



Quality Improvement Plan

San Juan Island EMS

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Introduction

The San Juan County Medical Program Director (MPD) has developed this plan to articulate the process that is used to monitor the quality of pre-hospital patient care in San Juan County. The Emergency Medical Services System Quality Improvement Program (QIP) Model Guidelines will provide leadership to the EMS community to establish best practices, and collaborate with stakeholders to provide the highest quality care to the patients of San Juan County.

The MPD is responsible for the regulatory oversight of all Emergency Medical Services in the County of San Juan ([WAC 246-976-920](#)). A portion of that oversight is accomplished through a Quality Assurance (compliance) program.

The MPD separates the responsibility for the components of the QI process between the Quality Improvement Committee and the individual agency program medical director (physician delegates) and Pre-hospital Program Staff. The Pre-hospital Program Staff is responsible for the QA/QI processes related to personnel, equipment and supplies, skills maintenance and competency.

Quality Improvement (QI) is a process derived from business and management philosophy that augments traditional quality assurance methods by focusing on processes rather than the individual. Both internal and external "customers" are incorporated in that focus. QI promotes the need for objective data to analyze and improve processes. QI is a management philosophy which contends that most things can be improved. The scientific method is at the core of QI and is applied to everyday work to meet the needs of those we serve and improve the services we offer. Through the use of QI processes we can offer our patients evidence-based best practices which are continually evolving to provide the highest quality, standardized care. QI can only exist in an environment which fosters input from all levels of personnel in the system, and feedback to the system providers from the MPD affords closure of the quality loop. The QIP will describe in detail how San Juan County EMS agencies will manage quality in the pre-hospital system.

Quality Improvement Authority and Protection

WAC 246-976-920 provides that County Medical Program Directors must audit the performance of field personnel. In essence, the MPD is responsible to ensure an effective quality assurance/improvement program exists.

Participants in the QI Committee approved by DOH under [RCW 43.70.510](#) are not subject to any action for civil damage for such QI activity. This statute also provides confidentiality and exemption from courtroom discovery. Members of the QI Committee are held harmless by the DOH when the function is in accordance with [RCW 18.71.215](#) and [WAC 246-976-920](#).

Risk Management

Risk management will be addressed through the use of the Unusual Occurrence Report (UOR). These reports will be submitted to the MPD by anyone who has a question concerning care, patient management, crew interaction, public perception or any other issue that is in question. The Unusual Occurrence Report form, with instructions for its completion is available for download on the Orcas Island Fire Department and San Juan EMS websites. The QI Committee compiles a data base of reported issues and is able to trend and track the types of issues reported, personnel involved, and resolution of the issue. All of the reported information is maintained in a confidential manner, and reports are provided to the Chief of the involved agency. Any complaint submitted to the MPD or EMS agency from the public is investigated by the appropriate EMS agency, operations if it is a compliance issue, and MPD if it involves the care of the patient. If the complaint has both components both the MPD and EMS agency will collaborate on the investigation.

Operational Definitions

EMS Quality Improvement Plan (QIP): The San Juan County QIP is an inclusive, multidisciplinary process that focuses on identification of system-wide opportunities for improvement. QIP refers to methods of evaluation that are composed of structure, process, and outcome appraisals. Improvement efforts focus on identification of the root causes of problems, interventions to reduce or eliminate these causes, and the development of steps to correct inadequate or faulty processes. Additionally, QIP can assist constituent groups to recognize excellence in performance and delivery of care. The goal of QIP is not disciplinary in nature.

Through QIP, the QI Committee provides leadership for the clinical oversight and quality management of the various specialty care initiatives (Trauma, Stroke and Cardiac) as well as the general pre-hospital patient care in the County. Continuous quality improvement is achieved through assessment of clinical care, research, evidence-based implementation of initiatives, monitoring the outcomes of the changes implemented, and redirecting study of the system changes for continued progress.

Quality Improvement Committee (QIC): Reviews and studies all aspects of EMS pre-hospital care, identifies trends through the use of quality indicators and provides education that is driven by the results of these findings. Includes multidisciplinary representation of all EMS System care providers.

