

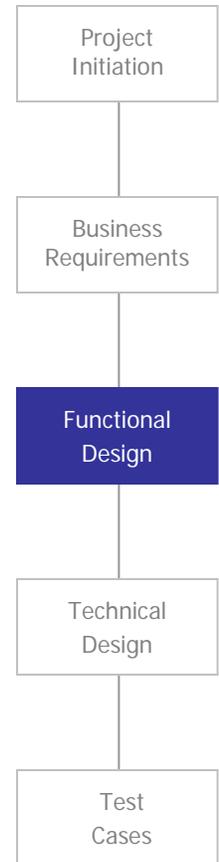
# Functional Design Document

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## AQI Extract for NACOR



## Revision & Sign-off Sheet

### Revisions

<i>Date</i>	<i>Author</i>	<i>Version</i>	<i>Change Reference</i>
5/1/10	L Mueller	1.0	Initial Draft
10/1/10	L Mueller	2.0	Updated

### Sign-off

<i>Name</i>	<i>Signature</i>	<i>Date</i>
AQI		10/01/10



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# Summary

The following outlines the requirements for submitting data to the Anesthesia Quality Institute (AQI) registry, National Anesthesia Clinical Outcomes Registry (NACOR).

## Business Case

The Anesthesia Quality Institute's mission is to develop and maintain an ongoing registry of anesthesia cases and outcomes to help anesthesiologists assess and improve patient care. The goal of AQI is to include data from all practicing anesthesiologists and all practice locations in the United States.

AQI is a non-profit corporation, created to collect electronic anesthesia case data from practice groups, hospitals, and information technology vendors.

Collected data will include:

- Practice and hospital data
  - (e.g. facility size, teaching status, number of anesthesia professionals)
- Patient data
  - (e.g. age, medical history, current medications/allergies)
- Anesthesia procedure data
  - (e.g. type of anesthesia given, medications used, vital signs)
- Outcomes of the anesthesia and surgery
  - (E.g. complications, recovery time, patient satisfaction).

The AQI will aggregate this data and report it to the contributing practices, allowing them to benchmark their care relative to peer groups and other hospitals.

AQI data will be used for research into anesthesia risk factors, comparative effectiveness, and identification of best practices, and used by ASA to develop quality measures, practice standards and guidelines.



### **AQI data will be of value to practicing anesthesiologists for:**

1. Personal benchmarking
2. Quality reporting
3. Hospital credentialing
4. Maintenance of licensure
5. Maintenance of certification
6. Clinical research

### **The AQI will be of value to the broader healthcare community by:**

1. Defining benchmarks for anesthesia practice
2. Disseminating best practices throughout the profession
3. Fostering comparative effectiveness research in perioperative care, critical care and pain management
4. Creating and disseminating standard definitions for information technology related to anesthesia and surgery (AQI definitions are based on US and international standards for healthcare IT)
5. Convening partnerships with industry and universities for research studies
6. Encouraging the adoption of healthcare information technology and data reporting.

**AQI Background:**

Established by the American Society of Anesthesiologists, the AQI represents the next step in the specialty's quality improvement mission.

Although operating as a separate 501(c)(3) entity, AQI's work will complement and enhance the efforts of ASA and other organizations such as the Anesthesia Patient Safety Foundation, the Foundation for Anesthesia Education and Research, the National Surgical Quality Improvement Project and the Surgical Quality Alliance.

For example, data from the AQI will be an additional resource for the Closed Claims Project, which collects outcomes from closed legal cases filed against anesthesiologists in order to review safety processes and improve the quality of care. Publications from the Closed Claims Project have contributed to a 50% decrease in malpractice costs for anesthesiologists over the past 25 years and reduced anesthesia

mortality rates from two deaths per 10,000 anesthetics administered to one death per 200,000-300,000 anesthetics administered.



The addition of AQI data will power a greater understanding of the numbers of patients at risk for serious complications, and will enable focused prevention and mitigation strategies.



The AQI ultimately exists to improve patient care.

Collecting and analyzing data from anesthesiology and pain practices across the country will provide the data needed to understand best practices, and will create a network for dissemination.

In the end, the AQI will save lives and improve the quality of care.

