

Hospitals' Capacity to Provide Acute Care for Heart Attack and Stroke, Oregon, 2008

Background:

In 2008, Oregon Heart Disease and Stroke Prevention Program (HDSP) at Oregon Department of Human Services (DHS) in partnership with Oregon Association of Hospitals and Health Systems (OAHHS) conducted a needs assessment survey on Oregon hospitals' capacity in myocardial infarction (heart attack) acute care and stroke acute care. The questionnaire was developed by HDSP and was distributed to Oregon hospitals by OAHHS. It is the first survey of this kind in Oregon and reflects the collaboration of HDSP and OAHHS to improve heart disease and stroke care quality in Oregon.

A response rate of 68% across the state was achieved (Table 1). Results of the survey are representative of Oregon hospitals overall, although nonresponse bias cannot be entirely excluded. The highest response rate (80%) was achieved in the Tri-county region (Multnomah County, Clackamas County and Washington County) of the Portland metropolitan area, and the lowest response rate (45%) was seen in Southern Oregon.

Main Findings:

There are big gaps in the capacity for heart attack and stroke acute care in Oregon. Survey findings point to needs in multiple dimensions:

- Not all surveyed hospitals have written protocols for acute heart attack care and for acute stroke care. This deficit is particularly evident in Oregon's large rural area.
- About half of Oregon hospitals do not activate ST-elevated myocardial infarction (STEMI) care or stroke care based on emergency medical services (EMS) pre-hospital information.
- A small portion of Oregon hospitals do not have important diagnostic tools for stroke: CT or MRI, available 24 hours a day, 7 days a week (24/7). Urban hospitals are not more likely to have this equipment than rural hospitals. The limited availability of radiologists or neuro-radiologists and the shortage of neurologists is most obvious in rural hospitals.

- Treatments for heart attacks and for ischemic strokes, such as thrombolytic therapies and interventional catheterizations, are not available 24/7 in all surveyed hospitals.
- In Oregon, all the emergency departments (ED) are open 24/7. ED physicians are the care providers most often given responsibility for ordering treatment and activating care for acute cardiac events.
- Urban hospitals and hospitals in the Tri-county region are more likely to receive patient referrals from other places in Oregon.

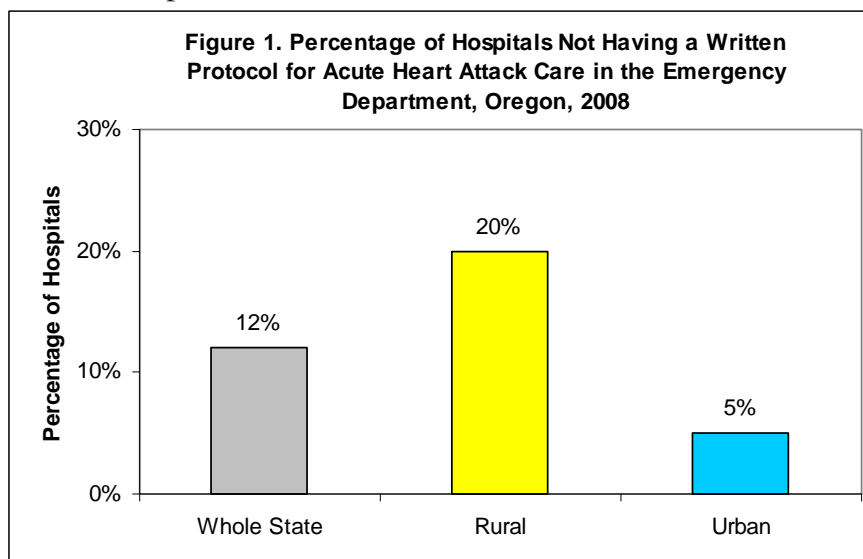
Detailed Results

Table 1. Survey Response Rate Chart

| | Whole State | Rural | Urban |
|--|-------------|-------|-------|
| Number of Hospitals in the Region That Responded to the Survey | 41 | 20 | 21 |
| Number of Hospitals | 60 | 34 | 26 |
| Response Rate | 68% | 59% | 81% |

Heart Attack Acute Care Capacity

Rural hospitals are less likely to have written protocols than urban hospitals for acute heart attack in Oregon. In eastern and central Oregon, a fourth of the surveyed hospitals do not have such protocols.



