

Workgroup Recommendations for Implementation of a Statewide Emergency Department Data Collection System in Washington:

The Coded Emergency Department Data System (CEDDS) Project

August 2011



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Executive Summary

With funding from the Washington Traffic Safety Commission, the Department of Health conducted the Coded Emergency Department Data System (CEDDS) project to assess the feasibility of leveraging existing systems to collect emergency department data. The Department of Health convened a Recommendations Committee to develop a set of proposals for policy makers on statewide implementation of emergency department data collection. The proposals outlined in this report are based on the opinions of the CEDDS Recommendations Committee members (Appendix A) and not necessarily the organizations they represent.

Currently, Washington State does not gather comprehensive data on patient visits to hospital emergency departments. We do know that from 1998 through 2008, total emergency department visits in Washington increased 54 percent, while increasing only 23 percent nationally. In 2008, there were more than 2.5 million emergency department visits and \$2.6 billion in hospital charges for emergency care in Washington. Many of these emergency department visits were preventable, and could have been more efficiently and effectively treated in other health care settings.

Twenty-eight states collect emergency department data. Washington State is among those that lack a statewide emergency department data collection system. Without data on emergency department use, it is difficult for agencies to monitor trends in disease and injuries, effectively target resources to local areas, and plan and evaluate strategies to reduce potentially preventable emergency department use.

In the absence of a statewide emergency department data system, state agencies and other organizations have had to rely on other, less appropriate data or invest in costly data collection efforts of their own. The Washington State Department of Transportation and the Washington Traffic Safety Commission are two such agencies that have to rely on less appropriate data to allocate millions of dollars in resources for reducing the number and severity of injuries from traffic crashes. In addition, Spokane Regional Health District and the Washington State Hospital Association are two organizations that have invested in independent emergency department data collection efforts. Neither approach is optimal because reliance on inappropriate or incomplete data affects agencies' ability to make good decisions about effective policies and the best use of their resources. Moreover, multiple and overlapping emergency department data collection efforts are not an efficient use of resources.

Recommendations to Policy Makers for Statewide Emergency Department Data Collection:

1. Statewide data collection from emergency departments in Washington should be mandated in state law when funding can be identified.
 - Emergency department data should be collected from hospitals statewide to support state and local agencies and organizations in using their resources more effectively to meet their mission.
 - Data should be collected in a standardized format.
 - Data should be collected on all visits, including those that result in inpatient admissions.
 - Hospitals should be given time prior to the start date for data collection to develop the internal systems and procedures necessary to enable data reporting.
 - Data collection requirements should be limited initially to the data already collected by hospitals for reimbursement purposes.
 - De-identified (non-confidential) data files should be made available to the public.
2. Several funding sources should be explored to support the implementation and maintenance of the emergency department data collection system.

- General funds and federal grant opportunities should be explored to support implementation of emergency department data collection. Inter-agency funding opportunities should be explored to support ongoing system maintenance.
 - Costs should be borne in part by data users through the use of fees for obtaining data files. The fee schedule should identify exempt users including the hospitals that provide the data.
3. Leveraging the existing inpatient data collection infrastructure in hospitals and the Department of Health is currently the most cost-efficient and timely way to collect statewide emergency department data.
- In the future, Health Information Exchanges (HIE) should be explored as a potentially more timely and cost-effective way of collecting emergency department data.

Scope of the Problem

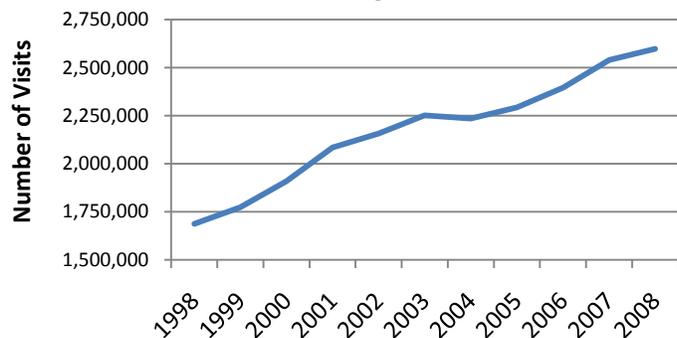
Total emergency department visits in Washington increased 54 percent from 1998 to 2008 (Figure 1). Nationally they have increased only 23 percent. In 2008, there were more than 2.5 million emergency department visits in Washington. The hospital charges associated with these visits were more than \$2.6 billion.[‡]

According to the Washington State Hospital Association, an estimated 11 percent of emergency department visits in Washington are potentially preventable.¹ Potentially preventable emergency department visits are those that can be treated in another, potentially less costly setting or could have been avoided with better primary care management. Depending on the methodology used, potentially preventable emergency department visits at the national level have been estimated to be as high as 56 percent.² Without data on the medical causes for these visits, it is difficult to quantify the extent of potentially preventable emergency department use in Washington, and to develop and evaluate ways to address the issue.

Background

Emergency department use is a marker of how well other components of the health care system are operating, such as access to primary and urgent care. Increasing emergency department use and a decrease in hospitals operating emergency departments has pushed emergency care in the US to a breaking point.⁴ – Institute of Medicine, 2007

Figure 1: Number of Emergency Department Visits in Washington 1998-2008



In the absence of a statewide emergency department data system, several organizations in Washington such as the Spokane Regional Health District and the Washington State Hospital Association have implemented data collection efforts of their own. Duplicated data collection efforts are burdensome on the hospitals that have to provide the same data to several different organizations. Little of the emergency department data currently collected by individual organizations in Washington are available publicly.

Lack of statewide emergency department data also hinders efforts to monitor the health care system in Washington. One of Washington State's Priorities of Government is to improve health by providing access to appropriate health care, including emergency department care and primary care. Without complete data on the medical causes for emergency department visits, state government officials and policy-makers are missing critical data needed to evaluate progress toward this goal.

Finally, the need for emergency department data extends well beyond health agencies and organizations. The Department of Transportation and the Washington Traffic Safety Commission need data on where traffic crashes resulting in serious injuries are occurring in the state so they can invest financial and personnel resources in the right place to reduce crashes. Currently, they rely on information gathered by the investigating police officers at the scene, who have limited or no medical training or medical equipment needed to assess injury severity. These approaches to fill the current data gap are known to produce misleading results.³

[‡] Data on the number of emergency department visits and the charges for these visits are available from the Department of Health's Hospital Financial Reporting System. This system does not collect data on the medical causes, services provided, or outcomes of these visits.

