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State Flex Program EMS/Trauma Activities and Integration of Critical Access Hospitals into Trauma Systems

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A Performance Monitoring Resource for
Critical Access Hospitals, States, and Communities

Flex Monitoring Team

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With funding from the federal Office of Rural Health Policy (PHS Grant No. U27RH01080), the Rural Health Research Centers at the Universities of Minnesota, North Carolina, and Southern Maine are cooperatively conducting a performance monitoring project for the Medicare Rural Hospital Flexibility Program (Flex Program).

The monitoring project is assessing the impact of the Flex Program on rural hospitals and communities and the role of states in achieving overall program objectives, including improving access to and the quality of health care services; improving the financial performance of CAHs; and engaging rural communities in health care system development.

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The Medicare Rural Hospital Flexibility Program

The Medicare Rural Hospital Flexibility Program (Flex Program), created by Congress in 1997, allows small hospitals to be licensed as Critical Access Hospitals (CAHs) and offers grants to States to help implement initiatives to strengthen the rural health care infrastructure. To participate in the Flex Grant Program, States are required to develop a rural health care plan that provides for the creation of one or more rural health networks; promotes regionalization of rural health services in the State; and improves the quality of and access to hospital and other health services for rural residents of the State. Consistent with their rural health care plans, states may designate eligible rural hospitals as CAHs.

CAHs must be located in a rural area (or an area treated as rural); be more than 35 miles (or 15 miles in areas with mountainous terrain or only secondary roads available) from another hospital or be certified before January 1, 2006 by the State as being a necessary provider of health care services. CAHs are required to make available 24-hour emergency care services that a State determines are necessary. CAHs may have a maximum of 25 acute care and swing beds, and must maintain an annual average length of stay of 96 hours or less for their acute care patients. CAHs are reimbursed by Medicare on a cost basis (i.e., for the reasonable costs of providing inpatient, outpatient and swing bed services).

The legislative authority for the Flex Program and cost-based reimbursement for CAHs are described in the Social Security Act, Title XVIII, Sections 1814 and 1820, available at http://www.ssa.gov/OP_Home/ssact/title18/1800.htm

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Introduction

This paper provides a portrait of State Flex Program EMS and trauma-related activities with particular focus on designation of Critical Access Hospitals (CAHs) as trauma centers.

Methods

Information on state EMS/trauma activities supported by 2008-2009 Flex grants was collected through telephone interviews with State Flex Coordinators, State Office of Rural Health (SORH) Directors, and related EMS stakeholders (e.g., CAH trauma coordinators and State EMS staff). Data were collected in two phases: 1) telephone interviews with SORH representatives about state Flex Program efforts and state trauma delivery systems (March-April 2009); and 2) interviews with project personnel engaged in activities targeting system development, center designation, and/or trauma team training (June-August 2009). State-specific data on CAH trauma center designation found in Table 2 was updated to March 31, 2010.

Results

Many states are paying more attention to trauma care in rural areas. Almost two-thirds (62%) of all Flex grantees included at least one trauma-related activity in their 2008-2009 State Flex grant workplans. Twenty-four of the 28 states with trauma-related objectives targeted two or more trauma area objectives, and many states targeted all three trauma area objectives. Those data undercount rural trauma activity, because ten states that did not include trauma-related objectives in their 2008-2009 work plans were currently engaged in trauma activities (largely as a carryover from previous year's efforts). Trauma team training was the most frequently funded workplan activity.

More than one-third of all Critical Access Hospitals in the U.S. have been designated as trauma centers. As of March 31, 2010 the project team identified a combined total of 560 CAHs designated as trauma centers.

Conclusion

The results of this study document heightened activity related to designating CAHs as trauma centers. Several states reported that participating in the Flex Grant Program was a key to getting CAHs involved. Norms are changing in some states: Respondents told us that, as more facilities obtained designation status, the remaining facilities found themselves left out of the process and some sought designation to be part of the larger state group again.

Significant barriers remain. In particular, lack of funding, lack of national standards (at present there are no national standards for trauma center designation, system planning, or trauma team training) and lack of available Level IV and V designation in many states all hamper progress toward trauma care systems that serve rural areas effectively.

Respondents emphasized the need to build on existing efforts. They also recommended using trauma registry data as a valuable educational tool. Registry data can convince rural hospitals of the need to improve their trauma care abilities. Equally important, registry data also helps educate state-level policy and program personnel about continuing disparities in rural trauma care and the need to work toward integrated, coordinated systems in which all parties have designated roles to play.

INTRODUCTION

Rural residents are twice as likely to die of traumatic injuries as urban residents. Nearly 60% of all trauma deaths occur in rural areas, including approximately two-thirds of all fatal motor vehicle accidents. Thus, organized trauma systems are critical for reducing mortality and morbidity rates in rural areas.[1-2] Most of the roughly 47 million Americans who do not have access to at least level II trauma care live in rural communities.[3] Great strides have been made over the past decade in extending emergency medical and trauma care to all Americans. However, large areas of the U.S., especially rural and frontier areas, continue to lack consistent access to these services.[4]

Developing and integrating emergency medical services (EMS) capacity remains a significant challenge for many rural areas."[5] Trauma care presents an additional challenge because of the unique skills and resources required to provide timely and appropriate care to severely injured patients and the need to coordinate with providers far away from rural areas. 'Traumatic injuries' are acute physical injuries (such as burns, head injuries and penetrating wounds) that pose a discernible risk for death or long-term-disability.

A trauma care delivery system consists of an organized approach to facilitate and coordinate a multidisciplinary response to provide care for those who experience severe injury. Detailed planning is required for all components to interface successfully and for health professionals to interact properly, so that the trauma care system functions effectively across the continuum of care. (The continuum of care includes EMS, 9-1-1 dispatch and medical oversight of pre-hospital care, triage and transport, emergency department trauma care, trauma center team

activation, surgical intervention, intensive and general in-hospital care.)[4] Many states now realize that they need to create or enhance their ability to care for trauma and burn patients.