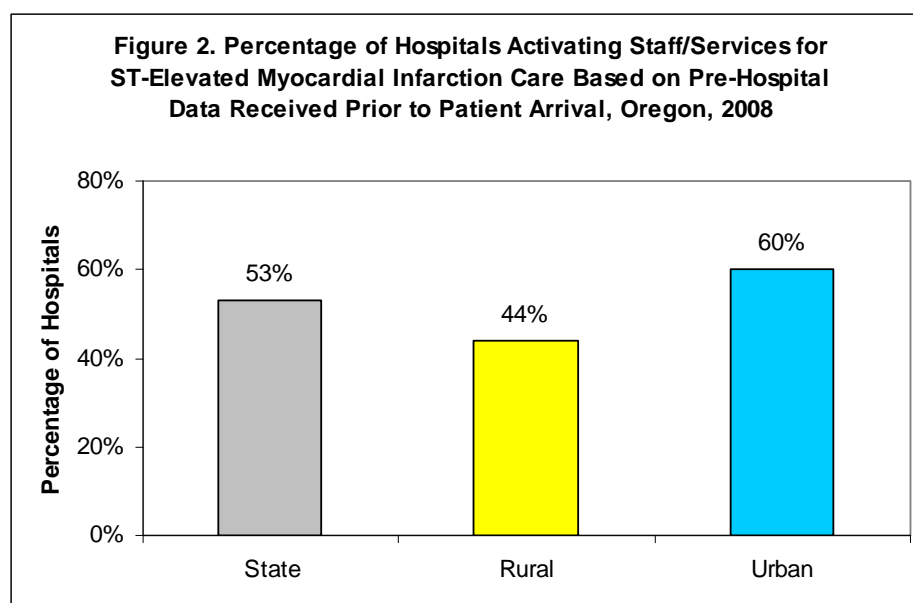
Across the state about 2/3 of hospitals receive pre-hospital notifications for ST-elevated myocardial infarctions and thus have time to prepare to receive for treatment or to transfer the patient to another care facility. However, in Willamette Valley region, only 1/3 of hospitals receive pre-hospital notifications. In contrast, the most rural and remote regions in Oregon—eastern and central Oregon have three quarters of hospitals that receive pre-hospital notifications.

Pre-hospital STEMI notification in the form of 12-lead ECG transmission provides more accurate and detailed information than verbal notification. Among the hospitals that receive pre-hospital STEMI notifications in Oregon, rural hospitals receive 12-lead ECG transmission less frequently than urban ones.

Table 2. Form of Pre-Hospital ST-Elevated Myocardial Infarction Notification, Oregon, 2008

| | State | Rural | Urban |
|--------------------------|-------|-------|-------|
| Verbal notification | 85% | 83% | 93% |
| 12-lead ECG transmission | 56% | 33% | 79% |

Across the state and in regions such as Willamette Valley, northern, eastern and central Oregon, hospital staff and services can rarely be activated based on pre-hospital STEMI data.



Thrombolytic therapies for heart attacks are less available in urban hospitals, where health care resources are usually considered more abundant than in rural hospitals. Among the hospitals that do offer thrombolytic therapy for heart attack patients, emergency physicians are primarily responsible for ordering the therapy.

Cardiologists are next most likely to be responsible for ordering thrombolytic therapies in urban hospitals; in contrast primary care doctors order thrombolytic therapies more commonly than cardiologists in the rural hospitals.

Table 3. Availability of Thrombolytic Therapy for Myocardial Infarction, Oregon, 2008

| | State | Rural | Urban |
|-------------------------------------|-------|-------|-------|
| 24 hours a day/7 days a week (24/7) | 85% | 100% | 71% |
| available, but not 24/7 | 10% | 0% | 19% |
| not available | 5% | 0% | 10% |

Table 4. Responsibilities to Order Thrombolytic Therapy, Oregon, 2008

| | State | Rural | Urban |
|---------------------|-------|-------|-------|
| ED physician | 95% | 95% | 95% |
| Cardiologist | 29% | 11% | 47% |
| Primary care doctor | 16% | 32% | 0% |

Most hospitals scattered in Oregon's rural areas do not have a cardiac catheterization lab. Of the few surveyed rural hospitals that do have this lab, all have an interventional cardiologist and support staff available 24/7. No northern coast hospital or four-fifths of surveyed southern, eastern and central Oregon hospitals reported having a cardiac catheterization lab. Among the hospitals with cardiac catheterization labs, 14% of urban hospitals and about a fifth of Willamette Valley area hospitals do not have an interventional cardiologist and support staff available 24/7. In addition, based on survey responses nowhere in Oregon can EMS/paramedics activate catheterization labs. Half of rural hospitals and two fifths of Willamette Valley hospitals with cath labs do not have a method for catheterization lab activation with a single page or alert. Overall, a fifth of all surveyed hospitals with these labs cannot be activated by a single signal.

