be modeled after a template prepared by the SVS PSO for this purpose (available at http://www.vascularqualityinitiative.org/components/regional-quality-groups/sample-bylaws). Discussion of the quality group bylaws is important, and, if enough centers/practitioners are present, regional group officers can be identified at the first meeting as well, as described below. The group and its representatives should review and approve the bylaws, which are then sent to the Governing Council of the SVS PSO for formal accreditation of the regional quality group.

The discussions regarding funding, data entry, and workflow continue at the initial meeting with successful sites sharing their experiences and offering advice. Each institution will have a different approach to this issue, with varying obstacles and concerns, such that open discussion can be helpful.

The subject of quality improvement projects and research projects should also be discussed. Realistically, it takes several years of data collection to drive meaningful quality improvement projects. However, this should not prevent the group’s focus on quality measures, such as reduction in variation in processes of care that are known to improve outcomes. Demonstrating benchmark reports for key outcome measures for each procedure from existing regional quality groups is also important, and these examples are available from the SVS PSO.

Timing of meetings varies among regional quality groups. The VSGNE meets semiannually and rotates its meetings to the various participating institutions. This allows everyone in the group to visit other institutions and distributes the meeting responsibility across the region. This also establishes a sense of ownership of the meeting by all the member institutions. The So Cal VOICe and the Florida-Georgia Vascular Study Group have elected to hold one of the semiannual meetings in conjunction with the annual meeting of their respective regional societies, and the other will be rotated at the various institutions participating in the region. The Virginia Vascular Study Group would like to alternate biannual meetings between the Virginia Vascular Society and the West Virginia Vascular, preferably one in the fall and the other one in the spring. SOVONET will use web communication as its primary conferencing tool due to distances between centers, with one meeting held in conjunction with a regional society (Texas Vascular and Endovascular Society in November) and the second with a regional continuing medical education event in Houston, Texas, in March. The Carolinas Vascular Quality Group has designated two locations for a semiannual meeting: Charleston, South Carolina, in November and Asheville, North Carolina, in May. These sites are within a 5-hour drive for all members.

ADMINISTRATIVE STRUCTURE OF THE REGIONAL QUALITY GROUP

It is important to designate a regional medical director and some portion of a project manager, ideally housed in the same center for optimal communication, who will handle the administrative tasks of the group. Initially, these tasks are small, but they can grow as more data are entered and quality improvement projects develop. In the future, the group may want to purchase statistical services, or it may want to make such analyses the responsibility of academic centers that have the statistical resources required for outcomes research. Initial costs for VSGNE were very low, with a part-time project manager only. Now this has expanded to include a half-time statistician and a data coordinator (20%). The VSGNE provides lunch for attendees at the semiannual meetings. For this reason, each regional group should designate a fiscal agent, such as an institution or foundation or, in the case of So Cal VOICe, a society, which can receive regional fees from participating centers and pay expenses authorized by the regional group.

Each regional quality group is required by the SVS PSO to have an Executive Committee, a Quality Committee, and a Research Advisory Committee (RAC). The structure and election of each committee are determined by the regional quality group and detailed in the bylaws. The Executive Committee should consist of the medical director of the regional quality group and one representative from each participating institution. The Executive Committee conducts the business of the regional quality group and makes all decisions on behalf of the regional quality group, including oversight of budgets, contracts, publications, management of relationships with outside parties, requests for membership, and the general direction of the association. The Executive Committee oversees the interaction of the regional quality group with the fiduciary
agent, including costs and contractual details for regional quality group member participation.

The Quality Committee consists of a chair and members of the group who have an interest in participating, ideally from various institutions within the group. The mission of the Quality Committee is to oversee quality improvement efforts of the quality group. This includes the development of specific quality improvement projects for approval by the Executive Committee; organizing quality presentations at the quality group semiannual meetings; developing practice guidelines, care plans, and other clinical aids; revising data collection forms and reports; and reviewing regional data to identify areas for quality improvement.

The RAC consists of a chair and members who have interest and expertise in the design, conduct, interpretation, and presentation of analytic projects involving data collected by the regional quality group. The mission of the RAC is to facilitate the conduct of regional quality improvement research by group participants. The RAC reviews research proposals from regional quality group participants who request nonidentifiable regional datasets that are derived from the SVS PSO. If there are no research proposals from their own region, the RAC may still review research proposals for multiregion projects that originate from other regions. The RAC will work with researchers to ensure that proposed research projects are novel, central to the regional quality group mission, have an appropriate analytic plan, are correctly interpreted, and are properly presented and published.

Initially, the functions of the RAC may be folded into the Quality Committee, or both may be combined with the Executive Committee, according to the preference of the regional quality group. However, as the regional quality group expands and increases the amount of quality improvement initiatives and research projects, the group will likely choose to separate the two committees. At the time of this publication, only the VSGNE has both a Quality Committee and an RAC. All other regional quality groups have these committees arranged with combined responsibilities.

Costs for regional groups have been minimal, such as minor costs for semiannual meetings. When a regional group becomes mature, they may hire a part-time administrator, the cost of which is distributed across the regional centers. Academic staff at involved centers usually performs research projects conducted by a regional group, although a regional group might choose to collectively hire a statistician to perform multiple studies.

RESEARCH REQUESTS FOR NONIDENTIFIABLE DATASETS

Regional groups may request nonidentifiable multi-institution datasets from institutions in their region, prepared by the SVS PSO, for regional outcomes research. Regional groups may also request nonidentifiable multiregion datasets. All requests for nonidentifiable datasets are recorded by the PSO. Any requests that may overlap are brought to the attention of the investigator so that regions can either collaborate or change their project to avoid redundancy. Only SVS PSO members who are members of a regional quality group may request nonidentifiable datasets for regional quality research. Each regional quality group must specify a mechanism for review and approval of such requests. A regional group may request data for only their region or from multiple regional groups (for details see http://www.vascularqualityinitiative.org/resources/whitepapers/quality-research-dataset-request-process). These methods are consistent with the basic premise that each institution “owns” its institutional data and must permit its use outside the PSO, even when de-identified, for research purposes. Furthermore, it emphasizes the independence of regional quality groups for decisions regarding the use of data from their region, but it allows collaboration of regional groups to create national research projects using nonidentifiable data.

CONCLUSIONS

VQI regional quality groups allow for benchmarking between centers and participation in regional quality improvement projects. As each regional quality group accumulates more data, there will be increased opportunity to analyze variation and develop best practice recommendations, which have been clearly demonstrated by the oldest regional quality group (VSGNE). The structure and organization of each regional quality group can be adapted to suit the needs of its participants. In this environment of increasing focus on quality assurance and quality improvement, regional quality groups are vital to the success of the SVS VQI. Participation in a regional quality group and in the VQI facilitates a surgeon’s ability to address quality at his or her own institution. It is the intention of the SVS VQI to organize regional quality improvement groups in all areas of the United States and in other countries that wish to participate. With 10 accredited regional groups already organized, this process is well underway.

AUTHOR CONTRIBUTIONS

Conception and design: KW, JC
Analysis and interpretation: KW, JEJ, JH, MD, AB, GU, FW, JC
Data collection: KW
Writing the article: KW, JEJ, JH, MD, AB, GU, FW, JC
Critical revision of the article: KW, JEJ, JH, MD, AB, GU, FW, JC
Final approval of the article: KW, JEJ, JH, MD, AB, GU, FW, JC
Statistical analysis: Not applicable
Obtained funding: Not applicable
Overall responsibility: KW

REFERENCES