Aim of the Project

The aim of the Coded Emergency Department Data System (CEDDS) project was threefold:

1. Test the feasibility of collecting emergency department data using the existing infrastructure for hospital inpatient data reporting.
2. Demonstrate the utility of emergency department data.
3. Develop a set of proposals for policy-makers on statewide implementation of emergency department data collection.

The CEDDS project was conducted by the Department of Health between July 2009 and April 2011, with funding from the Washington Traffic Safety Commission. The commission's primary interest was to obtain a more comprehensive picture of the burden of traffic crash injuries in the state. In particular, it was interested in how well the data on the severity of traffic crash injuries assessed by the police officers at the scene of a crash compared to patient medical data from the emergency department visit.

Under current state law, hospitals in Washington are required to report data to the Department of Health on all inpatient hospital stays ([RCW 43.70.052](#) and [WAC 246-455](#)). This project tested the feasibility of using the existing hospital inpatient data reporting infrastructure to collect emergency department visit data. The infrastructure tested includes the systems that hospitals use to report inpatient data as well as the system used by the Department of Health to collect and process these data.

To design the project, the CEDDS team gathered information from many of the other 28 states that currently collect emergency department data. Department of Health staff convened a multi-disciplinary stakeholder team to guide the direction of the project, help gather and evaluate data, and develop a set of proposals based on the evidence (Table 1).

Table 1: Recommendations Committee Membership

<i>Hospitals:</i>	<i>State and Local Agencies:</i>
<ul style="list-style-type: none">• Central Washington Hospital• Harborview Medical Center• Okanogan Douglas District Hospital• Prosser Memorial Hospital• Providence Medical Group• Swedish Medical Group• University of Washington Medical Center	<ul style="list-style-type: none">• Department of Health• Traffic Safety Commission• Department of Social and Health Services• Medicaid Purchasing Administration• Department of Transportation• Spokane Regional Health District• Public Health – Seattle and King County
<i>Health Care Organizations:</i>	<i>Hospital Data Vendors:</i>
<ul style="list-style-type: none">• American Heart and Stroke Association• King County Healthcare Coalition• Puget Sound Health Alliance• Washington State Emergency Nurses Association• Washington State Hospital Association	<ul style="list-style-type: none">• Inland Northwest Health Services

Eleven hospitals agreed to voluntarily participate in this project, of which seven were able to provide the department with patient-level data on all of the emergency department visits in 2009 (Table 2). Participating hospitals included Harborview Medical Center, the only Level 1 trauma center in Washington, and Swedish Issaquah, a free-standing emergency department. This project received approval for data collection from the Washington State Institutional Review Board (IRB), Swedish Medical Centers IRB, and Providence Health Systems IRB.

Table 2: Hospitals That Provided Emergency Department Data for this Project

<i>Hospital Name</i>	<i>City</i>	<i>County</i>
Central Washington Hospital	Wenatchee	Chelan
Swedish Ballard	Seattle	King
Swedish Cherry Hill		
Swedish First Hill		
Harborview Medical Center		
University of Washington Medical Center		
Swedish Issaquah	Issaquah	King

Feasibility of Statewide Emergency Department Data Collection

The CEDDS team tested the feasibility of using the existing hospital inpatient data system infrastructure to collect emergency department data from the seven hospitals that voluntarily participated in the project. To minimize the reporting burden on hospitals, the administrative data collected from emergency departments were based largely on billing data that facilities already collect for reimbursement purposes. In addition, the CEDDS Recommendations Committee asked hospitals to test whether they could submit four non-billing data items including mode of arrival at the emergency department (e.g. arrival by ambulance or not), time since onset of symptoms (e.g. time since heart attack or stroke symptoms started), blood alcohol level, and blood toxicity screen (e.g. prescription or recreational drug levels in the blood).

Based on these tests, the committee determined that:

1. Hospitals are able to submit emergency department billing data to the Department of Health using the existing infrastructure for hospital inpatient data submission.
2. Within the time frame of this project, hospitals were unable to submit the non-billing emergency department data items listed above.
3. With additional time to define and clarify new non-billing data reporting requirements, many hospitals may be able to submit some of these data items to the Department of Health.
4. The Department of Health is able to process and analyze emergency department data using the existing hospital inpatient data system infrastructure.
5. Implementing a statewide emergency department data collection system would increase four-fold the number of patient records collected by the Department of Health. To accommodate the increase in number of records, the department would need to enhance the capacity of its existing hospital inpatient data system.

Utility of Statewide Emergency Department Data

The following section provides an overview of the potential utility of statewide emergency department data. These results are based on the pilot study data collected during this project from seven out of the about 100 emergency departments in Washington. Although suggestive of how useful statewide data could be, the following results are not representative of all emergency department visits in the state at this time.

In total, 206,193 emergency department records were submitted during this project, which represented eight percent of all emergency department visits in 2009 (Figure 2). About one quarter of these visits were for injuries and poisonings (Figure 3), and another quarter were for ill-defined conditions (e.g. the emergency department staff could find no specific medical or injury diagnosis for the patient).

Figure 2: Number of Emergency Department Visits in 2009 for the Seven Participating Hospitals

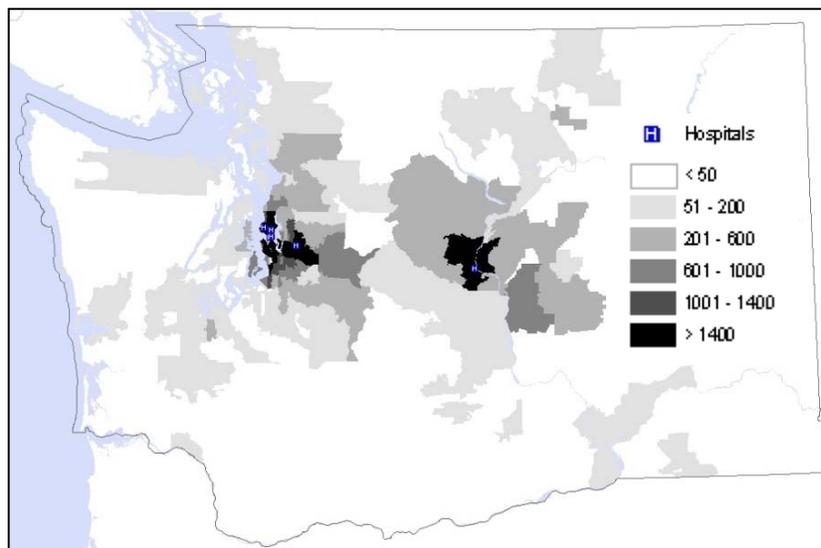
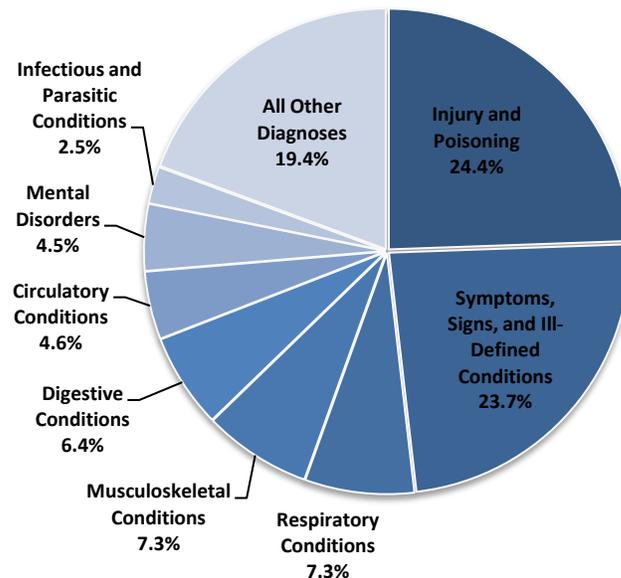