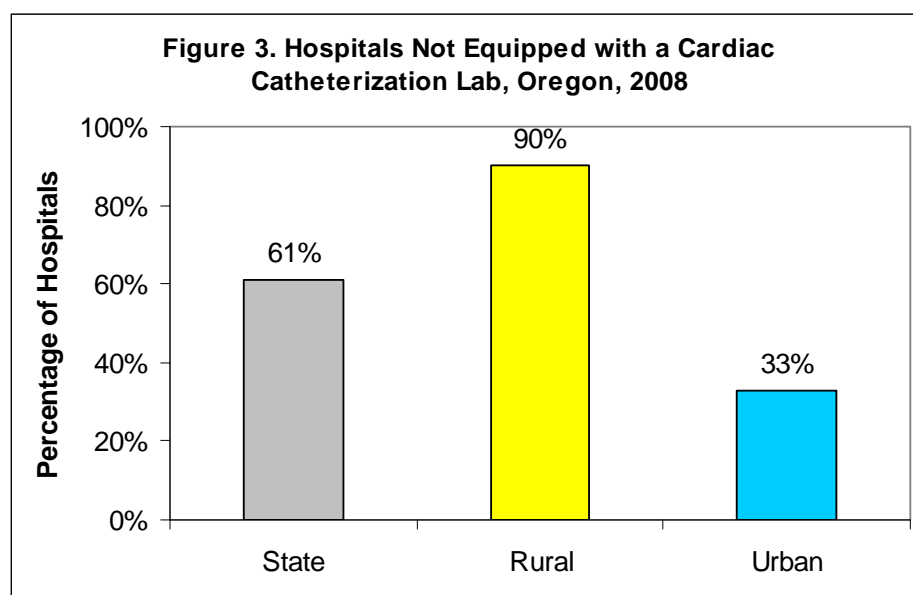


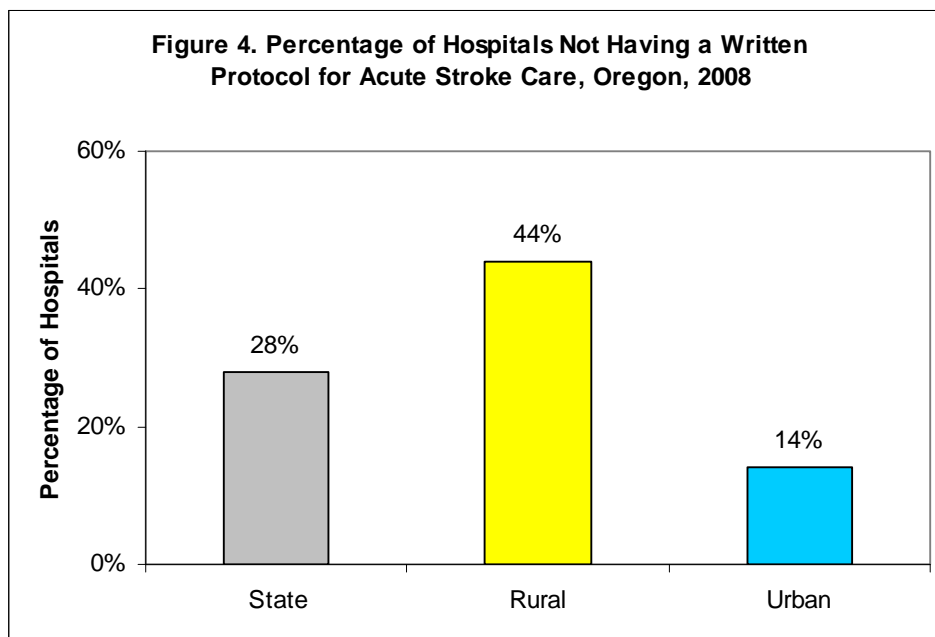
Table 5. Who Can Activate the Cardiac Catheterization Lab, Oregon, 2008

| | State | Rural | Urban |
|---------------------------|-------|-------|-------|
| EMS personnel (paramedic) | 0% | 0% | 0% |
| ED physician | 92.9% | 100% | 92% |
| Cardiologist | 85.7% | 100% | 83% |
| Other | 14.3% | 0% | 17% |

Urban hospitals (64%), especially the Tri-county region hospitals, are more likely to be referral centers for STEMI patients than rural hospitals (50%). Based on a few responses from eastern and central Oregon hospitals, they are all self-identified as referral centers for STEMI patients.