Trauma care centers are distinguished from other acute care facilities by the depth of resources they have available to provide care to severely injured patients (e.g., trauma specialists, intensive care units, and surgical teams ready for immediate surgery). [6] Trauma centers are typically categorized by level (e.g., I, II, and III) to emphasize their resource differentiation. Level I centers are tertiary care facilities that typically serve as regional resource centers; they offer not only the full range of trauma care but also medical education, trauma research and system planning support services. Appendix A contains additional information about the trauma center designation levels.

From old paradigm to new community-based trauma care model

Modeled after military standards for the triage and treatment of severely injured soldiers in Korea and Vietnam, early trauma delivery systems were exclusive and depended on two key components: one or more definitive care centers (trauma centers) and a dedicated pre-hospital medical transport system. Other acute care facilities (urban and rural) were bypassed.

The increased incidence of major trauma in the late 1980s and early 1990s, the events of September 11, 2001, plus a heightened awareness of the needs of rural communities all contributed to the emergence of a new, inclusive paradigm of trauma care. In this updated paradigm, all acute care facilities have roles, to the extent their resources allow, in a) assessing and stabilizing patients before further transport to a definitive care facility and b) caring for less severely injured patients within their own communities. [7] This concept of a fully inclusive trauma care system regards trauma care as community-based rather than trauma center-based. A community-based system can be planned for all populations, incorporating the needs of children, elder persons, and those with special health care needs and cultural considerations.[4]

In its report *Trauma Agenda for the Future*, the National Highway Traffic Safety Administration recommends that most facilities -- including small community hospitals -- should have a designated role in trauma delivery systems. The report concluded that integration of community-based Critical Access Hospitals (CAHs) and emergency medical services providers into regional trauma systems is of paramount importance in order to reduce rural disparities in access to trauma care services.[1]

Challenges to trauma care system implementation in rural areas

Multiple challenges must be overcome before trauma care systems that include rural hospitals become the norm.

Funding. Federal funding for trauma system development has been uneven for decades. The last major targeted program, the Trauma Care Systems Planning and Development Act of 1990, ended in 2006.

Standards. At present there are no national standards for trauma center designation, system planning, or trauma team training.[8] System development and trauma center designation are the responsibility of state agencies and typically fall within the purview of state EMS offices. Although some states such as New York and Pennsylvania have established their own standards for trauma center designation, the majority of states have adopted standards established by the American College of Surgeons (ACS) Committee on Trauma (COT). Appendix B contains additional information on the status of standards. The ACS has been a major stakeholder in national trauma system development efforts since the 1970s when it published the first set of trauma center resource and process standards in "Optimal Hospital Resources for Care of the Seriously Injured."[7] The standards have been updated on a regular basis as the field of trauma care has advanced.

Availability of Level IV - V designation. Although state trauma systems that have incorporated CAHs as lower-level centers have demonstrated improvements in rural trauma outcomes, as of 2006 half of all states still had only Level I - III trauma designations available, designations that are not typically attainable by CAHs.[9-10] ACS verification is still limited to Level III and above, and trauma center designation remains the responsibility of state agencies. Consequently, not all states have established Level IV or V trauma center designation criteria. (See Appendix A for more information about trauma center level criteria.)

Rural population and geography. A significant challenge in creating an effective trauma system is structuring a configuration of acute care hospitals that meets both the population and geographic needs of a given region. Variations in population density, geographical barriers to transport, and the location, capabilities and commitment of existing hospitals and medical staff can all determine – and limit -- system design.

Medicare Rural Hospital Flexibility (Flex) Program

Since its implementation, the Medicare Rural Hospital Flexibility (Flex) Program has provided grant funding and other assistance to the health care infrastructure of rural America. Supporting states' efforts to improve access to and the quality of emergency medical services for rural communities has been a core focus of the Flex Program's charge. The 2007 and 2008 Flex Grant Program guidelines included specific program guidance for developing trauma care systems. In each of those years the Office of Rural Health Policy (ORHP) directed funding for EMS and trauma-related activities to five areas: 1) assess trauma and EMS systems; 2) pursue trauma center designation of CAHs; 3) support CAH trauma team development; 4) improve EMS medical direction; and 5) implement mechanisms to support EMS agencies in efforts of recruitment/retention, reimbursement and restructuring.

PURPOSE OF THE PROJECT

This project had three primary purposes: 1) to identify state EMS and trauma-related activities that were included in the 45 state Flex Program work plans for the 2008 - 2009 grant cycle, and 2) to examine the degree to which CAHs are involved in pursuing assessment, designation, and training objectives and 3) to assess the degree to which CAHs are being integrated into larger trauma systems of care.

METHODS

Information on state EMS/trauma activities supported by the 2008-2009 Flex grant was collected by telephone interview with state Flex Coordinators, State Office of Rural Health (SORH) Directors, and related EMS stakeholders (e.g., CAH trauma coordinators and State Bureau of EMS staff). Data were collected in two phases:

1) telephone interviews with SORH representatives about state Flex Program efforts and state trauma delivery systems; and

2) interviews with project personnel engaged in activities targeting system development, center designation, and/or trauma team training. During March and April 2009, the project team contacted representatives from all 45 Flex states to verify which states had work plans involving trauma-related activities and to document any changes in work plan activities since the state's initial grant awards.

A copy of each state's 2008-2009 Flex grant work plan (provided by ORHP) was used as a point of reference for data collection on work plan changes. In addition to verifying their 2008-2009 work plan activities, representatives from each state were also asked to describe:

- their familiarity with EMS/trauma-related technical assistance materials,
- the degree to which CAHs were allowed to participate in state trauma systems (e.g., if CAHs were eligible for designation as a trauma center, the levels available for designation, and the number of CAHs designated), and
- their experiences in integrating rural EMS/trauma strategies into state policy and encouraging CAHs to take an active role in regional and statewide trauma systems.

Finally, the Flex Coordinators were asked what if anything the ORHP could do to foster greater involvement of CAHs in EMS and trauma system development efforts.

The project team paid particular attention to states engaging in activities relevant to trauma care. Respondents from these states were asked to identify their most important trauma-related effort (e.g., system assessment and development, center designation, and/or trauma team development), the role their office played in the effort, and the nature and source of support provided (e.g., financial support and technical assistance) in pursuit of work plan objectives. The vast majority of respondents were State Flex Coordinators; however, in some cases the position was either vacant or newly filled. In these instances, interviews were conducted with other knowledgeable representatives from the State Office of Rural Health or EMS/Trauma Agency.