Clinical Indicator- Clinical indicators are performance measures that include the identified standards. The Joint Commission on Accreditation of Hospitals and Agencies (JCAHO) defines a clinical indicator as something that measures conformance with a reasonable expectation as defined by the community served. Indicators consist of measurements of conformance to standards within a system.

Outcome indicator – The measurement of the sum of structure and process indicators within a system. Changes in structure and/or processes have direct effect on outcomes.

Process indicator – Measurements of activities occurring within a system.

Structure Indicator – Measurements of expectations of people, places and things within a system.

System - a group of independent but interrelated elements comprising a unified whole.

BACKGROUND

The clinical QI program for the San Juan County EMS System employs a vertically integrated process, incorporating all EMS stakeholders within its jurisdiction. The MPD in conjunction with the pre-hospital provider agencies develops and implements QI activities. Reports of activities are required based on the frequency of monitoring identified by the MPD. In addition, each provider agency will submit an annual report of QI activities to the MPD. The MPD incorporates the provider agency QI Activity reports into its annual report of QI activities, which will be submitted to the North Region EMS &TC Council and Washington State Department of Health.

The use of indicators is one very effective way to monitor the quality of patient care in the pre-hospital arena. The San Juan County QI program develops and uses standardized indicators, allowing agencies to uniformly review aspects of patient care, some of which may identify potential risk. Other indicators can guide targeted studies to assess the effectiveness of new processes (i.e. Stroke Centers, Cardiac Centers and Trauma Centers etc). Additionally there may be issues that require development of benchmarks used to measure system performance in San Juan County. The MPD will determine, with the advice from the system stakeholders, which indicators to use. All provider agencies will measure performance against established standards of care.

At the core of the San Juan County QIP process is the Quality Improvement Committee (QAC), a multidisciplinary group consisting of physicians, nurses, provider agency representatives, EMT's, paramedics and the County MPD. This committee will review cases, issues that have been submitted through the use of the Unusual Occurrence Report process, and the outcome of indicator data to reveal possible trends and seek solutions for system issues. At the end of each QAC meeting the group will discuss "lessons learned" from the case discussions and the trends identified. A document with generalized information will be published for the education of all pre-hospital providers to afford feedback into the system. Listed in this plan are the MPD's responsibilities, provider agency's responsibilities, and program-related policies as well as the clinical indicators currently in use.

Clinical QI – MPD Responsibilities

The Clinical QI process in San Juan County EMS evaluates important aspects of pre-hospital patient care such as compliance with policies and patient treatment protocols. Audit filters are used to monitor compliance with standards of care (AMA's, STEMI evaluation, Stroke assessment, effective trauma triage, etc). The QI process ensures a review of any care that falls outside the identified standard and implementation of improvement plans to correct deficiencies. Improvement plans are monitored for continued progress towards the identified goals.

Each provider agency has designated personnel who manage the internal quality improvement process for that agency. Additionally each provider agency has a medical director who is responsible for the QI program and all care rendered by the paramedics and EMT's within that agency. The provider agency QI personnel and medical directors report issues in medical management of patients to the San Juan County Medical Program Director (MPD) upon completion of their internal QI review. Issues reported to the MPD include but are not limited to the following:

- a. Actions outside of the scope of practice of pre-hospital personnel.
- b. Protocol compliance issues related to:
 1. Administration of medications
 2. Invasive procedures
 3. Defibrillation/cardioversion
 4. Other patient treatments.

The MPD reviews all cases submitted by the EMS agencies, tracks and trends issues that are reported, and presents the trended information related to systemic issues to the QIC for discussion and identification of potential solutions. Issues related to regulatory compliance will be reported to the Washington State Department of Health.

Additional aspects of clinical care are monitored routinely such as rates of Return of Spontaneous Circulation (ROSC) for all CPR cases in San Juan County, monitoring the use of newly added procedures or protocol changes, paramedic intubation capability etc. Data obtained through this monitoring is developed by the MPD, presented at the QIC and sent to the individual provider agencies. Any issues found through these clinical reviews will be communicated to the involved provider agency for investigation and resolution.