Figure 3: Percent of Emergency Department Visits by Main Diagnosis of Each Patient, 2009



Older Patients, Medicare and Medicaid Recipients

Background

- *Total hospital charges associated with emergency department visits are higher for older patients than for younger patients, which has significant implications for health care costs as our population ages. In 2010, 12 percent of Washington's population was age 65 or older, and by 2030 it is forecasted to be more than 25 percent.⁵*
- *Medicaid accounts for about 15 percent of the state's biennial budget and pays for about one third of all emergency department visits in Washington. To measure the true success of strategies to improve services and contain costs, it is important to compare to other payers and similar populations over the same time period. For example, opinion on whether a strategy by one payer to contain certain costs was a success will depend upon whether other payers have achieved similar or greater success.*

The percent of emergency department visits made by patients aged 25-44 years was three times that of patients aged 14 or under and two times that of patients aged 65 years and older (Figure 4). In contrast, the percent of hospital charges associated with these visits increased steadily with patient age. Patients aged 65 years and older accounted for twice the proportion of charges than they did the number of emergency department visits. Medicare recipients accounted for 21 percent of emergency department visits, and 41 percent of charges. Medicaid recipients accounted for 24 percent of emergency department visits and 16 percent of charges (Figure 5).

The capacity of the emergency care system in the nation is already reaching a breaking point⁴, and the state and federal budgets are in crisis. According to the pilot data, Medicaid and Medicare account for almost half of emergency department visits and more than half of all charges. Furthermore, the proportion of the population age 65 and older is forecasted to more than double by 2030.⁵ With statewide data on emergency department visits, agencies would have the information they need to effectively plan and evaluate strategies to ensure we have capacity in the emergency department system for people who need it, and to ensure we use our resources most efficiently to pay for it.

Figure 4: Percent of Emergency Department Visits and Hospital Charges by Age Group, 2009

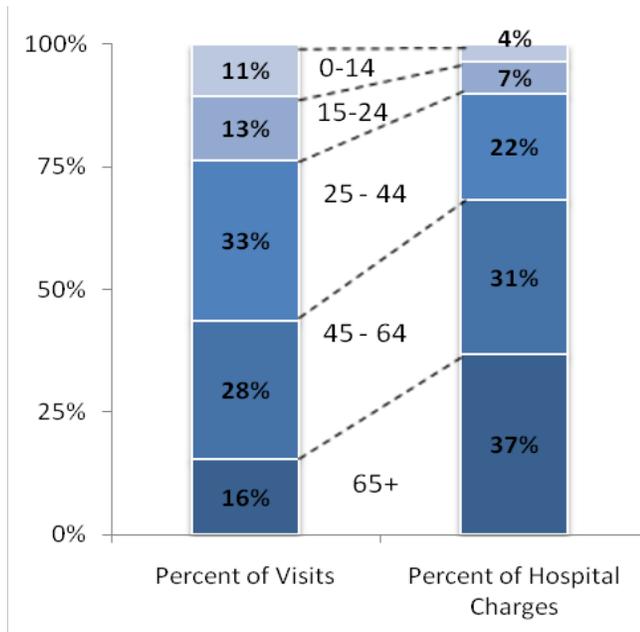
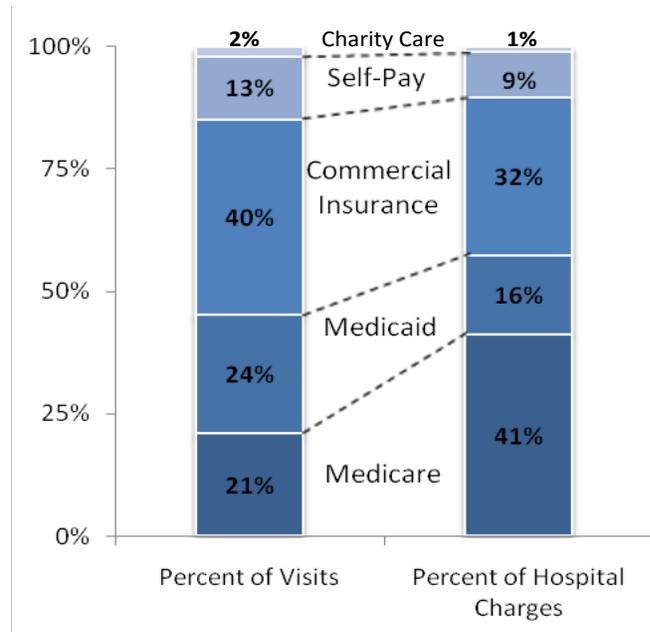


Figure 5: Percent of Emergency Department Visits and Hospital Charges by Payer, 2009