Calls to each of the 45 states lasted approximately 15-30 minutes, depending on the scope and depth of information being collected. At the conclusion of the interview, the respondents were asked to identify project stakeholders who had contributed significantly to the success of trauma system development efforts and who might be interested in participating in a second wave of interviews involving a more in-depth discussion of one or more of the three trauma project activities.

Based on these responses, we selected 11 states for further study, including four states focusing on trauma system assessment and development (Kansas, Nebraska, New Mexico and West Virginia), five active in CAH trauma center designation (California, Colorado, Minnesota, Nebraska, and New Mexico), and six engaged in trauma team training (Indiana, Kansas, Minnesota, New Hampshire, Utah and Texas). Second-wave interviews with state trauma program and CAH personnel were conducted between June and August 2009. The goal of these interviews was to obtain information on notable trauma system accomplishments, facilitators and barriers to achieving objectives, lessons learned, and advice for other states.

RESULTS

This section of the report begins with a description of states' EMS/Trauma work plan objectives/activities for 2008-2009, and then discusses the state of trauma system development; state assessment and development activities; designation of CAHs as trauma centers; rural trauma team training; and integration of rural EMS/trauma strategies into state policy. It concludes with "lessons learned," i.e., advice offered by survey respondents to other states and CAHs.

Work Plan Objectives/Activities for 2008-2009

***Changes in work plan objectives*.** Most work plans remained unchanged. State Flex grant work plans had remained relatively unchanged over the more than six months since submission to ORHP in 2008. In spring 2009, at the completion of the first wave survey, 91% of all work plan activities had either been completed or were expected to be completed by the end of the grant year (August 2009). The vast majority (83%) of work plan modifications related to EMS objectives rather than trauma objectives and the majority of those objectives involved personnel training. Over half of the modified training objectives involved switching either the

training or hosting responsibilities from the SORH to another entity such as the State EMS Bureau.

The reasons for failing to follow through with the few remaining objectives involved political barriers, lack of interest, and funding shortages (e.g., ability to pay for travel or provide cover for staff to be trained at a distant location). Changes in work plan activities had a negligible impact on the overall project goals of the 2008-2009 State Flex grantees.

All 45 states targeted at least one of the five required EMS/trauma objectives in their 2008-2009 work plans. Eleven states focused exclusively on trauma-related activities and 17 states included both EMS and trauma-related activities. The remaining 17 states focused their efforts exclusively on EMS objectives. Table 1 shows the numbers of state objectives related to various EMS and trauma system categories.

***EMS objectives and activities*.** Twelve states included objectives/activities that focused on improving EMS medical direction, such as the provision of technical assistance, developing training programs, and implementing recruitment strategies. While some state plans focused on providing targeted assistance and support to EMS agencies for medical director recruitment and training (e.g., Colorado, Iowa, and Montana), others folded their efforts into a broader recruitment and training initiatives that also included EMS managers (e.g., Arkansas and Kentucky). Other states include the use of web-based technologies for providing training and/or for supporting an ongoing dialogue among Medical Directors across their states (e.g., Idaho, Kansas and Oregon). As Table 1 shows, many states included various activities to foster and strengthen EMS agencies.

Table 1. State EMS/Trauma Objectives for the 45 State Flex Programs, 2008-2009

Flex Program Required Objectives 2008 – 2009	Number of States with Objective in Flex Work Plan*
Emergency Medical Services 34 states total; 17 exclusive	
Improve EMS Medical Direction	12
Implement Mechanisms to Support EMS Agencies	
• Recruitment & Retention	12
• Reimbursement	7
• Restructuring	33
o Planning	10
o Leadership	10
o System Development	13
Trauma System Development and CAH Integration 28 states total; 11 exclusive	
EMS/Trauma System Assessment	24
Trauma Center Designation	17
Support CAH Trauma Team Development	26

*Total is greater than 45 states because some states had multiple objectives.

The most active EMS project area involved efforts to restructure or strengthen local and statewide EMS delivery systems. Efforts were equally divided among planning, leadership development, and system development activities with a strong emphasis on collaboration between local EMS agencies and CAHs.

Projects targeting the recruitment and retention of EMS personnel incorporated a range of strategies. These included: the development of an EMS training mentoring program (Nebraska); offsetting the costs of scholarships available for existing EMTs for intermediate and advanced paramedic training (Nevada and Arkansas); and using technologies such as state-wide webinars

and computer-based testing and certification programs (New Hampshire and Montana). State efforts in EMS reimbursement included providing direct training on-site and through regional workshops (Colorado, Michigan, Oregon and Utah); conducting agency-specific budgeting studies (Oklahoma); establishing a centralized billing and inventory system (North Carolina); and fielding a statewide pilot billing service (South Carolina).

Trauma objectives and activities. Although the three trauma-related areas are separated conceptually in the grant application guidance, trauma activities were seldom implemented in isolation. Center designation and team training are integral components of system development and planning. Twenty-four out of the 28 states with trauma-related objectives targeted two or more trauma area objectives, and many states targeted all three trauma area objectives.

Ten states that did not include trauma-related objectives in their 2008-2009 work plans were currently engaged in trauma activities (largely as a carryover from previous year's efforts). Six of these states were actively involved in trauma team training efforts, three were engaged in trauma system assessment and development activities and one was involved in center designation activities.

The State of Trauma System Development

Consistent with the trauma system literature, states reported varying stages of trauma system development. Of the 45 states surveyed, 43 states had some level of trauma system development. The range of development was notable. Some states reported having the authority to designate Level IV and V trauma centers that integrated sparsely populated areas into a larger statewide system, while others reported only regional development (e.g., Level I and II centers located in metropolitan areas). Other states were developing statewide trauma registries or

crafting legislative proposals to authorize regulations and/or appropriations for supporting a state trauma system (e.g., assisting hospitals with the cost of verification, training, and trauma activation service costs).