# Section 1: Required Data

## 1.1 Description

The NACOR is a data 'warehouse' that will eventually capture the 25 million anesthetics (a very rough estimate) and millions of pain clinic procedures performed each year by anesthesiologists in the United States. Creation of the NACOR will require close collaboration between the AQI, individual providers, and the industry partners that link us together.

Roles will be as follows:

- The AQI will define data and outcomes that the NACOR collects (with the assistance of various ASA Committees), will provide unifying definitions and templates, will contract with individual practices and hospitals to exchange data, and will be responsible for analyzing and reporting the data collected.
- Individual anesthesia practices, hospitals, and providers will provide data to NACOR in exchange for AQI verification of their participation in ABA, Joint Commission, and State and federally mandated performance improvement efforts, and for benchmarking their practice and outcomes nationally.
- Vendors of anesthesia billing software and Anesthesia Information Management Systems will facilitate NACOR reporting through their work with individual practices. Vendors that can provide formatted data for contribution to NACOR will be endorsed and recommended by the AQI.
- See Appendix B for [Data flow diagram](#).

Data captured will fall into four categories:

1. *Practice demographics* – describing the anesthesia group (age, training, certifications, and subspecialties) and the environment (hospital size, inpatient/outpatient mix). This information will be collected once, and then periodically updated.

2. *Case specific data* in several tiers: simple (e.g. CPT code, anesthesia type, provider code, patient age); moderate (e.g. duration of surgery, agents used); and complex (e.g. output from AIMS with vital signs, fluids, drug doses).
3. *Outcome data*: Basic (e.g. intra-op cancellation, mortality, major morbidities) and extended (e.g. infections, prolonged length of stay, late events). The basis for recognized outcomes of interest will be the ASA Committee on Performance and Outcomes Measurement (CPOM) definitions. Information will come from Anesthesiology Department data or from linkage to surgical databases that capture long term patient outcome.
4. *Risk Adjustment data*: ICD-9 diagnostic codes, pre-op medication use, defined co morbidities, hospital length of stay, etc. Much of this data will come from the hospital or healthcare facility's systems.

NACOR will evolve over time under pressure of provider needs, experience and regulatory requirements. The definition of existing data elements will sharpen, and new elements will be introduced for business or research purposes.

## 1.2 Assumptions

- AQI will support vendors in efforts to create a standard extract. This has ranged from the vendor doing 100% of the development to the vendor providing AQI a db schema and AQI developing the extract.
- AQI will not provide monetary compensation for the vendor for developing the extract.

### 1.3 Functional Requirements

We recognize that no single system has all of this information at is time, the list includes all of the information that might be collected by any one practice (including those with AIMS), so that we save a place for it in the Registry.

Attached is the AQI Data Dictionary



Data Dictionary for  
AQI - 061510.xlsx

Attached is the AQI XML Schema



AQISchema v1.5.xsd

The schema is also available in a browser [here](#).

The schema is a work in progress. AQI is looking for any suggestions to improve the schema and data being collected. If there are fields we are not collecting which we should, please suggest them. If there are enumerated values which are absent, please let us know what you are using so we can include them in our schema.

We are looking to receive what data is readily available. As the registry grows and the reporting needs change, we will be re-visiting the data requirements. We are planning to do this on an annual basis.

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# Section 2: Exchanging Data with AQI

## 1.1 Description

The AQI provides multiple methods for receiving data.

All methods meet industry standards for secure data transmission. Further, the data being transferred is de-identified health information.

## 1.2 Assumptions

- All files must be placed on AQI Servers. AQI will not be pulling files from vendors and practices.
- Emailing files as attachments is not acceptable for production purposes. If necessary, a test file maybe emailed if prior arrangements have been made with AQI. In this instance, every attempt should be made to encrypt the file.
- Files will be processed on a First-in/First-out basis.

## 1.3 Functional Requirements

### File Type and Layout:

The preferred file layout is a XML file validated against the provided AQI Schema. Other options are possible but require agreement between the vendor and AQI's System Architect. Non-xml files would need to be submitted using an agreed upon data file layout and be properly formatted.



### Frequency:

Data should be submitted on a monthly basis. In some cases, quarterly data submission would be accepted.

### Data Transmission Options:

*Vendor hosts client data:*

AQI has an FTP server setup which vendors can use to upload client's data to AQI.

FTP Server: myftp.aqihq.org

Port: 22

Connection: SSH/SFTP

Please contact [Lance Mueller](#) to obtain a userid and password for uploading files.

AQI can accept a file containing an individual client or a file containing data for multiple clients.

*Clients / Practices to upload the data:*

The practice will login into the [AQI website](#). On the [Data Loads page](#), the practice will select browse to select the file to upload from their pc or local network. After selecting the file, the practice will click upload to transfer the file to the AQI server. There is also a table letting the practice know their historical uploads. (See [Appendix B](#))

## 1.4 Data Security

### *Website*

All data exchange is via Secure Sockets Layer (SSL) encryption with data encryption end to end is used for any type of data exchange end-to-end (data submissions and practice survey). You can see the certificate with most web browsers just by opening our login page: <https://www.aqihq.org/Login.aspx>. We can also provide the certificate if needed.

### *Hardware*

All AQI servers are located in a secured, protected, independently controlled (power, heating/cooling) servers' room (with stand-by alternative electrical generator).

### *Access*

To secure and totally eliminate access to database server from 'outside', AQI database server resides on private side of the network (no access from outside, no http, ftp, telnet ports open).

AQI is also utilizing the latest Cisco firewall Adaptive Security Appliance configured with optimal security along with a firewall configured with intrusion detection prevention.

AQI internet access is with two different ISPs for redundancy.

Server is up to date as far as security patches and other services are concerned.

### *Backups/Storage*

The backup procedure involves incremental backup of all of the servers (daily and full back-up on every Friday and end of the month). Friday tapes are stored remotely and rotated weekly.

All storage is configured as redundant array.



# Appendix A – Additional Resources

## Helpful Links

[AQI Frequently Asked Questions page](#)

## HIPAA and Data Privacy Considerations:

### Are Registry participants considered 'covered entities' under HIPAA?

Yes, Registry participants are considered 'covered entities' under HIPAA. The HIPAA Privacy Rule provides federal protections for personal health information (PHI) held by 'covered entities.' At the same time, the Privacy Rule is balanced so that it permits the disclosure of PHI needed for patient care and other important purposes.

### Will fully-identified PHI be required for submission?

No, PHI is not required for NACOR reporting. The Registry is accepting a 'limited data set' as defined by HIPAA. A 'limited data set' contains fields such as date of birth and zip code but

does not include fields such as the patient's name or medical record number. HIPAA permits 'limited data set' disclosure with a data use agreement in effect between AQI and the Registry participant.



### What are the HIPAA implications of sending PHI to the Registry?

Participation in the NACOR is primarily for the purpose of 'health care operations.' HIPAA defines 'health care operations' to include quality assessment and improvement activities, including outcomes evaluation. The mission of the NACOR is to develop and maintain an ongoing registry of case data that helps anesthesiologists assess and improve patient care. PHI may be disclosed for these purposes with a Business Associate agreement in effect between the AQI and the participant. The HIPAA Privacy Rule allows business associates to provide data aggregation related to 'health care operations.' While NACOR is not currently collecting PHI, we would be permitted to do so in the future.

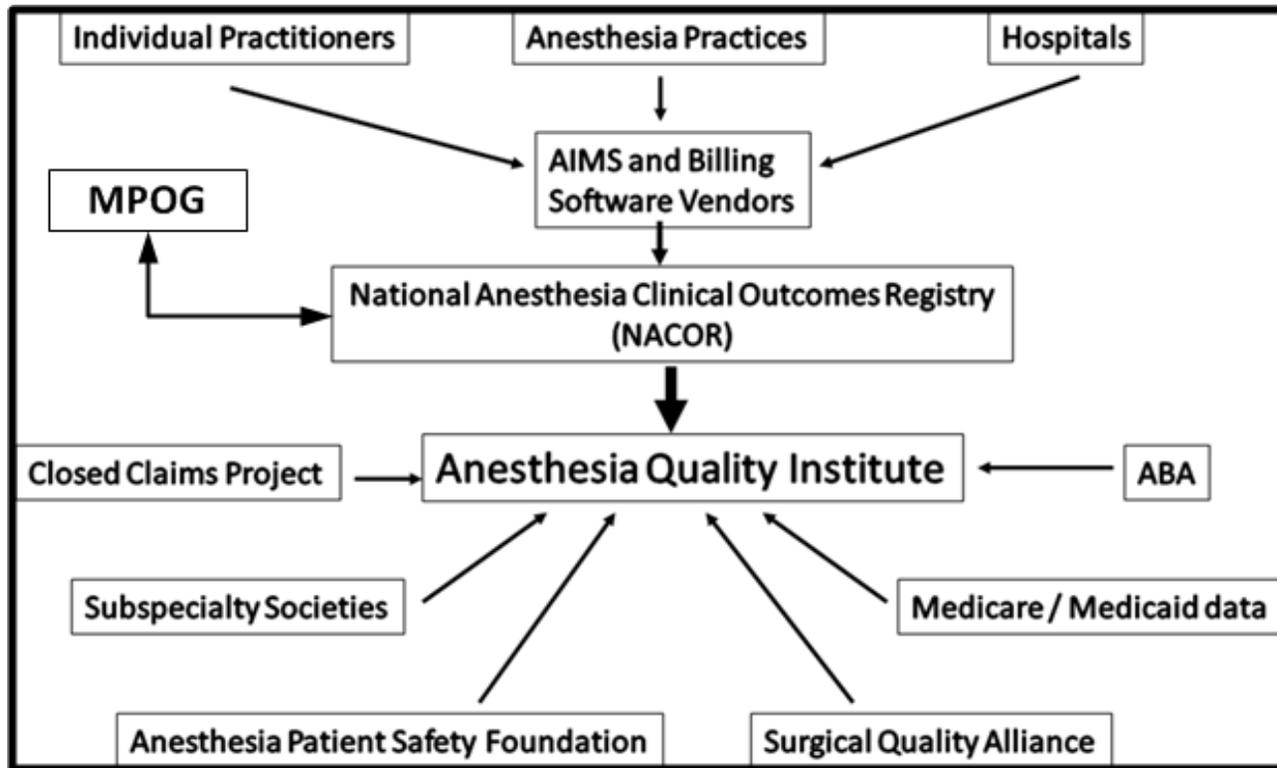
### What protections has AQI put in place to protect privacy and anonymity of NACOR data?

Data uploaded to the Registry will be de-identified before it is uploaded to the database. Direct patient identifiers will not be part of the Registry, and facilities and providers will assign their own codes to providers and facilities. Nothing published by the AQI will ever directly identify a patient, provider or facility without their express permission.

# Appendix B – AQI Charts

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## AQI Data Flow



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## AQI Data Upload

Select a File to Upload: (4Mb size limit)




### Historical Uploads

Load Date	File Name	File Size	Uploaded by User	Processed	Processed Date	Cases
6/3/2010 10:25:47 AM	test query for Hubert.xls	344576	saapcredit	No		0
8/5/2010 3:20:07 PM	PPM June 2010.zip	514812	saapcredit	No		0
8/20/2010 7:23:00 AM	Export_to_SAA_AQI_2010-08-20.zip	307792	saapcredit	No		0
6/11/2010 1:34:46 PM	PPM January 2010.zip	498366	saapcredit	No		0
6/11/2010 1:39:21 PM	PPM February 2010.zip	463470	saapcredit	No		0
6/11/2010 1:43:26 PM	PPM March 2010.zip	584120	saapcredit	No		0
6/11/2010 1:47:08 PM	PPM April 2010.zip	550604	saapcredit	No		0
6/11/2010 1:51:26 PM	PPM May 2010.zip	486460	saapcredit	No		0
7/30/2010 8:13:30 AM	Export_to_SAA_AQI_2010-07-19.zip	1668780	saapcredit	No		0
9/3/2010 12:58:18 PM	PPM July 2010.zip	477438	saapcredit	No		0
9/21/2010 10:00:48 AM	Export_to_SAA_AQI_2010-09-21.zip	327750	saapcredit	No		0