Specific Neighborhoods

Background

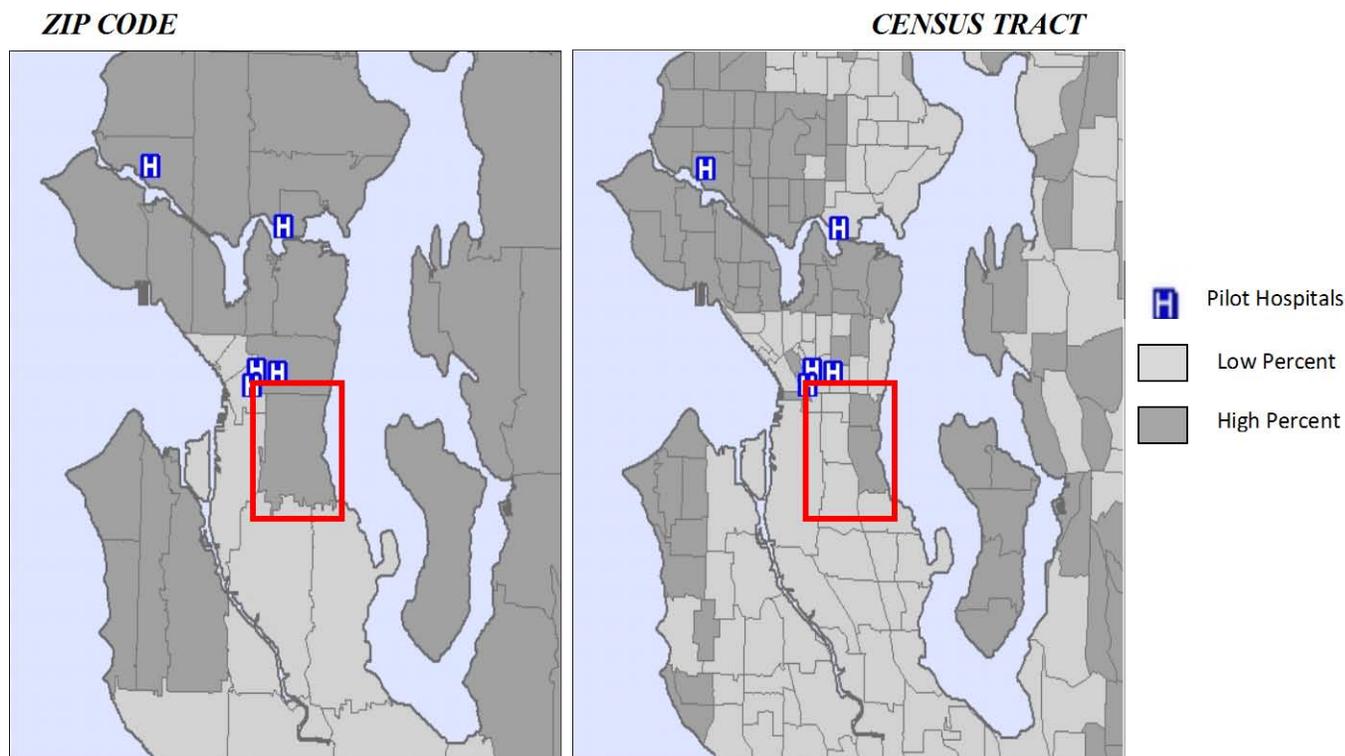
Currently, data on hospitalizations in Washington are collected only at the ZIP code level, and the number of different communities based within any given ZIP code can be large. For instance, more than 70,000 people reside in ZIP code 98031 in King County⁵. In contrast, census tracts contain only up to 19,000 people in Washington.⁵ Efforts to prevent disease and injury and improve health are more likely to be effective if they are targeted at the specific neighborhood of interest.

To test the feasibility of collecting a high degree of geographic detail about emergency department use, the committee asked the hospitals in this project to submit full patient address to the Department of Health. All seven pilot hospitals were able to submit this level of geographic detail.

Figure 6 shows two maps of the percent of emergency department visits due to injuries or poisonings in the King County region. One map shows the percent of visits due to injuries or poisonings by ZIP code, and the other by census tract. Based on ZIP code, it appears that injury/poisoning visits are high in the whole of the 98144 ZIP code (shown in red on the map). More than 26,000 people reside in this ZIP code.⁵ However, the census tract map shows that in reality only two neighborhoods within this ZIP code have a high percent of injury/poisoning emergency department visits.

Statewide emergency department data collected at a high level of geographic resolution would allow resources to be targeted strategically. Information about local areas could improve health in communities at high risk of injury or disease and be used to plan future development of local health care services.

Figure 6: Percent of Emergency Department Visits Due to Injuries or Poisonings in the King County Region by ZIP Code and Census Tract, 2009



Potentially Preventable Emergency Department Visits

Background

- Potentially preventable emergency department visits are visits for reasons that (1) do not require medical care within 12 hours, (2) could be more efficiently treated in a primary or urgent care setting, or (3) could have been avoided with better primary care management⁶. Examples of such visits are for prescription refills, ear infections, and urinary tract infections.
- Potentially preventable emergency department visits may lead to overcrowding, long waiting times for treatment, and increased health care costs for everyone⁴.
- The main methods for calculating the number of potentially preventable emergency department visits include the New York University (NYU) method and the California Emergency Room Coalition (MediCal) method¹.

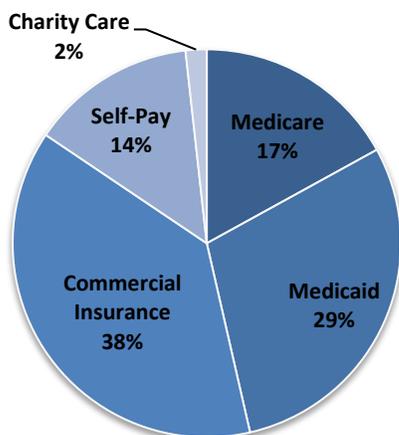
Of the patients who visited the emergency department at the seven pilot hospitals, 25 percent had visited the emergency department two or more times during 2009. Two percent of patients visited the emergency department six or more times within one year.

In total, between 11 and 46 percent of the emergency department visits at the seven pilot hospitals, and more than four percent of hospital charges, were potentially preventable, depending on the method used.

The burden of potentially preventable emergency department visits is not borne equally among payers. Medicaid recipients account for almost one third of potentially preventable emergency department visits (Figure 7). In addition, the average number of emergency department visits per patient at the pilot hospitals was higher for Medicaid recipients than for patients with other health insurance (Figure 8).

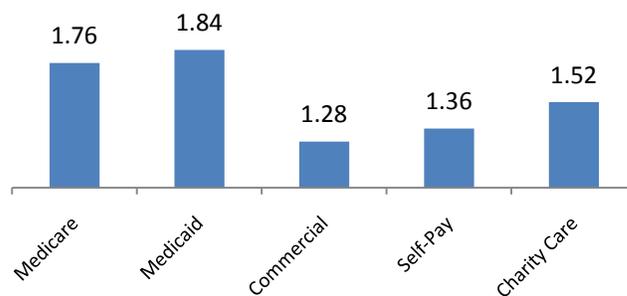
Several organizations and hospitals currently have initiatives to reduce the number of potentially preventable emergency department visits, including the Washington Medicaid Purchasing Administration. With statewide data on all emergency department visits for all payers, agencies would have the information they need to track what proportion of potentially preventable emergency department visits Medicaid is paying for in comparison to other payers, and to track and evaluate strategies to contain costs over time.

Figure 7: Percent of Potentially Preventable Emergency Department Visits by Payer *, 2009



*Based on the New York University Potentially Preventable Visits Method.

Figure 8: Average Number of Visits per Patient Made to the Emergency Department in a Year by Payer, 2009



Injuries and Motor Vehicle Traffic Crashes

Background

- *Injuries and poisonings are the most common causes of emergency department visits. Many of the common injuries that present at the emergency department could be more cost-effectively treated in other healthcare settings.*
- *The Department of Transportation and the Traffic Safety Commission allocate millions of dollars every biennium on road improvements (e.g., Target Zero) based on the location of severe traffic crash injuries in the state. In lieu of emergency department data on injury, these agencies rely on information gathered by police officers at the scene of traffic crashes to determine the severity of traffic crash injuries. Without the needed medical training and equipment to accurately determine injury severity, these data are known to be misleading.³*

One quarter of all emergency department visits (Figure 3), and 17 percent of hospital charges were for injuries and poisonings. The five most common injuries were open wound of the finger, head injury, neck sprain, ankle sprain, and bruising to the head and neck. Motor vehicle crashes accounted for two percent of emergency department visits.

Of the traffic crash injuries determined to be serious in the emergency department, the police correctly identified 75 percent of them at the scene of the crash (Table 3). However, for every one serious injury the police identified correctly, they mistakenly identified another four injuries as serious when they were actually mild or moderate injuries, or no injury at all. Of the traffic crash injuries determined to be minor in the emergency department, the police correctly identified only 47 percent.

Statewide emergency department data would allow the Department of Transportation and the Traffic Safety Commission to allocate their resources more effectively to reduce serious and fatal injuries. Furthermore, it would allow organizations such as hospitals to plan and evaluate strategies to treat common injuries more efficiently in other healthcare settings.

Table 3: Number of Emergency Department Visits due to Traffic Crashes by the Severity of Patient's Injuries as Determined from Emergency Department Records Versus as Determined by Police Officers in Department of Transportation Collision Records*, 2009

<i>Injury Severity from Collision Records</i>	<i>Injury Severity from Emergency Department Records</i>			
	No Injury	Minor Injury	Moderate Injury	Serious Injury
No Injury	75	290	1	1
Minor Injury	81	635	14	5
Moderate Injury	26	327	30	7
Serious Injury	2	103	37	39
<i>Total</i>	184	1,355	82	52

* For emergency department visits that occurred within 24 hours of the time of the traffic crash.

Chemical Dependency and Mental Illness

Background

- *Mental illness and chemical dependency related emergency department visits have increased more than 40 percent in the past 15 years nationally⁸.*
- *Washington’s Department of Social and Health Services has been monitoring trends in emergency department use for mental illness and chemical dependency within the Medicaid population.⁹ However, no statewide data are collected for other payers.*

Of the emergency department visits at our seven pilot hospitals, mental illness or chemical dependency were the main diagnosis received at four and one-half percent of visits (Figure 2), and were considered a contributory diagnosis in an additional 25 percent of visits.

Among all payers, Medicare recipients had the highest percentage (40 percent) of emergency department visits with a main or contributory diagnosis of mental illness. Medicaid had the highest percentage of emergency department visits (33 percent) with a main or contributory diagnosis of chemical dependency. Combining mental illness and chemical dependency, the payer with the highest percentage of emergency department visits with either a main or a contributory diagnosis of these conditions (37 percent) was Medicaid (Figure 9).

Average hospital charges for patients with emergency department visits with a main or contributory diagnosis of mental illness and/or chemical dependency far exceeds the average hospital charges for a visit made by a patient without such a diagnosis (Figure 10).

With statewide data on all emergency department visits for all payers, agencies would have the information they need to track what proportion of mental illness and chemical dependency emergency department visits Medicaid is paying for in comparison to other payers. This would allow them to track and evaluate strategies to contain costs (number of visits) over time.

Figure 9: Percent of Emergency Department Visits with a Mental Illness and/or Chemical Dependency Diagnosis by Payer, 2009

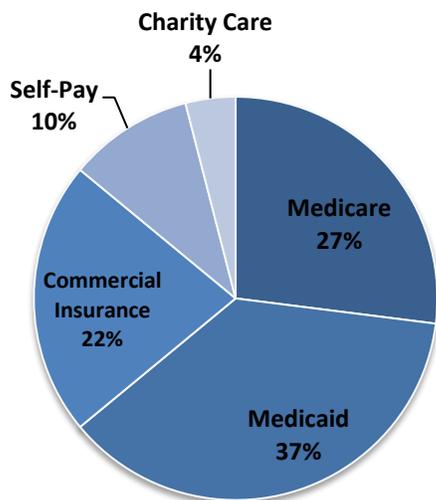
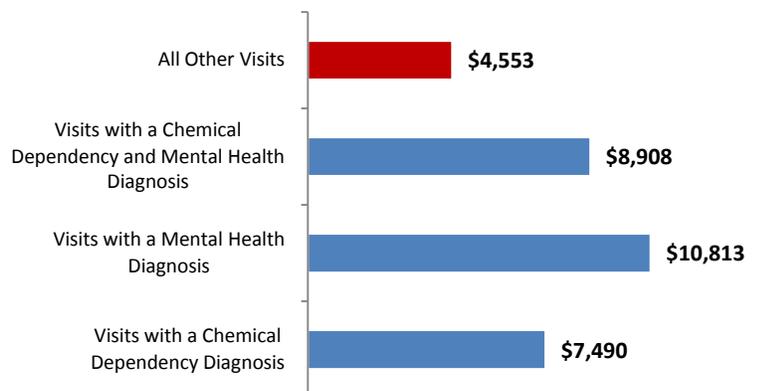


Figure 10: Average Charges Associated with an Emergency Department Visit with a Diagnosis of Mental Illness and/or Chemical Dependency Compared to All Other Visits, 2009



Chronic Health Conditions

Background

- *Chronic health conditions include diabetes, heart disease, stroke, hypertension (high blood pressure) and asthma. Cardiovascular disease (heart disease and stroke combined) is the leading cause of death in Washington.¹¹ Many people with chronic health conditions have more than one such condition. For example, a patient may present to the ED with hypertension, diabetes, and heart disease at the same time.*
- *The vast majority of chronic health condition-related emergency department visits are potentially preventable, as these conditions are more effectively and efficiently treated in a primary care setting.²*

Of the emergency department visits at the seven pilot hospitals, 15 percent of visits included a chronic health condition as the main diagnosis. An additional 30 percent of emergency department visits included a chronic health condition as a contributory diagnosis at the visit. Medicare recipients accounted for the highest percent (34 percent) of emergency department visits with a main or contributory chronic health condition diagnosis, followed by patients with commercial insurance (29 percent), and Medicaid (23 percent).

Some chronic conditions spike at certain times a year. For example, the number of asthma-related emergency department visits increased dramatically in the fall and early winter of 2009 compared to the rest of the year (Figure 11).

Average hospital charges associated with emergency department visits with a main or contributory diagnosis of one or more chronic health conditions were nearly four times greater than the charges associated with all other visits (Figure 12).

The Department of Health and other organizations currently have initiatives to redesign primary care delivery by adopting the medical home model of care. With statewide data on emergency department visits, agencies would have the information they need to plan and evaluate strategies related to this redesign effort. These data would assist them in planning and evaluating initiatives to triage chronic conditions, directing them to primary and urgent care instead of the emergency department.

Figure 11: Number of Emergency Department Visits for Asthma by Month, 2009

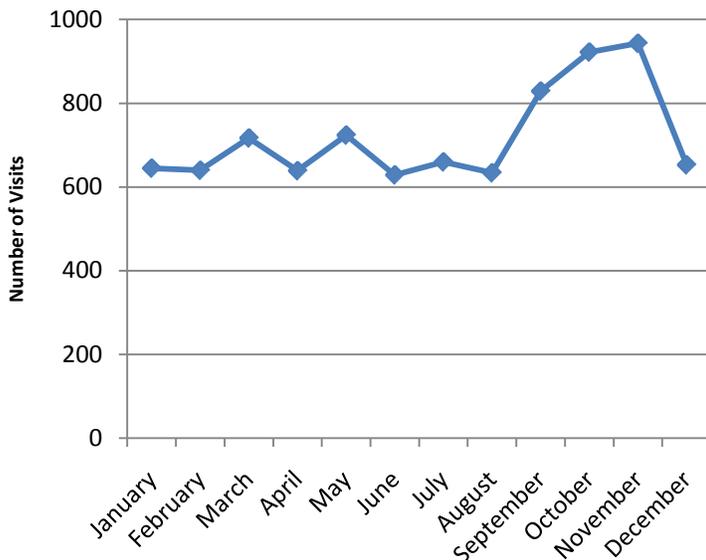
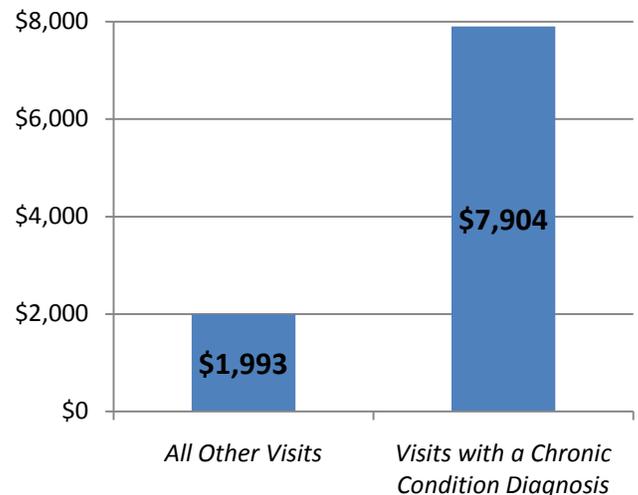


Figure 12: Average Charges Associated with an Emergency Department Visits with a Chronic Condition Diagnosis Compared to All Other Visits, 2009



Infectious Conditions and Communicable Diseases

Background

- *Pneumonia is one of the most common reasons for inpatient admission from the emergency department and is one of the most common causes of hospital death.¹⁰*
- *By law, health care providers and laboratories must notify the Department of Health of cases of certain infectious conditions (termed notifiable conditions) so the department can work to control possible outbreaks. Examples of these conditions include listeriosis and novel flu.*
- *Efforts to control notifiable conditions need to be swift to minimize the spread of the disease. The time lag of hospital billing data submission to the Department of Health precludes its use for informing immediate efforts to control disease. However, hospital billing data is a good tool for checking the completeness of reporting and for guiding work to improve compliance with notifiable conditions law.*

Of the emergency department visits at the seven pilot hospitals, infectious conditions and communicable diseases accounted for almost three percent of all visits (Figure 3). The most common such conditions seen in the emergency department were acute respiratory infections, followed by pneumonia and influenza.

Emergency department visits for influenza peaked in the fall and early winter of 2009 during the H1N1 flu epidemic. Visits more than doubled compared to that seen the rest of the year (Figure 13).

No comparisons of the emergency department data and the Department of Health's Notifiable Conditions database were conducted during this project. However, comparisons of hospital inpatient data and the Notifiable Conditions database identified a failure of providers and laboratories to report one fifth of all cases of listeriosis to the Department of Health, as is required by state law (Figure 14).

Because not all cases of notifiable conditions are reported to the Department of Health, this poses a problem for controlling the spread of disease. With statewide emergency department data, agencies would have the information they need to effectively plan and evaluate strategies to ensure all health care providers and laboratories comply with notifiable conditions laws. This would help us more effectively and efficiently contain future infectious and communicable disease outbreaks.

Figure 13: Number of Emergency Department Visits for Influenza by Month, 2009

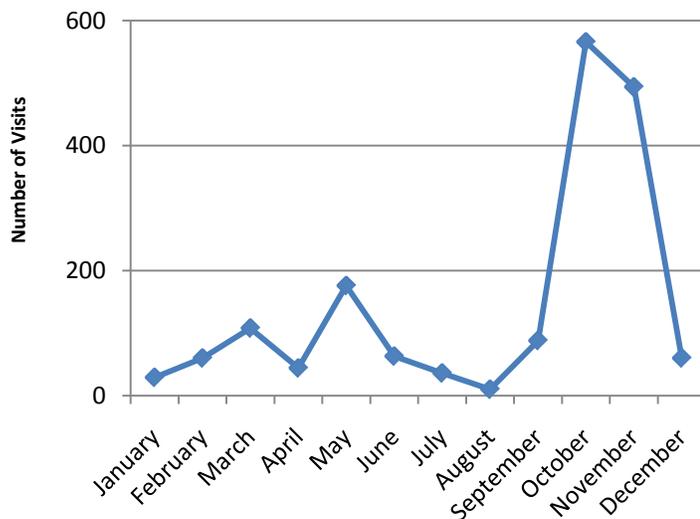
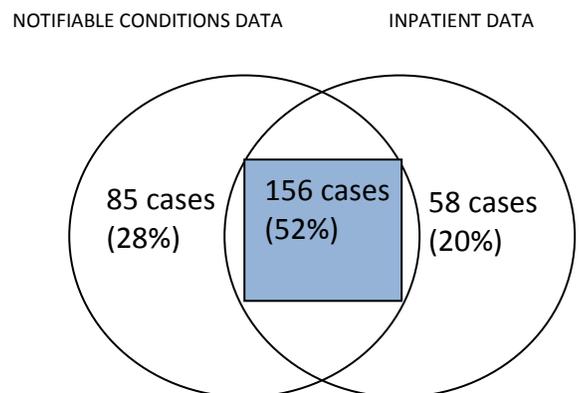


Figure 14: Number (%) of Listeriosis Cases Reported in the Notifiable Conditions Data System Compared to the Hospital Inpatient Data System, 2009



Recommendations for Implementing a Statewide Emergency Department Data Collection System

The following set of proposals for policy makers was developed based on the opinions of the CEDDS Recommendations Committee members (Appendix A), interviews with hospital representatives and data stakeholders, and data collection experiences gained from this pilot effort.

1. Statewide data collection from emergency departments in Washington should be mandated in state law when funding can be identified.

Compliance with data collection requirements by hospitals will be greater if data collection is mandated, and if there is legal authority to support compliance, than if data collection is voluntary. The greater the compliance with data collection requirements, the more complete and useful the data set, and fewer staffing resources are needed by the Department of Health to follow up with hospitals on reporting.

- Emergency department data should be collected from hospitals statewide to support state and local agencies and organizations in using their resources more effectively to meet their mission.

Data on emergency department use are needed by state agencies and other organizations to plan and evaluate strategies to improve public health, allocate financial and personnel resources (e.g. for emergency preparedness planning), and to make informed decisions about how to reduce costly and potentially preventable health care use. In addition, hospitals would value these data for marketing and service area analysis, and cost containment.

- Data should be collected in a standardized format.

The capability to compare emergency department data among different hospitals, different counties or over time is dependent upon data being collected in a consistent manner. Without consistent data, it is difficult to ascertain if a disease rate, for example, is indeed higher in one hospital compared to another, or if it is just because one hospital submitted its data to the Department of Health in a different way than the other. To collect data in a consistent manner requires data collection requirements, specifying standardized formats for data submission. Standardized formats for emergency department data submission would minimize the amount of resources hospitals need to spend preparing the data files as the requirements would be clearly defined. Emergency department data collected in a standardized format would require less staff time to collate into a data set at the Department of Health than data that are received in a different format from every hospital.

- Data should be collected on all visits, including those that result in inpatient admissions.

Emergency department visits can result in an inpatient admission, a discharge home or other outcome. Some patients also leave the emergency department without being seen by a health care provider. To create a comprehensive data system, data on all emergency department visits should be collected (to the extent possible) irrespective of discharge status.

- Hospitals should be given time prior to the start date for data collection to develop the internal systems and procedures necessary to enable data reporting.

Resources, data systems and IT capabilities vary widely among emergency departments in Washington. Based on the experience from this pilot, the majority of hospitals should be able to report emergency department data within about one year of the reporting requirements going into

effect. Smaller facilities with fewer resources are likely to require more than one year to meet data submission requirements. These timeframes take into account the imminent national IT conversions in hospital billing record format; the HIPAA version 5010 electronic billing standard in 2011 and the International Classification of Diseases version 10 (ICD-10) codes in 2013. If implementation of an emergency department data collection system is delayed, implementation timelines should be re-evaluated to take into account any further impending changes in national guidelines or reporting standards.

Hospitals currently have the ability to retrospectively submit data to the inpatient data system. Facilities that cannot submit data by the specified start date could retrospectively submit emergency department data to the Department of Health to ensure the completeness of the first year of emergency department data collection.

Once the internal systems and procedures are in place necessary to enable data reporting, the timeframe required for emergency department data submission by hospitals should be the same as that for hospital inpatient data reporting.

- Data collection requirements should be limited initially to the data already collected by hospitals for reimbursement purposes.

The data elements currently collected by hospitals for reimbursement purposes and for hospital inpatient data reporting are well established and understood by hospitals. Using established data elements will ensure a higher level of data consistency and reduce the reporting burden on hospitals.

Other states and national collaboratives have worked to enhance hospital billing data systems with non-billing data, particularly laboratory values and blood pressure results. These types of data are important for monitoring the management of chronic disease and adjusting comparisons of health outcomes between one facility and another based on how ill patients were when they arrived at the facility. Requirements for hospitals to submit additional data elements should be considered only once hospitals are able to meet these initial requirements. If pursued, the reporting of these types of data elements will require close collaboration between the Department of Health and hospitals, and inter-departmental collaboration within hospitals as it will be very time consumptive and expensive, especially for hospitals with fewer data reporting and electronic charting resources.

- De-identified (non-confidential) data files should be made available to the public.

The limited emergency department data files currently collected by individual organizations in Washington are not available publicly. To allow state agencies, organizations and hospitals to accomplish their mission, the emergency department data file collected by the Department of Health should be made available to the public in a de-identified (non-confidential) format.

Most data users do not need confidential data. Confidential data files include data elements such as name of patient and date of birth. Confidential data elements are crucial for linking emergency department visits over time (e.g. for assessing readmissions), linking emergency department visits to other datasets (e.g. to the Department of Transportation's motor vehicle collision dataset), and for deleting duplicates within the data set. Once emergency department visits have been linked by the Department of Health, a de-identified data file can be created by removing the patient identifiers.

2. Several funding sources should be explored to support the implementation and maintenance of the emergency department data collection system.

- General funds and federal grant opportunities should be explored to support implementation of emergency department data collection. Inter-agency funding opportunities should be explored to support ongoing system maintenance.

The hospital inpatient data collection system leveraged in this project to collect emergency department data is supported by general state funds. Data users contribute to the costs of sustaining the data collection system by paying a fee for obtaining hospital inpatient data files. The number of emergency department visits is approximately four times greater than the number of hospital inpatient stays. Additional resources will be required to implement emergency department data collection to support the costs associated with the increase in data volume.

This project did not include a detailed fiscal analysis of the resources required to implement statewide emergency department data collection. A full fiscal analysis will need to be conducted to inform decisions about implementation of a statewide emergency department data system.

- Costs should be borne in part by data users through the use of fees for obtaining data files. The fee schedule should identify exempt users including the hospitals that provide the data.

Data users should contribute to the costs of sustaining the emergency department data collection system through fees charged for data files, but such fees will not cover all costs of implementing and maintaining the system. A fee structure, separate from the fees currently charged for hospital inpatient data files, should be developed and should identify users exempt from these fees. Hospitals should not have to pay to receive the data they have collectively submitted for incorporation into a statewide data set.

3. Leveraging the existing inpatient data collection infrastructure in hospitals and the Department of Health is currently the most cost-efficient and timely way to collect statewide emergency department data.

This project has successfully demonstrated that emergency department data can be submitted, processed, and stored through the existing hospital inpatient data reporting system. Leveraging the existing hospital inpatient data system for emergency department data collection would be more expedient and substantially reduce the cost of implementation and maintenance than developing and implementing a new data collection infrastructure.

- In the future, Health Information Exchanges (HIE) should be explored as a potentially more timely and cost-effective way of collecting emergency department data.

Federal dollars are available to support the Meaningful Use of electronic medical record data through Health Information Exchanges. Together with the Department of Health, many hospitals are working to expand their use of Health Information Exchanges. As Health Information Exchanges, Meaningful Use guidelines and data reporting and processing technologies evolve, HIE may be a more efficient and cost-effective option for collecting and storing emergency department data than the existing infrastructure for collecting inpatient data.

Conclusion

Based on the evidence gathered during this project and the opinions of the CEDDS Recommendations Committee members (Appendix A), data collection from all emergency departments in Washington should be mandated to fill the existing data gap. Currently, this data gap is hindering efforts to effectively target resources to local areas with high rates of disease or injury, and to plan and evaluate strategies to reduce costly and potentially preventable emergency department use. In the short term, leveraging the existing hospital inpatient data reporting systems in hospitals and the hospital inpatient data collection systems in the Department of Health, seems to be the more expedient and cost-effective way to implement emergency department data statewide. In the long-term, as Health Information Exchange (HIE) develops and expands across the state, HIE may become a better vehicle to collate these data for dissemination in a broader user format.

Hospitals will require at least one year to develop the systems and processes needed to submit emergency department data to the Department of Health. The financial costs associated with reporting emergency department data are likely to vary widely among hospitals according to their size, IT capability, and data vendor arrangements. To minimize the burden of emergency department data reporting on hospitals, requirements should be restricted initially to the billing data already collected by hospitals for reimbursement purposes. At the Department of Health, additional IT and personnel resources will be required to accommodate the increase in number of patient records and data dissemination responsibilities to implement and maintain the emergency department data system.

Statewide implementation of emergency department data collection will benefit hospitals and state agencies, as resources could be targeted more strategically to tackle high rates of disease, serious traffic crash injuries, and inappropriate emergency department use. The eventual outcome of these efforts will help to improve the health of Washingtonians, one of Washington's *Priorities of Government*, through improved quality of health care, safer roads, and reduced health care costs.

Appendix A: Recommendations Committee Membership

Name	Organization	Organizational Role
Amy Riffe, MA, MPH	Spokane Regional Health District	Epidemiologist – Community Health Assessment
Angela Davis	Department of Transportation	Collision Data Quality Assurance Supervisor
Anthony Marfin, MD, MPH, MA	Department of Health, Public Health Laboratories	State Epidemiologist for Infectious Conditions
Bev Court, PhD, MHA	Medicaid Purchasing Administration	Research Manager – Office of Quality and Care Management
Bif Fink, RN, MSN	Washington State Emergency Nurses Association	Past President and Secretary
Cherish Hart, MA	American Heart and Stroke Association	Senior Community Health Director
Clark Hartley, MBA	King County Healthcare Coalition	Project Manager – Emergency Department Diversion Project
Jac Davies, MPH, MS	Inland Northwest Health Services	Director of the Beacon Community, Director of Northwest TeleHealth
Jacquie Zehner, RHIA	Harborview Medical Center	Director of Health Information Management
Jim Cannon	Washington State Hospital Association	Executive Director, Health Information Program
Juliet VanEenwyk, PhD	Department of Health, Noninfectious Conditions Epidemiology	State Epidemiologist for Noninfectious Conditions
Karen English, RHIA	Swedish Medical Group	Senior Clinical Analyst, Decision Support
Kathy Schmitt, MPA	Department of Health, Community Health Systems	Manager – Research, Analysis, and Data Section
Kristal Rust	Washington Traffic Safety Commission	Research Analyst
Mike Smyser, MPH	Public Health-Seattle King County	Epidemiologist – Assessment, Policy Development and Evaluation
Natasha Rosenblatt, MPH	Puget Sound Health Alliance	Data Projects Manager
Pamela Lovinger	Department of Health, Office of the Assistant Secretary	Senior Advisor for Policy and Business Practices
Richard Ordos, BA	Department of Health, Center for Health Statistics	Manager, Comprehensive Hospital Abstract Reporting System (CHARS)
Sally Beahan, RHIA, MHA	University of Washington Medical Center	Director of Health Information Management
Saman Arababi, MD	Harborview Medical Center, Harborview Injury Prevention and Research Center	Associate Professor, Acute Care Section Head
Sharon Estee, PhD	Department of Social and Health Services, Research and Data Analysis Division	Chief, Program Research and Evaluation Section
Staci Hoff, MSPH, CHES	Department of Health, Center for Health Statistics	Epidemiologist
Tom Dyet, RN	Central Washington Hospital	Director of Emergency Services
Tony Lawrence	Providence Medical Group	Manager – Budgeting and Long Range Financial Reporting
Wanda Celeone	Okanogan Douglas Regional Hospital	Business Office Manager
Wanda Roberts	Prosser Memorial Hospital	Information Technology
Wendy Shultis, PhD	Department of Health, Center for Health Statistics	Manager and Epidemiologist – Data Quality and Statistical Services

Appendix B: References

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