CAH designation as trauma center. Thirty-nine of the 45 states surveyed have the authority to designate Critical Access Hospitals as trauma centers. At the time of the survey, however, 17 of those states did not recognize trauma center designation levels beyond Level III. Twenty-three of the 28 states allowing trauma center levels beyond Level III had designated one or more CAHs at the time of the survey. The project team identified a combined total of 560 CAHs designated as trauma centers as of March 31, 2010 (see Table 2).

At the time of the survey, five states had all of their CAHs designated as trauma centers: Iowa, Michigan, Oregon, West Virginia, and Wyoming. An additional six states had at least 80% of their CAHs designated as trauma centers: Colorado, Minnesota, North Dakota, Oklahoma, Texas and Washington. The number of CAHs designated as trauma centers has continued to increase in several states since the survey was completed.

Designation criteria vary considerably across the states. Some simply accept ACS verification (typical of the states with Levels I - III). Others, especially those with Levels IV and V, have a lengthy list of requirements involving training standards, performance improvement, availability of equipment and supplies, and linkages with transport agencies. A few states designate by default (i.e., if a facility is not a level I, II, or III trauma center, it is automatically considered a Level IV center). Wyoming and recently North Dakota have made designation as a trauma center mandatory for state licensure as a hospital, and other states are considering a similar strategy.

Table 2. CAH Eligibility and Trauma Center Designations by State, March 31, 2010

State	Designation Levels	CAH Eligibility for Trauma Center Designation	Total CAHs in State	CAHs Designated as Trauma Centers
Alabama	I – III	Yes†	3	0
Alaska	I – IV	Yes	13	3
Arkansas	I – IV	Yes	29	0
Arizona	I – IV	Yes	14	4
California	I – IV	Yes	30	7
Colorado	I – V	Yes	29	26
Florida	I – II	No	11	0
Georgia	I – IV	Yes	34	1
Hawaii	I – IV	Yes	9	0
Idaho	I – III	No	26	0
Illinois	I – II	Yes†	51	0
Indiana	I – II	No	35	0
Iowa	I – IV	Yes	82	82
Kansas	I – III	Yes†	83	0
Kentucky	I – IV	Yes	29	0
Louisiana	I – III	Yes†	27	0
Maine	I – III	Yes†	15	0
Massachusetts	I – III	Yes†	3	0
Michigan	I – IV	Yes	35	35
Minnesota	I – IV	Yes	79	49
Mississippi	I – IV	Yes	30	27
Missouri	I – III	Yes	36	1
Montana	I – V	Yes	47	22
Nebraska	I – IV	Yes	65	30

State	Designation Levels	CAH Eligibility for Trauma Center Designation	Total CAHs in State	CAHs Designated as Trauma Centers
Nevada	I – IV	Yes	11	0
New Hampshire	I – IV	Yes	13	5
New Mexico	I – IV	Yes	6	4
New York	I – II	No	13	0
North Carolina	I – III	Yes†	23	0
North Dakota	I – V	Yes	36	34
Ohio	I – IV	Yes	34	1
Oklahoma	I – IV	Yes	33	33
Oregon	I – IV	Yes	25	22
Pennsylvania	I – III	No	13	0
South Carolina	I – III	Yes†	5	0
South Dakota	I – V	Yes	38	0
Tennessee	I – III	No	17	0
Texas	I – IV	Yes	76	58
Utah	I – V	Yes	9	1
Vermont	I – II	Yes†	8	0
Virginia	I – III	Yes†	7	0
Washington	I – V	Yes	38	37
West Virginia	I – IV	Yes	17	7
Wisconsin	I – IV	Yes	59	56
Wyoming	I – IV	Yes	15	15
Total			1,311	560

†No specific provisions in the laws of these states preclude CAH trauma center designation; however the human and capital resources required for designation as a level III center makes it unlikely that CAHs could be designated under the existing guidelines.

Data sources: The total number of CAHs by state, recognized trauma center designation levels, CAH eligibility for trauma designation, and the number of CAHs designated as trauma centers were obtained from the phone surveys and follow-up contacts with Flex Coordinators and state trauma system representatives, and from information available on various websites, including those of the American College of Surgeons, state hospital associations and state trauma entities.

System Assessment and Development Efforts

Flex Program funds were used to support trauma system assessment and development efforts by each of the 24 states that listed assessment and development objectives in their 2008 - 2009 workplans. When asked to identify their most important activity in assessment and system development for 2008 - 2009, five state respondents described statewide and regional assessment activities (Alaska, Colorado, Indiana, Kansas, and Oregon). The remaining 19 identified activities primarily involving trauma center development through team and EMS training (e.g., providing training tools and covering travel costs for participants in rural trauma team training, CAH administrator training, and pre-hospital service delivery training).

Approximately one-third of the respondents reported having only a minor role in statewide trauma system assessment efforts. However, considerable planning and developing activities focused on the designation of CAHs as trauma centers and on training their staff for trauma activation. State Flex Programs may be less likely to become involved in the assessment and development of state trauma systems largely because those systems are already in place and the working relationships required to implement them have also been long established. States that reported an active role in system assessment and development typically also had a working relationship with regional trauma councils, state hospital associations, and other entities with a vested interest in trauma system development. For example, in New Mexico, a working relationship evolved with the State Trauma System Funding Committee through prior involvement with the State Hospital Association.

Engagement strategies. Respondents identified several strategies that worked well for engaging CAHs in system assessment and/or development.

Develop working relationships with other state agencies. The most commonly identified engagement effort related to success (as defined by the respondents) involved the development of working relationships with other state agencies (e.g., trauma team advisory board, state trauma committee and regional trauma districts). Those few states in which the SORH is located in the same Department/Bureau as state EMS and Trauma Programs have a clear advantage.

Let CAHs help decide the best use of Flex funds. Working closely with CAHs to identify how Flex funds can best be used to support training efforts was highlighted by the respondents as a particularly successful strategy for engagement.

Integrate CAHs into trauma systems. For CAHs, one of the most critical partnerships that can be developed is between the CAH and a Level I or Level II trauma center. A partnership with a Level I or II center not only provides access to important training and operational expertise and resources but also offers a unique opportunity for the higher level trauma centers to understand the role CAHs can fulfill in a statewide trauma system.

Hand-pick the starting point. One state built on existing regional trauma systems and deliberately started in the region that seemed most likely to succeed. That success then set the tone for the other regions. The respondent noted that the state trauma regions and trauma centers were already in place when efforts began to integrate CAHs into the system. The CAHs knew that they needed help overcoming communication and transport issues, and the Level I and II centers needed to be educated about the challenges facing CAHs located on the fringes of their system. Once trauma center leadership grasped the issues, trauma surgeons and nurses were willing to travel to the CAHs to facilitate communication, coordination, and a performance improvement review process. (As a CAH trauma coordinator said, “They [the nurses] are

contracted to perform education or site reviews and while paid for their efforts, the pay is minimal … the providers' commitment is the real reason they go out.")

As the number of CAH trauma designations in the state increased (37 at the time of the survey) the effort developed a momentum of its own: CAHs that had previously refused to consider designation suddenly became more interested as their lack of designation became more obvious to their peers. The resulting improvements in patient quality of care due to more efficient and effective service delivery (e.g., stabilization, smoother care transitions and shorter transfer times) also fueled the integration process.

In-person, on-site outreach. In another state, the state EMS Medical Director, along with an ACS consultant, traveled to all of the small rural and Critical Access Hospitals in the state to talk with administrators and medical staff about participating in a statewide trauma system. The visits provided an opportunity not only to obtain provider opinions about system participation but also to address concerns and outline the advantages of participation. These visits were cited by several people as a critical factor in pulling rural communities into the statewide trauma system.

Use the expertise of CAH personnel. Successful states have also been able to integrate CAHs through the service of their administrators, physicians, and nurses on statewide and regional trauma boards. It also helps to have CAH personnel in positions where they can provide assistance in designation reviews as well as advice on program, legislative and regulatory development.

Challenges. In addition to successful strategies, respondents identified several challenges or barriers in their efforts to engage CAHs.

Over-extended practitioners. Obtaining buy-in can be difficult for a variety of reasons. Several states reported that their efforts were slowed by an initial reluctance on the part of physicians (identifying and obtaining commitment of physician leaders) and nurses (trauma nurse coordinators at both tertiary and CAH locations) because those professionals already felt over-extended.

Coverage/liability concerns. Even where states can provide funding to cover training and travel costs, it can be difficult to overcome coverage issues. In one state, a concern over liability coverage was a significant barrier to participation. Legislation was eventually passed that placed a $500,000 liability limit per case for designated trauma centers. [‡]

Trauma Center Designation

Seventeen states included CAH trauma center designation activities in their 2008-2009 Flex work plans. Fifteen of these states utilized Flex funding to support their designation activities; one state supported its trauma center designation activities with funds allocated from the Governor's budget; and one used funds from an extra vehicle tax. Three-quarters of these states identified providing technical assistance as their most important activity in trauma center designation. Such technical assistance primarily included mock site visits, providing support to trauma verification committee, staff education, simulation training, and follow-up to prepare for the designation process.

Planning and development efforts ranked a distant second behind technical assistance. Those efforts involved the development of center guidelines (usually involving slight

[‡] The legislation was in response to a malpractice crisis where orthopedic surgeons walked out of a Level I facility causing it to lose its trauma accreditation.

modifications to ACS criteria in recognition of local conditions) and supporting statewide conferences to educate medical directors and rural EMS managers about the role CAHs can play in regional and statewide trauma systems. At the time of the survey, four states were actively developing designation criteria or working on authorizing legislation to promulgate the necessary regulations.

Preparing for designation: A major task. Preparing for designation can be a lengthy process. In Utah, for example, the process can take six to twelve months. Utah requires collecting data and recording system functions to demonstrate that a hospital is ready to move forward (e.g., demonstrating that the hospital has the capacity and functionality for rapid assessment, treatment and transport).

Respondents characterized designation as a very resource-intensive process. This is true not only because of the data collection, processing, and other equipment needs but also because of the need to recruit additional personnel (e.g., trauma physicians and trauma nurse coordinators). The added pressures can be especially felt, and reported, by hospital medical staff, because responsibilities involving mortality and morbidity review, program improvement, and trainings take on added importance with trauma center designation.

Voluntary vs. mandatory designation. Five states reported that all of their CAHs are designated as trauma centers, and two states now require trauma center designation as part of the state hospital licensure process. However, designation in the vast majority of states is voluntary. Therefore, most states become aware of a CAH's interest in designation when the CAH contacts the office directly.

As with any voluntary initiative, facility-specific priorities tend to drive action. Workforce shortages and lack of financial resources needed to hire new staff (or even cover

existing staff for training purposes) can be significant barriers to CAHs seeking designation as a trauma center.

***Success factors*.** Respondents noted several factors that fostered greater CAH involvement in trauma center designation*:*

- Legislation. One state was able to relieve a considerable degree of concern when it passed legislation that capped trauma-related malpractice claims at $500,000.
- Reimbursement. Another state makes funding for uncompensated trauma care available to designated centers as an added incentive.
- Funding to help cover costs. Some states were able to provide much needed funding to complete the designation process.

Benefits of designation. Several CAHs pointed out one or more unintended benefits of designation as a trauma center.

Added value. For example, some CAHs realized that adding laboratory or radiation personnel required for center designation provided an added value for serving non-trauma patients increasing available scope of services. Other CAHs valued designation because it was a strategy for retaining patients who might otherwise have bypassed their facility (strengthened market share).

Smoother trauma operations. When asked if designation as a trauma center had made a difference in how their CAH addressed local health care needs, CAH representatives noted that their hospitals' operations had become much smoother in terms of integrating pre-hospital and hospital care, and in dramatic improvements in time to transfer. Another noted that having protocols for calling trauma activation has made the decision easier for the staff. "We have had four trauma activations in one month, which is huge for us. Each one has been better, and the

things we learn and can take to the table in review make a lot more sense than before designation." The CAHs reported having more effective triage skills and more rapid responses to acute needs.

Improved quality and speed. One CAH administrator noted that the trauma team building process required for designation has had a positive multiplier effect. Training has increased staff members' overall awareness of just how critical a patient may be and has increased the speed of transition to appropriate care even in cases with less urgent trauma care needs.

Community outreach and education. As facilities settle into their roles as local trauma centers, some are beginning to expand efforts to include community outreach injury prevention education, which is a core component of trauma system operations.

Enhanced networks and communications. In addition to other benefits, CAHs designated as trauma centers reported that the establishment of system contacts and educational relationships had streamlined communications with higher level trauma centers (who to call and when to get a trauma patient into timely care). These relationships had formed a basis for establishing other efforts. (For example, in one state, those new contacts and relationships led to a statewide stroke treatment network.)

Rural Trauma Team Training: A High Priority

Providing, supporting, and/or facilitating rural trauma team training is the most frequently identified trauma-related activity of the 2008-2009 Flex grantees. Twenty-six of the 28 states that focus on trauma-related activities either directly train or support the provision of rural trauma training (e.g., Flex or state-supported grants, simulation training, development of stroke tools, etc.). It is not surprising that training is the most frequently cited work plan activity, since training is a requirement for designation. It is also a key integration component in

trauma system development. Moreover, training can be readily managed at the local level and requires only modest coordination with regional and/or statewide schedules and decision-making bodies.

Funding sources. Twenty-four of the states used Flex funding to support training activities. Several states also used funding from other sources, including staffing and capital investments by Level I and II trauma centers.

Who trains? It depends. States exhibited a considerable degree of variability in their use of trauma team trainers. For some, training was provided by the state trauma coordinator. Others obtained trainers from Level I and II trauma centers or required CAHs to provide their own trainers. In some cases, trainers were hired from independent agencies such as the ACS, a Life Long Learning Simulation Center, and a State Emergency Nurses Association among others. One state (NH) elected to stage scenario simulations at local facilities using a computerized mannequin. The scenarios were selected based on discussions with local trauma coordinators. Five of the six CAHs in that state's trauma system have used the simulation training.

Varied strategies for selecting training sites.

In-person visits, armed with data. In one state, it was a priority for the Flex and trauma staff to visit each of the nine CAHs to talk personally with administrators, EMS personnel, and physicians about the structure of the state trauma system network and the benefits of trauma team training. In this instance, many of the hospital administrators and EMS staff thought they were doing better than they actually were. As the visiting State EMS Medical Director and an ACS consultant talked about the state project, they used actual trauma registry data from the facility they were visiting to make their points. This usually got the attention of the CAH and

generated interest in how the CAH could improve patient care through participation in the state's trauma system.

Responses to Request for Proposal. A couple of the states had benefited from participation in the ACS trauma team training pilot project. In one of those states, CAHs had volunteered to participate in the initial phases; their success "made the program a natural draw for many other CAHs." In this instance, site selection was determined by response to a state Request for Proposal reviewed by the appropriate regional trauma council, and the costs of training were subsidized by a state grant.

Geographic proximity. Other states selected training locations by their geographic proximity to facilities, to minimize travel and time away from hospital positions. Sequence of training (timing of site usage) usually was determined by regional readiness. For example, Kansas had just completed its statewide training effort and was in the process of evaluating why certain locations worked better than others, which aspects of the training program content best fit local needs, and what helped most to build capacity. Evaluation outcomes will guide their development and scheduling of follow-up training. Follow-up training will become ever more important for that state as it attempts to get a Level III center designated in each of its six trauma regions and completes promulgating regulations for designating Level IV centers.

Other states reported that, now that statewide trainings have been completed, hospitals are beginning to contact them periodically to recertify.

Success factors in CAH training

Mission and goals. State program representatives frequently indicated that a hospital's mission to provide good care plus a general desire by administrative and medical staff to

improve trauma services in their communities were fundamental enablers for many CAH training participants.

Positive word-of-mouth feedback on training impact. One representative reported that the resulting positive feedback loop provided further encouragement for other CAHs to take part in trauma training. The positive feedback started originally by word-of-mouth as flight crews talked about patients from trained facilities being in better shape for transport. Local providers began to feel more confident to act after having the training, so they became more active in taking care of their patients. The increased confidence level corresponded to a decreased anxiety about the severity of patients that might be brought to their emergency rooms.

Regulations. For one state, the regulation requiring pre-hospital transport to bypass non-designated facilities and take patients directly to a trauma center helped make up the minds of some CAH administrators.

Logical next step. In some hospitals, designation as a trauma center represented only a small step from the role they were already occupying in their communities (e.g., already having staff with trauma team training and/or the existence of critical care committees reviewing service delivery issues and conducting performance improvement). That experience made it a straightforward decision to seek training once the necessary resources were identified.

Training barriers. Respondents identified four barriers that impeded CAH trauma training.

Scheduling. Scheduling training sessions was among the more commonly reported problems, especially coordinating training sessions with physician schedules and finding coverage for other hospital staff.

Distance. The small size of the facilities coupled with the distance traveled to training further complicates achieving training goals. States have used region-specific training strategies to address travel barriers; however, distance is still a frequently cited variable confounding training scheduling and resource focus.

Space. Space was an issue raised by several states as a critical training variable. In addition to the need for enough space to work and divide out into smaller sessions, since the training occurs at a facility, there is also the issue of occupying a space that might be needed for providing care at some point during the scheduled training.

Competition. Another less mentioned but nonetheless potentially significant barrier is historic competition (e.g., competing referral patterns) that seems to limit system integration. In areas with little competition, systems develop more readily.

Skill Retention and Re-Certification. Although not directly identified as a training barrier, it is likely that some CAH trauma teams may require additional resources to support re-training efforts in order to maintain their competencies and proficiencies in the face of low trauma volume.

Integration of Rural EMS/Trauma Strategies into State Policy

State Flex coordinators were asked if anything in particular had helped or hindered their efforts to raise awareness of the relevance of rural issues in state policy/program development (for example, integrating rural relevant (Flex) strategies into their State Rural Health Plan, implementing State EMS/Trauma training and planning policies, or influencing state law and regulations).

What helps rural policy efforts? Five states reported that they were not currently working on the integration of rural strategies into a broader state policy dialogue. Of the

remaining 40 states, nine reported no known facilitators, and four were unsure. However, other states identified one or more helpful factors.

Relationships. Eighteen states reported that having a working relationship with one or more other state agencies with overlapping missions (e.g., State EMS Bureau or State Trauma Advisory Committee) was the most significant factor that helped their efforts.

Provider leadership. Four states (Kansas, New Hampshire, South Dakota, Wisconsin) identified provider leaders as the most important factor facilitating the integration of rural strategies.

Connections with regional or state leaders. Two states (Iowa and Nebraska) identified connections with national and regional leaders as facilitating factors.

What hinders Flex coordinators' efforts? Lack of political/professional support (e.g., uninformed or uninterested legislature to sponsor trauma authorizing legislation, Level I and II trauma center support, and commitment of hospital medical staff) and inadequate funding at the state level (e.g., to support ongoing statewide trauma system) were cited as the two most common barriers to integrating rural strategies into state policy. Fragmented decision making and professional turf issues were identified as the third most common barrier to integration (nine states). Five states reported no barriers to their efforts to integrate a rural context into state policy and programming.

Impact of efforts to engage CAHs in trauma systems. When asked how successful SORH efforts had been in encouraging/engaging CAHs to take a role in state and regional trauma system and implementation, slightly more than one half of the coordinators (54%) reported they had been either successful or very successful. While the evidence cited for success varied from obtaining collaboration among important state-level agencies to the passage of

critical legislation, the majority of the responses focused on the designation of CAHs as trauma centers.

Among those states reporting to be very successful in their efforts, CAHs had become aware of the important role they can play in trauma care and realized that being bypassed for a higher level trauma center "is not a bad thing." One state noted that, as more facilities obtained designation status, the remaining facilities found themselves left out of the process and some sought designation to be part of the larger state group again.

Slightly more than 15 percent of the respondents considered themselves to be unsuccessful in engaging CAHs to take an active role in the state's trauma system activities. Barriers to success included working with CAHs that a) could not or would not focus on trauma system priorities, b) considered themselves to be unimportant in trauma care (e.g., being a "drip and ship" facility), or c) needed to see a reimbursement advantage as a center. Other CAHs had lost the resource capacity to participate due to ailing local economies, or they simply had no regional system in which to participate.

Of the nine states that were *not* working to encourage CAHs to take an active role in trauma system implementation, three did not have the authority to designate trauma centers at the time of the survey, and three others did not have a trauma center beyond Level III. Two states were largely rural, and one state's Flex coordinator was too new to the position to be sure of the progress that had been made to date.

Lessons Learned

This section represents a distillation of the advice offered to other states and CAHs by respondents in both surveys conducted by the project team.

Build on existing efforts. For all but a few of the states surveyed, state trauma system development pre-dates Flex projects. Therefore, a common lesson learned that states wanted to share was the importance of building on existing efforts – using existing regional programs with strong Level I and II leadership. One state urged caution in overcommitting state resources that could be better used locally. (Have CAHs involved in a state advisory board rather than several regional boards that now have to be staffed.)

Find and involve a local champion. Having a local physician champion is also critical. Respondents said the sooner the local champion is involved, the greater the buy-in by other providers. (This lesson was raised in the context of state-level leadership as well as community leadership.)

Engage the community. Community buy-in and support is very important as well. It should be in hand before proceeding with the trauma center designation process.

Obtain buy-in by other state agencies. This important component was facilitated in several states by the effective use of trauma registry data to demonstrate the nature and scope of local care issues.

Use registry data to engage CAHs. One respondent noted that some of the CAH administrators and medical staff they approached to participate in trauma team training had a better impression of their hospital's performance than could be supported by the registry data. The resulting wake-up call was a strong inducement to support team training.

Keep using registry data. Trauma registry data was also cited as a valuable tool for ongoing performance improvement to refine further trauma team development. As one respondent stated, "Data is critical … and … necessary for convincing doubters." The use of

quality improvement strategies in trauma care had a positive multiplier effect: Trained staff members brought their performance improvement perspective to other areas of care as well.

Tailor training materials to rural centers. Several states commented that the ACS training materials could be better tailored to the circumstances facing rural trauma centers (e.g., the lack of a formal statewide trauma system and the dependence on family practice physicians rather than on trauma surgeons as physician leaders).

Work with existing leaders. Working with the state ACS chapter as well as the state EMS and Trauma Councils/Committees is also important. It helps generate and maintain support for and interest in serving rural areas of the state, and it also helps educate Level I and II centers about the issues facing CAHs. Support from Regional Trauma Councils and Level I and II centers can be especially useful for CAHs that are understaffed and have few resources.

Foster partnership between SORHs and EMS state agency, as needed. One state coordinator pointed out that there has never been a real recognition of the importance of the partnership between SORHs and their EMS state counterparts, even in terms of general EMS issues. SORHs often need to make an extra effort to reach out and establish effective partnerships. For some states, this has not been an issue because the SORH and EMS agencies are both located in the State Health Department, sometimes in the same units.

SUMMARY

If the state respondents surveyed for this study conveyed one central message, it was the critical need to educate state agencies, Level I and II trauma centers, and other EMS/trauma stakeholders about a) the rural context, and b) the potential role of CAHs and other small rural hospitals in statewide trauma efforts. One respondent summed up the urgency of this need by stating: “Small rural hospitals will always be part of a trauma system by default, but without

expectation about their capacities, the system has a great opportunity to fail." The goal of designation criteria then is not to define a place in the trauma system but to describe the nature and scope of the role that can be filled. Both the lack of national standards and the lack of major federal funding for trauma system development since 2006 have made this task all the more difficult.

Several states noted that without the Flex Grant Program they would not have been able to make the progress they have over the past few years since HRSA's Trauma-EMS Systems Program ended. Of course, the amount of funding available from the grant program is far outstripped by the need.

It is not surprising that trauma team training has been a major focus of states' grant efforts. Because many state trauma systems pre-dated Flex Program projects, trauma training represents a natural sequence in that it logically follows the planning and assessment phase of trauma system development. In some aspects, the current status of rural trauma system development (trauma team training and CAH trauma center designation) reflects the initial focus of the Flex Program with its heavy investment in conversion of CAHs and staff training/education. Now, over a decade after recognizing the value of inclusive rather than exclusive trauma systems and the important roles that a range of providers can play in a statewide trauma system, many states still struggle to find opportunities to strengthen their statewide trauma systems.

Effective trauma systems must be inclusive. CAHs are not all the same; some have ample resources to meet the criteria of Level III ACS verified trauma centers while others, by virtue of the personnel and resources available, will best perform their role as a point of stabilization and transfer. Small providers, even those without surgical services, can provide a valuable role in

supporting the ultimate work of Level I and II trauma centers by making sure patients arrive in time and in the best possible condition. Both types of providers help create a system of seamless care. With proper coordination, they can streamline service delivery for rural communities that would otherwise have to settle for less than acceptable levels of care.

APPENDIX A. Definitive Care Facilities

The American College of Surgeons (ACS) uses the term "Definitive Care Facility" synonymously with the term trauma center.[6] A trauma system then is a network of trauma centers that coexist with other acute care facilities to coordinate the provision of a spectrum of care for all injured patients in their service area. Only three levels are verified under the ACS trauma center classification scheme (Level I, II, and III) and are predicated on the availability of surgical services to address trauma patient needs. "Conceptually, effective trauma systems must have a lead hospital. These lead hospitals should be the highest level available within the trauma system. In many areas, Level I centers will serve as the lead hospitals. In systems with a less dense population base, Level II facilities may assume this role. In smaller community and rural settings, Level III centers must serve as the lead hospital." The following list of trauma center levels distinguishes between centers based on ACS-COT standards and guidelines and emphasizes a ranking of resource depth rather than a ranking of medical care.

LEVEL I - The Level I facility is a regional resource trauma center that is a tertiary care facility central to the trauma care system. Level I facilities generally serve large cities or densely populated areas and, because of their leadership role in providing for the total care of the injured patient, and in trauma system research and planning, are often University-based teaching facilities.

LEVEL II – The level II trauma center is a hospital that also is expected to provide initial definitive trauma care, regardless of the severity of injury. Depending on geographic location, patient volume, personnel, and resources, the Level II trauma centers may not be able to provide the same comprehensive care as a Level I trauma center. Therefore, patients with more complex injuries may have to be transferred to a Level I center. Level II trauma centers may be the more prevalent facility in the community, managing the majority of trauma patients. In areas where Level I facilities are not readily available, a Level II facility should take on the responsibility for education and system leadership.

LEVEL III – The Level III Trauma Center serves communities that do not have immediate access to a Level I or Level II institution. Level III trauma centers can provide prompt assessment, resuscitation, emergency operations, and stabilization calls and also arrange for possible transfer to the facility that can provide definitive trauma care. General surgeons are

required in a Level III facility. Planning for care of injured persons in these hospitals requires transfer agreements and standardized treatment protocols. Level III trauma centers are generally not considered appropriate in urban or suburban areas with adequate Level I and or Level II coverage.

LEVEL IV – The Level IV trauma center provides advanced trauma life support before patient transfer in remote areas where no higher level of care is available. These facilities are considered more trauma stabilization centers than full fledged trauma centers and may be a clinic rather than a hospital and may or may not have a physician available. Because of geographic isolation, however, the Level IV trauma facility is considered the de facto primary care provider. If the Level IV trauma facility is willing to make the commitment to provide optimal care, it is considered by the ACS as an integral part of inclusive trauma care systems. As with Level III centers, treatment protocols for resuscitation, transfer protocols, data reporting, and participation in systems performance improvement are essential. A good working relationship with the nearest Level I, II, or III facility is vital for the skillful use of existing professional and institutional resources.

LEVEL V– Some states recognize a Level V facility for the most remote and resource challenged areas of their states. These facilities can only provide limited emergency care and stabilization and frequently do not have access to surgical services.

Although the ACSCOT is in agreement with the IOM and NHTSA visions concerning the role for all available providers in local and regional trauma systems, there is no verification process below Level III. In its 2006 version of the Resources for Optimal Care of the Injured Patient, the ACSCOT identifies a Level IV facility as a provider of advanced trauma life support prior to transfer from remote areas where there is no higher level of care available. Similar to Level III centers, the ACSCOT stresses that Level IV facilities must be linked to a larger trauma system and have adopted standardized plans for patient treatment (e.g., treatment protocols for resuscitation, transfer protocols, data reporting, and participating in system performance improvement). With ACS verification limited to Level III and above and trauma center designation under the responsibility of state agencies, not all states have established Level IV or V trauma center designation criteria.

APPENDIX B. Standards

The ACS has been a major stakeholder in national trauma system development efforts since the 1970s when it published the first set of trauma center resource and process standards in "Optimal Hospital Resources for Care of the Seriously Injured."[7] The standards have been updated on a regular basis as the field of trauma care has advanced.

In 1987 the ACS launched its verification program to assist hospitals in evaluating and improving trauma care through a voluntary external review process. Depending on the nature and scope of the activity (e.g., focus review, verification, re-verification, and the number of reviewers involved) the cost per hospital can range between $10,000 and $20,000. The ACS began its trauma systems consultation service in 1996 based on the Model Trauma Care System Plan (MTCSP) developed for the Health Resources and Services Administration (HRSA). The two have worked in tandem since that time. In 2006, they developed the Model Trauma System Planning and Evaluation document that emphasized the principles of public health (assessment, policy development, and assurance), injury control and prevention, and the regionalization of services.

Standards for trauma team training have been developed by the ACS ad hoc Rural Trauma Committee to address the special resource availability and needs of small community hospitals. The training model is based on the premise that most rural hospitals can provide at least three individuals to form the core of a trauma team. This core consists of a Team Leader (physician or physician extender), Team Member One (a nurse), and Team Member Two (nurse, aide, technician, pre-hospital provider, or clerk) to act as a link with the larger trauma delivery system. Training is provided for support members as well as the core team and can include respiratory, radiology, and laboratory technologists, additional nurses, pre-hospital personnel and others.

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