Stroke Acute Care Capacity

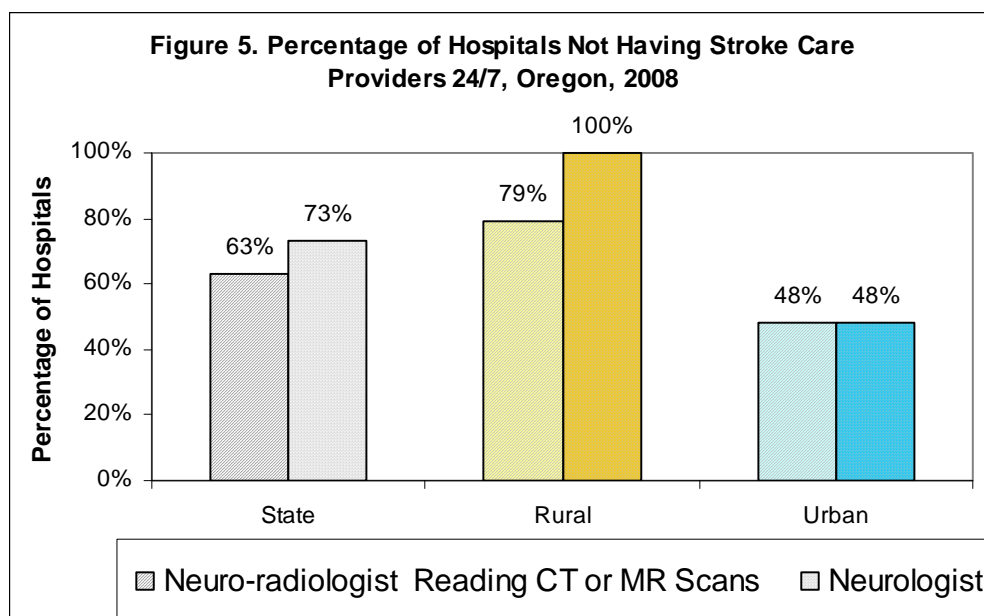
More than 40% of rural Oregon hospitals do not have written protocols for acute stroke care. More than 30% of hospitals outside the Tri-county region do not have written stroke care protocols.



Based on survey respondents, across the state 48% of the hospitals' staff and services for acute stroke care cannot be activated based on EMS information and pre-hospital notification. 40% of surveyed southern Oregon hospitals do not have this capacity either. Places such as Willamette Valley and eastern and central Oregon have even less capacity of pre-arrival activation.

CT scans and radiologist interpretation are available 24/7 in more than 90% of the hospitals in the whole state. But according to survey responses, a fifth of hospitals in southern Oregon do not have these services available 24/7. It is interesting that 17% of hospitals in the Tri-county region also do not have these services available 24/7. In regards to stroke diagnostic tools, urban hospitals do not appear to have greater advantages than rural hospitals (91% vs. 95% for CT scans, 85% vs. 95% for MR scans). However, 24/7 MR scans and radiologist interpretation in the hospitals with MR scans, are less likely to be available in rural area (50%) than in urban areas (75%).

Rural hospitals tend to have fewer neuro-radiologists available 24/7 for CT or MR scans reading. The shortage of neuro-radiologists available 24/7 is especially obvious in northern coast, southern, eastern and central Oregon. Similarly, rural area hospitals in Oregon do not have neurologists available 24/7 at all, although more than 70% of all surveyed hospitals in the state do not have this capacity either. The lack of access to neurologists is more severe in areas other than the Tri-county region.



Despite the lack of neuro-radiologists and of neurologists available 24/7, thrombolytic therapy for stroke appears to be more readily available in some rural areas such as southern, eastern, and central Oregon.

Table 6. Availability of Thrombolytic Therapy for Stroke in the Hospitals, Oregon, 2008.

| | State | Rural | Urban |
|-------------------------------------|-------|-------|-------|
| 24 hours a day/7 days a week (24/7) | 77% | 78% | 76% |
| available, but not 24/7 | 10% | 11% | 10% |
| not available | 13% | 11% | 14% |

83% surveyed hospitals across the state do not have capacity and no rural hospitals have the capacity to perform catheter procedures for stroke patients on a 24/7 basis. Even in urban hospitals, only a third of them have it available 24/7.