Review and Evaluation of Information

Information used to analyze QI activities shall include individual incident reports, local and/or state registry data and meeting minutes of discussions that took place. The QIC shall use current standards and actual field performance documented on incident reports as a basis for QI evaluations.

Current standards consist of:

- Washington State approved curriculum
- State and San Juan County MPD patient care protocols
- Regional Patient Care Procedures
- San Juan County Operating Procedures
- Washington State Trauma Triage Tool
- CPR, Obstructed Airway and External defibrillation following current nationally accepted standards.
- Infection Control Procedures following the most current approved [Infectious Disease Prevention for EMS Providers curriculum](#)

San Juan County EMS Council Responsibilities

1. Develop and implement the local QIP based on DOH EMSTS Regulations.
2. Facilitate the formation of and support the activities of the Quality Improvement Committee.
3. In collaboration with provider agencies identify and develop indicators for performance measurement.
4. Maintain summary QIP reports submitted by the provider agencies.
5. Oversee the development of any indicated Performance Improvement Processes.
6. Collaborate with the North Region EMS & Trauma Care Council and WA State DOH EMSTS to develop future indicators.
7. Facilitate in the development of education and training programs for the provider agencies in relation to the implementation of the QIP plan.
8. Monitor and report progress of QIP process to North Region EMS & Trauma Care Council.

PROVIDER AGENCY RESPONSIBILITIES

1. In cooperation with the San Juan EMS Council, implement a QIP internally.
2. Assist in the identification of indicators needed and ensure compliance with completion of all required indicators.
3. Share results of internal QI activities as well as dissemination of appropriate information forwarded from the QI committee, with all EMS personnel within the agency.
4. Develop and implement a provider-specific written QIP program as needed.
5. Review the provider-specific QIP annually for effectiveness in identifying and resolving provider related QI issues and revise as needed.
6. Provide the MPD/QIC with all required reports including an annual update on the provider QIP.

DATA COLLECTION AND REPORTING CLINICAL INDICATORS

INDICATOR	PAGE
1. Reporting Clinical Indicators	xx
2. Data collection tool	xx
3. Suspected Cardiac Ischemia Protocol Compliance	xx
2. Stroke Center Destination	xx
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5. Medical Indicators	xx
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REPORTING CLINICAL INDICATORS

Each provider agency will complete the indicators based on the care that their personnel render to the patient. Using an Excel Spread Sheet as exemplified on the next page, each provider agency will submit the required information for the clinical indicator currently in use to the MPD on a quarterly basis. The MPD will send the spreadsheet electronically to each provider agency.

The clinical indicator information, in spreadsheet form, will be due back to the MPD by the 15th business day of the following month. The MPD will review and validate the data and look for trends. Trends derived from the clinical indicators will be discussed at the quarterly QIC meeting. Reports of the clinical data will be compiled by the EMS Quality Coordinator and sent back to the provider agencies.

The indicators will measure current compliance with identified best practices. If compliance is maintained or improved, the indicators may be retired and new indicators are developed. The MPD will maintain the records of the results of the clinical indicators submitted by the local provider agencies. The provider agencies will maintain all raw data collected for the clinical indicators should there be any questions about trends or identified issues.

Data Collection

Data is collected through the use of Excel Spread sheets that the MPD makes available to the provider agencies.

Below is an example of the data collection tool.

Clinical Indicator – Suspected Acute Cardiac Ischemia

Date	Run #	ASA	NTG	Lopressor	12 lead Interp	STEMI	Comment

SAN JUAN COUNTY EMS PERFORMANCE INDICATOR

Protocol Compliance with Treatment Protocol xxx

APPROPRIATE TREATMENT OF SUSPECTED ACUTE CARDIAC ISCHEMIA

DEFINITIONS:

- % Compliance:** Percentage (%) of adult patients assessed by EMS personnel who present with symptoms consistent with suspected cardiac ischemia, and are treated according to Pre-hospital Care Policy Treatment Protocol xxx.
- Adult patient:** Age >15 years
- Symptoms:** Including but not limited to one or more of the following complaints: chest pain or pressure; shortness of breath nausea; diaphoresis; arm or neck pain

REPORTING:

- Indicator items:** Total number of patients presenting with symptoms suggestive of cardiac ischemia.
- Total number of above identified patients who received ASA, NTG and had a 12Lead EKG done according to SJC treatment protocol xxx.
- % compliance rate for correct protocol use in patients presenting to EMS Personnel with suspected cardiac ischemia.

Reporting formula: $N/D \times 100 = \%$

Data Points: Inclusion criteria:

- Patient age > 15 years
- Patient complains of symptoms suggestive of suspected cardiac ischemia.
- SJC Treatment Protocol xxx is utilized
- San Juan County EMS Personnel treat patient

Numerator: Total Number of patients encountered with symptoms suggestive of suspected cardiac ischemia who received ASA, NTG and a 12-Lead EKG performed. (N)

Denominator: Number of patients who presented with symptoms suggestive of suspected cardiac ischemia. (D)

Reporting Period: Quarterly

Data Source: Patient Care Reports

Reporting Example

Reporting Period:	Quarterly
Numerator:	Total Number of patients encountered with symptoms suggestive of suspected cardiac ischemia, which were correctly treated according to SJC Treatment Protocol xxx. (N=23).
Denominator:	Total number of patients who presented with symptoms suggestive of suspected cardiac ischemia. (D=25)
Formula:	$\text{Numerator/Denominator} \times 100 = \% (23/25) \times 100 = 92\%$
Summary indicator:	92% compliance with SJC Treatment Protocol xxx for patients who present with symptoms suggestive cardiac ischemia.

TYPE OF MEASURE: Process

BENCHMARK REFERENCES:

1. American Heart Association
2. American College of Cardiology

SAN JUAN COUNTY EMS PERFORMANCE INDICATOR

Protocol Compliance with Treatment Protocol xxx

APPROPRIATE DESTINATION OF ACUTE STROKE PATIENTS

DEFINITIONS:

Adult	Age > 17
% Compliance:	Percentage of patients who meet stroke alert criteria who are transported to a designated stroke center.
Stroke Alert Criteria:	Cincinnati Stroke Scale > 0
Symptom Onset:	< 3 hours

REPORTING

Indicator Items:	Total number of patients meeting "Stroke Alert" criteria. Total number of patients meeting "Stroke Alert" criteria transported to a designated stroke center. Percent compliance with appropriate destination when presenting with "Stroke Alert" criteria.
Reporting Formula:	$N/D \times 100 = \%$
Data Points:	<i>Inclusion criteria:</i> <ul style="list-style-type: none">• Patient > age 17, who's onset of symptoms is < 3 hours and Cincinnati Stroke Scale is > 0. Numerator: The number of patients meeting Stroke Alert Criteria transported to a designated Stroke Center. (N) Denominator: The number of patients meeting Stroke Alert criteria. (D)
Reporting Period:	Quarterly
Data Source:	Patient Care Report

Reporting Example

Reporting Period:	Quarterly
Numerator:	Total number of patients with positive meeting “Stroke Alert” criteria who were transported to a Stroke Center: (N =5)
Denominator:	The number of patients who met “Stroke Alert” criteria (D = 7)
Formula:	$\text{Numerator/Denominator} \times 100 = \% (5/7) \times 100 = 71\%$
Summary indicator:	71% compliance with appropriate stroke center destination.

TYPE OF MEASURE: Process

BENCHMARK REFERENCES:

1. American Heart Association/American Stroke Association
2. Brain Attack Coalition

SAN JUAN COUNTY EMS PERFORMANCE INDICATOR

APPROPRIATE DOCUMENTATION OF TRAUMA TRIAGE DECISIONS

DEFINITIONS:

% compliance: Percentage of appropriate documentation of trauma triage criteria and appropriate destination decision by ALS personnel

Trauma triage guidelines:

Pediatric Trauma Center Candidate: a patient, age <14, who requires triage destination to a Trauma Center, based on Physiologic, Anatomic, Mechanism of Injury criteria, or paramedic judgment.

Adult Trauma Center Candidate - a patient who requires triage destination to a Trauma Center, based on Physiologic, Anatomic, Mechanism Of Injury criteria or paramedic judgment.

REPORTING:

Indicator item: Percentage of injured patients who meet Trauma Triage Criteria, and are not transported to a Trauma Center.

Reporting formula: $N/D \times 100 = \%$

Data Points: Inclusion criteria:

- Any transported patient who is traumatically injured and meets trauma triage criteria.

Numerator: Patients meeting trauma triage criteria with a destination other than a designated trauma center. (N)

Denominator: All patients who meet trauma triage criteria. (D)

Data Elements: Age; Chief Complaint(Injury); Description of event; Mechanism of Injury met; Anatomic Criteria Met; Physiologic Criteria Met; Comorbidity/Special Circumstances; Paramedic Judgment; Documented reason for destination; Destination Facility

Reporting period: Quarterly

Data Source: Patient care reports, Unusual Occurrence Reports

Reporting Example

Reporting period:	Quarterly
Numerator:	All injured patients meeting trauma triage criteria with a destination other than a designated trauma center (N = 3)
Denominator:	All injured patients who meet trauma triage criteria (D = 50)
Formula:	$\text{Numerator/Denominator} \times 100 = \% (3/50) \times 100 = 6\%$
Summary indicator:	6% of patients who meet Major Trauma Triage Criteria do not go to trauma center destination.

TYPE OF MEASURE: Outcome

BENCHMARK REFERENCES:

1. American College of Surgeons-Committee on Trauma

SAN JUAN COUNTY EMS PERFORMANCE INDICATOR

APPROPRIATE TREATMENT OF ALTERED LEVEL OF CONSCIOUSNESS- NON-TRAUMATIC (GLUCOSE MONITORING)

DEFINITIONS:

% Compliance: Percentage (%) of patients assessed by EMS personnel as having a non-traumatic altered level of consciousness and glucose testing done.

Altered Level of Consciousness: Altered mental status: Any change in a patient's mental state; alterations can range from mild confusion and abnormal behavior to deep coma.

Age: Patients of any age

REPORTING:

Indicator item: % Compliance glucose testing rate per total cases of altered LOC

Reporting formula: $N/D \times 100 = \%$

Data points: *Inclusion criteria:* Any patient with altered LOC assessed by EMS personnel.

Numerator: Total number of patients who had glucose testing

Denominator: Total number of patient cases assessed by EMS personnel as having a non-traumatic altered level of consciousness.

Reporting Period: Quarterly

Data Source: Patient Care Reports

REPORTING EXAMPLE

Reporting Period: Quarterly

Numerator: Total number of patients who had glucose testing (N = 20)

Denominator: Total number of patients assessed with altered LOC (D = 25)

Formula: $\text{Numerator/Denominator} \times 100 = \% (20/25) \times 100 = 80\%$

Summary Indicator: $20/25 \times 100 = 80\%$ compliance glucose testing in A-LOC

Type of Measure: Process

Benchmark Reference: National EMT-B Curriculum

SAN JUAN COUNTY EMS PERFORMANCE INDICATOR

APPROPRIATE TREATMENT OF PEDIATRIC ASTHMA

DEFINITIONS:

% Compliance: Percentage (%) of patients assessed by EMS personnel as having respiratory distress related to bronchospasm.

Bronchospasm: A temporary acute narrowing of the bronchi caused by contraction of the bronchial smooth muscle related to allergy or inflammation.

Age: Patients age < 16 years

REPORTING:

Indicator item: % Compliance documentation of respiratory effort, auscultation of lung sounds, oxygen saturation, oxygen therapy and peak flow measurement pre and post bronchodilator therapy if > age 8

Reporting formula: $N/D \times 100 = \%$

Data points: *Inclusion criteria:* Any patient < 16 years with wheezing assessed by EMS personnel.

Numerator: Total number of pediatric patients treated with bronchodilator therapy.

Denominator: Total number of pediatric patient cases assessed by EMS personnel as having wheezing related to bronchospasm.

Reporting Period: Quarterly

Data Source: Patient Care Reports

Type of measure: Process

Benchmark Reference: 2007 NHLBI/NAEPP Guidelines (National Heart, Lung, and Blood Institute/ National Asthma Education and Prevention Program).

Note: Peak expiratory flow measurements using handheld devices provide a means to obtain simple, quantitative, and reproducible assessments of the existence and severity of airflow obstruction.

EVALUATION OF CLINICAL INDICATORS

Clinical indicators are completed quarterly by the provider agencies and the results are sent electronically to the MPD for analysis. The MPD or EMS Quality Coordinator compiles indicator data and documents compliance with the measured criteria in graph form.

The QI Committee sends the results of the analysis back to the provider agencies each quarter with a graph that demonstrates the mean county rate of compliance with the measured indicators, the agency's specific compliance as it relates to the county's mean compliance and the comparison of agency and county compliance.

The compliance threshold for each criteria measured is set at 95%. Once the mean county compliance meets and sustains at 95% consistently for 12 months, the clinical indicator will be retired and new indicators will replace the existing indicators.

NEW PROCEDURE MONITORING

Reporting Period: 12 months following implementation

CPAP

Rad 57 CO Oximeter with CO level > 12

MPD INDIVIDUAL CASE REVIEW

Reporting Period: monthly

Report Type: Patient Care Report

Type of call:

1. Cardiac Arrest / ROSC
2. Airway management (Attach Airway Management Reporting Template)
3. Any issue involving delayed Fractile Response times
 - a. 911 call to Dispatch time
 - b. Dispatch to response time
 - c. Response to arrival time
 - d. On-scene time
 - e. Transport time
4. Acute time critical cardiac intervention
 - a. ST elevation Myocardial Infarction (STEMI)

- b. Thrombolytic administration
 - c. Cardioversion
 - d. Transcutaneous Cardiac Pacing
 - e. CPAP for Acute pulmonary edema
5. Field Orthopedic fracture/dislocation for impaired circulation
 6. Placement of Intraosseous
 7. GCS < 12
 8. Any patient meeting WA State Trauma Triage Guidelines requiring transport to a trauma center.

Send copy of patient care report to:

San Juan County MPD
45 Lavender Lane
East Sound, WA 98245

METHODS FOR IMPROVEMENT

The provider agencies, through their internal QI process, are responsible for creating and monitoring issue resolution programs in conjunction with the MPD, up to and including individual performance improvement plans, education and training, standardized education and if necessary discipline.

The involvement of all stakeholders in the QI Committee ensures that a multidisciplinary approach to issue resolution exists. As trends in issues are identified QIC may elect to form subcommittees to address specific issues and develop solutions. Should an issue arise outside of the specifically collected indicators or filters, notification of the issue will be directed by the MPD to the provider agencies. The MPD in collaboration with the provider agencies will explore the issue's root causes as well as develop solutions.

TRAINING AND EDUCATION

Once a decision to take action or to solve a problem has occurred, training and education are critical components that need to be addressed. Each provider agency has designated training personnel who work in conjunction with the QI personnel to ensure that appropriate training is presented to the pre-hospital care personnel.

To implement change, one must deliver verifiable, ongoing training that is appropriate to the skill level and service goals of the organization. The QI committees in conjunction with the MPD and San Juan County EMS Council can develop standardized training that can be disseminated to all the provider agencies.

Annual updates to the patient treatment protocols are constructed by the MPD and EMS Council in conjunction with the QI Committee and formulated into a standardized teaching plan prior to their implementation. All training materials are made available to each agency, as well as posted on the Orcas Island Fire Department and San Juan EMS websites.

The QIC discusses issues related to the medical management of pre-hospital patients and teaching documents are created by the MPD based on these discussions. The document, titled "Lessons Learned" is sent to all the provider agencies to distribute and discuss with the pre-hospital personnel, as well as posted on the agency websites. The provider agencies include the "Lessons Learned" documents in the regular training program for all EMS personnel.