The majority (94%) of rural hospitals are not referral centers for stroke patients in Oregon. Only 28% of all hospitals in the whole state and 48% of urban hospitals are stroke referral centers.

APPENDIX . Survey of Heart Disease and Stroke-Related Acute Care Infrastructure In Oregon Hospitals and Emergency Departments

1. Is your emergency department open 24 hours a day/7 days a week?

- ☐ Yes
☐ No

The following questions are about MI & Heart Disease care:

2. Does your hospital have a written protocol for acute MI (myocardial infarction) care in the ED? (If No, skip to question #3)

- ☐ Yes
☐ No

2a. If yes, which of the following best describes how often is it used, on average?

- ☐ Daily
☐ Several times a week
☐ At least once a month
☐ Less than once a month

3. Does your facility receive pre-hospital notification for STEMI? (If No, skip to question #4)

- ☐ Yes
☐ No

3a. If yes, how (check each response that applies)?

- ☐ Verbal notification
☐ 12-lead ECG transmission

4. Are your hospital staff/services for STEMI care activated based on pre-hospital data received prior to patient arrival?

- ☐ Yes
☐ No

5. Please describe availability of thrombolytic therapy for MI in your hospital (check one response).

- ☐ 24 hrs a day/7 days a week
☐ available, but not 24/7
☐ not available

6. If available, who is responsible for ordering the thrombolytic (check all that apply)?

- ☐ ED physician
- ☐ Cardiologist
- ☐ Primary care doctor
- ☐ Other, please describe

7. Does your hospital have a cardiac cath lab? (If No, skip to question #8)

- ☐ Yes
- ☐ No

7a. If yes, are an interventional cardiologist and support staff available 24 hrs a day/7 days a week?

- ☐ Yes
- ☐ No

7b. If yes, who can activate the cardiac catheterization lab (check all that apply)?

- ☐ EMS personnel (paramedic)
- ☐ ED physician
- ☐ Cardiologist?
- ☐ Other, please describe

7c. If yes, is there a system for activation of the entire cath lab team with a single page or alert?

- ☐ Yes
- ☐ No

8. Is your hospital a referral center for STEMI patients? (If No, skip to question #9)

- ☐ Yes
- ☐ No

8a. If yes, from what hospitals do you usually receive referrals?

Hospital 1:

Hospital 2:

Hospital 3:

Hospital 4:

9. If your hospital transfers patients to other hospitals for STEMI care, to which hospitals are patients transferred?

Hospital 1:

Hospital 2:

Hospital 3:

Hospital 4:

The following question are about Stroke care:

10. Does your hospital have a written protocol for acute stroke care? (If No, skip to question #11)

- ☐ Yes
☐ No

10a. If yes, which of the following best describes how often is it used, on average?

- ☐ Daily
☐ Several times a week
☐ At least once a month
☐ Less than once a month

11. Are your hospital staff/services for acute stroke care activated based on information provided by EMS personnel prior to patient arrival?

- ☐ Yes
☐ No

12. Are CT scans and interpretation by a radiologist available 24 hrs a day/7 days a week?

- ☐ Yes
☐ No

13. Are MR scans available in your hospital? (If No, skip to question #14)

- ☐ Yes
☐ No

13a. If yes, are MR scans and interpretation by a radiologist available 24 hours a day/7 days a week?

- ☐ Yes
☐ No

14. Is a neuro-radiologist available to read CT or MR scans 24 hrs a day/7 days a week?

- ☐ Yes
☐ No

15. Is a neurologist available in your hospital 24 hrs a day/7 days a week?

- ☐ Yes
☐ No

16. Please describe availability of thrombolytic therapy for stroke in your hospital (check one response).

- ☐ 24 hrs a day/7 days a week
- ☐ available, but not 24/7
- ☐ not available

17. Are interventional catheter procedures for stroke available in your hospital 24 hrs a day/7 days a week?

- ☐ Yes
- ☐ No

18. Are you a referral center for patients with stroke? (If No, skip to question #19)

- ☐ Yes
- ☐ No

18a. If yes, from what hospitals do you usually receive referrals?

Hospital 1:
Hospital 2:
Hospital 3:
Hospital 4:

19. If your hospital transfers patients to other hospitals for acute stroke care, to which hospitals are patients transferred?

Hospital 1:
Hospital 2:
Hospital 3:
Hospital 4: