



# Countywide Emergency Department 9-1-1 Ambulance Patient Transfer of Care Report Performance Report

**Prepared by:  
Contra Costa Emergency  
Medical Services**

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**2/11/2016**

# Contra Costa Emergency Medical Services (EMS) System Performance Expectation

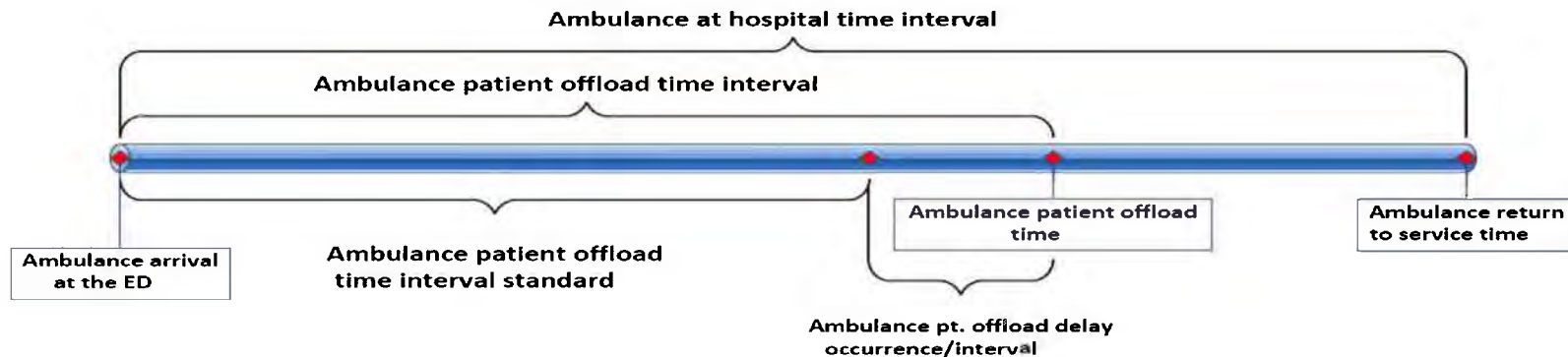
**EMS Policy #40: Hospitals designated as an EMS receiving facility in Contra Costa County shall be prepared to receive patients transported by 9-1-1 county ambulance providers and accept these patients upon arrival. The patient transfer of care performance expectation for the EMS System is 20 minute or less; 90% of the time.**

## Countywide Hospital Performance (January 2015 to Dec 2015)

<b>90<sup>th</sup> Percentile of All Facilities<sup>1</sup></b>
<b>Patient Transfer of Care occurs between 23-28 minutes 9 out of 10 times</b>

### Description of Patient Transfer of Care (TOC)<sup>2</sup>

EMS patient transfer of care is known to improve the availability of 9-1-1 ambulances and patient safety. The California Hospital Association and the EMS Administrators of California have proposed the following graphic to describe the intervals associated with patient transfer of care. In Contra Costa County our metric of patient transfer of care or handoff time is equivalent to the ambulance patient offload time interval.



<sup>1</sup> San Ramon Regional Medical Center is not included in the all facilities reporting. San Ramon Regional Medical Center is served primarily by San Ramon Fire Protection District who does not collect this information.

<sup>2</sup> Source: California Hospital Association, Aug 2014, 1<sup>st</sup> edition "Toolkit to Reduce Ambulance Patient Offload Delays in the Emergency Department" pp: 33-38.

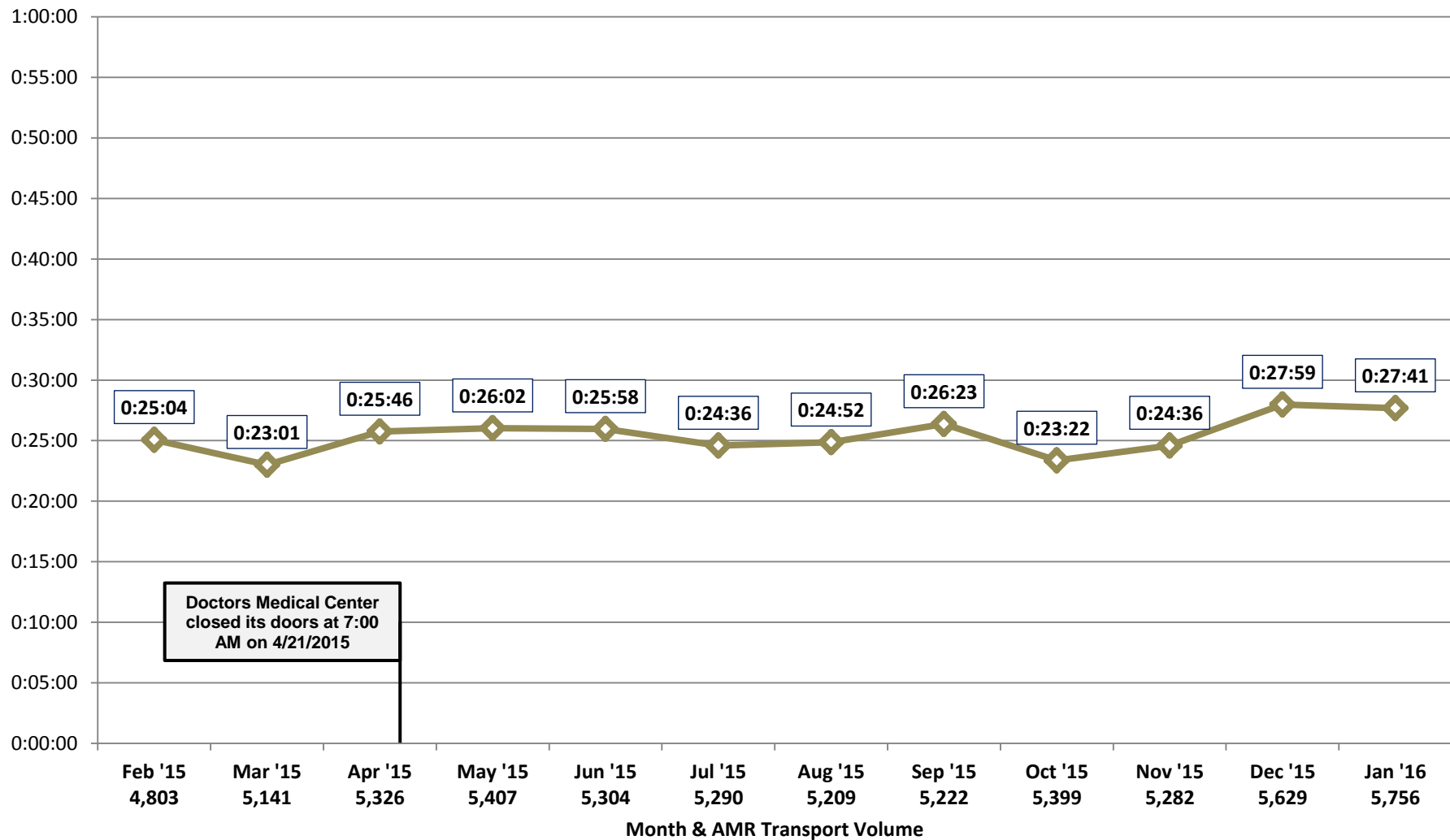


## Patient Handoff Times by Facility 90th PERCENTILE OF ALL FACILITIES

**February 2015 - January 2016**

63,768 Transports (5,314 per Month)

*Source: AMR MEDS (ePCR Database)*



## The Metrics: How We Measure Hospital Performance

**Transfer of care time interval:** Time from ambulance arrival on hospital premises to documented transfer of care. Transfer of care is defined as the patient being physically off the gurney and EMS personnel having completed an appropriate verbal report to hospital staff (where EMS crew has no further direct patient care duties). Any activity performed after the patient care transfer occurs is not included, e.g. clean up of ambulance and completion of prehospital patient care record.

**Data elements used in reporting:** Arrival of ambulance time is defined as the time the ambulance reaches hospital property and captured as an automated data point using a link to the ambulance CAD (Computer Aided Dispatch). Transfer of care time is the time that the EMS provider documents as the point in time where the patient is both physically off the gurney and the ED staff have received a verbal patient report.

**Fractile Performance:** Measurement of percentage of time interval associated with completed transfer of care (e.g. 90% of patients with transfer of care within 20 minutes).

**Average patient handoff time (min):** The average time in minutes it takes to handoff patients at an individual facility or group of facilities.

**Total number of patients:** The total count of patients transported to the individual facility or group of facilities during the data collection interval.

**90% Percentile (min):** The amount of time (in minutes) associated with patient transfer of care for 9 out of 10 patients for a facility or group of facilities.

**“Never Events” by Facility:** The total count of EMS patient care transfers (handoffs) taking 60 minutes or longer. This information is displayed as a total count by year, year to date and rate per 100 transports for each facility.

**Demographic Patient Data associated with “Never Events”:** These charts and tables capture descriptive information about patients who experience “Never Events” and includes the paramedic’s primary impression, patient’s age, sex, and ethnicity. The data represents a report of a simple count that has not been evaluated for disparities nor compared with the normal demographics seen in hospital emergency departments.

## The Standards and Benchmarks

The following are the TOC standards and benchmarks of the Contra Costa County EMS System have been established to support prompt ambulance and ED patient transfer of care times:

- Optimal patient transfer of care time: 15 minutes 90% of the time
- Delayed patient transfer of care: 30 minutes or more
- A “Never Event” for patient transfer of care: 60 minutes or more

## The Contra Costa EMS System TOC Safety Initiative: Data Sharing for Improvement

Contra Costa Emergency Medical Services (EMS) recognizes the challenges that many hospital EDs face managing the increase in patient volume associated with many citizens using the ED for primary and urgent care. However, delays in the timely transfer of care of patients<sup>3</sup>, brought by 9-1-1 emergency ambulance, are known to increase risk to the patient and adversely impact the availability of providing emergency ambulance services throughout the county. It is important that all hospitals receiving emergency ambulances recognize the following:

- Everyday a significant number of 9-1-1 patients in Contra Costa experience some level of transfer of care delays when they arrive at the hospital.
- Delays of greater than one hour are considered “**Never Events**” within the Contra Costa EMS system because they are “**preventable**”.
- In 2014 “**Never Events**” affected some 401 patients of all ages and in 2015 that number jumped to 608 patients affected.
- When delays of more than 30 minutes occur, efforts by ED staff closest to the patient need to occur to prevent further delays in patient care.
- When two or more emergency ambulances experience delays greater than 30 minutes (known as stacking) a community’s 9-1-1 ambulance response may be adversely affected.
- Emergency ambulance providers have strict response time performance requirements resulting in stiff financial penalties when delays in response occur.
- **Hospitals with inpatient workflow practices that support ED throughput consistently demonstrate shorter patient transfer of care times and experience significantly fewer excessive delays (never events) regardless of spikes in normal day to day ED volume.**

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<sup>3</sup> Delays in timely transfer of care are also known as “offload” or patient “handoff” delays.

To effectively collaborate and manage the patient safety issues associated with patient handoff delays, transfer of care standards and performance metrics were established for the Contra Costa EMS System. The EMS policy # 40 “*EMS Prehospital-Emergency Department Transfer of Care Standards*” is available at <http://cchealth.org/ems/pdf/policy40.pdf>. Contra Costa EMS encourages all of our EMS System partners to use this information to create effective strategies to support timely patient transfer of care.

The Institute of Medicine, National Quality Forum, Centers for Medicare & Medicaid Services, National Association of EMS Physicians and the California Hospital Association/Emergency Medical Services Authority Ambulance Patient Offload Delay Collaborative all recommend establishing benchmarks, metrics and engaging in data sharing to support patient safety between EMS System stakeholders.

The County EMS System standards for patient handoff between ED and 9-1-1 ambulance personnel for all Contra Costa Community Hospitals include:

- Conducting 9-1-1 transported patient handoff as soon as possible upon ambulance arrival;
- Activating appropriate measures to effectively manage ED saturation
- Reducing 9-1-1 ambulance stacking during peak conditions.
- Treating handoff delays of 60 minutes or more as “Never Events”.
- Practicing optimal patient handoff times of 20 minutes or less

The Contra Costa EMS System patient handoff standards were established after 4 years of EMS System stakeholder participation. Beginning in January 1<sup>st</sup>, 2015, EMS began to post public reports at [www.cccems.org](http://www.cccems.org) website at appropriate intervals. We would like to thank all of our Contra Costa community hospitals for making this a high priority in their organizations. Questions about this report should be directed to Contra Costa EMS by visiting us at [www.cccems.org](http://www.cccems.org) or calling 925 646-4690.

## **Management of Delays in Patient Transfer of Care**

Contra Costa EMS works with emergency ambulance, hospital and ED leadership to assure prompt patient transfer of care in the ED. Prompt transfer of patient care enables timely definitive care and the return of 9-1-1 emergency ambulance assets to availability for the next emergency call. The Contra Costa EMS Agency provides routine reports on patient handoff to hospitals, ambulance providers, the Contra Costa Emergency Medical Care Committee and the County Board of Supervisors.

Contra Costa EMS encourages hospitals to measure overcrowding as part of internal quality and patient safety efforts to improve ED/Hospital throughput. Two resources that have demonstrated value in this area include the use of the California Emergency Department Overcrowding Scale (CEDOCS) or the National Emergency Department Overcrowding Scale (NEDOCS). Both scales provide an objective assessment of ED overcrowding, and may be useful in helping hospitals to reduce ambulance offload delays. These tools incorporate measurement of patient census, ED bed count, ED admits, in-patient bed counts, door-to-bed time in the ED, longest wait for admission and number of patients receiving 1:1 care in the ED. The score provides a measure of overcrowding that can be used to provide an early warning to hospital personnel when overcrowding is worsening. Many hospitals have developed internal response plans to address patient flow based on these overcrowding scores. By managing flow issues early, crowding can be addressed and ambulance offload delays can be minimized or eliminated.

## **Report Limitations**

This report is based on computerized dispatch and electronic patient care records for 9-1-1 ambulance data from American Medical Response (AMR). AMR provides approximately 92 % of all emergency ambulance transports within the County. The report does not include patient handoff data from Fire ambulance providers, non-emergency ambulance providers or out of county emergency ambulance providers.

Data for patient transfer of care reporting is not available from San Ramon Fire and Moraga Orinda Fire Transport Providers. Transports from these providers may add to the emergency ambulance volume as they provide up to 8 % of the emergency ambulance services in the county. In particular San Ramon Regional Medical Center is served almost exclusively by the San Ramon Fire Department and is not included in this report while Kaiser Walnut Creek, John Muir Walnut Creek and Contra Costa Regional Center would be most affected by additional transports provided by fire ambulance providers. As fire department ambulance transfer of care data becomes available in the future it will be included in this report.

ED annual utilization data is based on OSHPD data may not be validated until 6 months into the following year. Data associated with ED volume from OSHPD may change OSHPD updates and validates this information.

Doctor's Medical Center was closed to emergency ambulance traffic on August 7, 2014. Data collection on ambulance transfer of care stopped on Aug 7, 2014. On April 21, 2015 the hospital ceased all operations and closed permanently. For more information on the impact of that closure visit [cchealth.org/dmc](http://cchealth.org/dmc)

## Never Events by Hospital: A Simple Count

A Transfer of Care (TOC) Never Event is a patient transfer of care delay of 60 minutes or more. Never Events are serious, largely preventable patient safety incidents. In September of 2014 the Contra Costa EMS began to partner with hospitals to measure and report these events to improve patient safety and support returning ambulances for availability as quickly as possible. The factors that Ambulances support first medical response throughout the Contra Costa EMS System and delays associated with Never Events affect ambulance availability for the next 9-1-1 response in local communities.

County Wide Emergency Department TOC Never Event Summary	2014 NEVER EVENTS	2015 NEVER EVENTS	Change Number of Events	2016 NEVER EVENTS YTD AS OF 1.31.2016
Contra Costa Regional Medical Center[3]	49	101	52	10
John Muir-CONCORD	19	8	-11	1
John Muir-WALNUT CREEK	17	22	5	2
KAISER ANTIOCH	10	19	9	1
KAISER RICHMOND	13	47	34	13
KAISER WALNUT CREEK	8	19	11	2
SAN RAMON REGIONAL [1]	NA	NA	NA	NA
SUTTER DELTA	285	392	107	37
<b>COUNTYWIDE TOTAL</b>	<b>401</b>	<b>608</b>	<b>207</b>	<b>66</b>

[1] Reported ambulance TOC never events limited to AMR data. TOC Never Event Data not available for transports provided by San Ramon and Moraga Orinda Fire

Although the numbers for most hospitals have increased the primary reason is that more people are using Emergency Departments and EMS than ever before. In 2014 the countywide hospital never event rate was 0.7 TOC never events per 100 transports and in 2015 that rate increased to 0.9 TOC never events per 100 transports. During that year the EMS experienced a hospital closure, fire station closures in East County while the hospitals have been experienced a surge of patients in their Emergency Departments in 2015. Contra Costa EMS believes that no patient should wait more than an hour on a gurney and our goal is to reduce and whenever possible eliminate patient TOC never events.

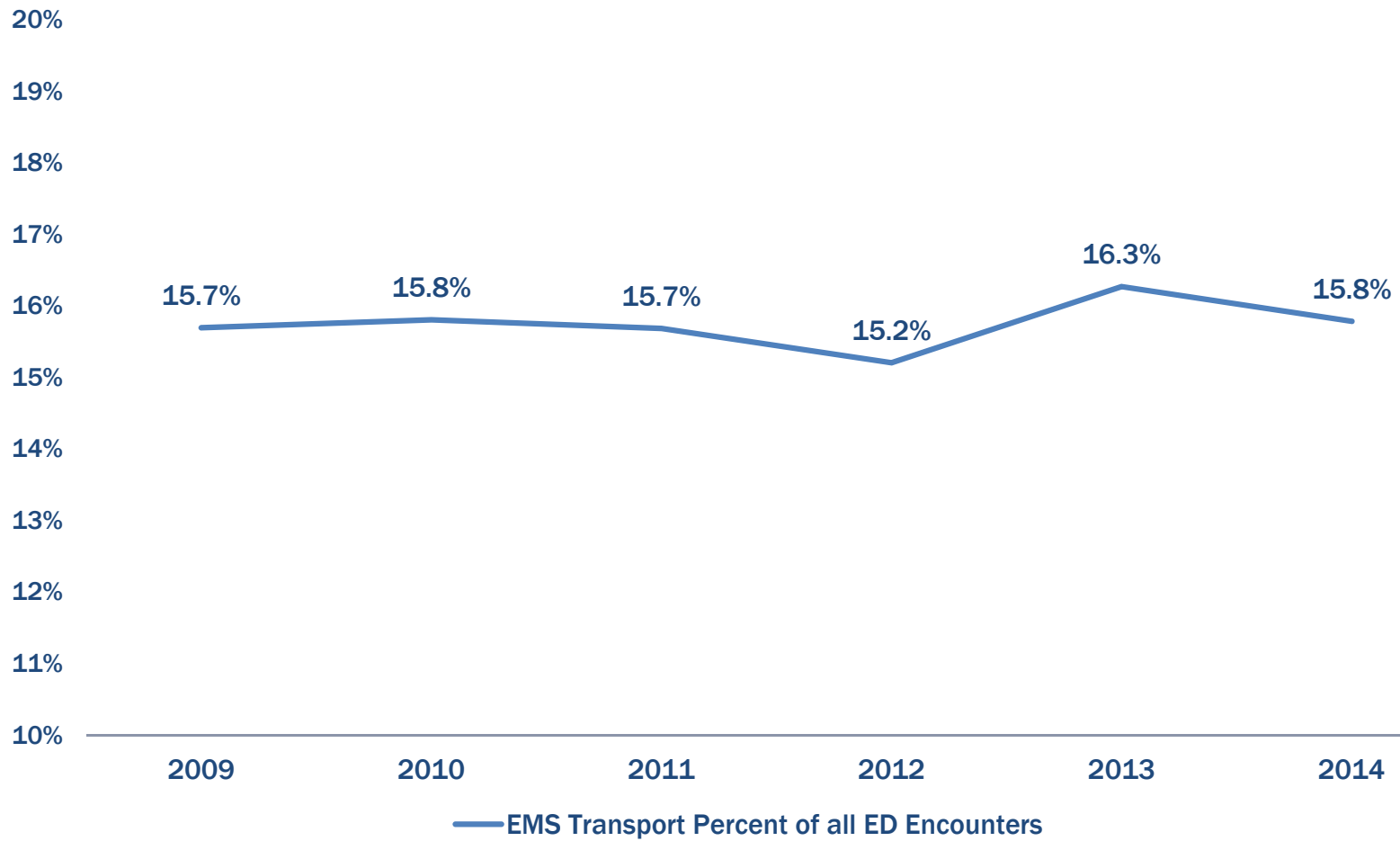


## Hospital Capacity and EMS Transfer of Care: EMS-ED Utilization 2009-2014

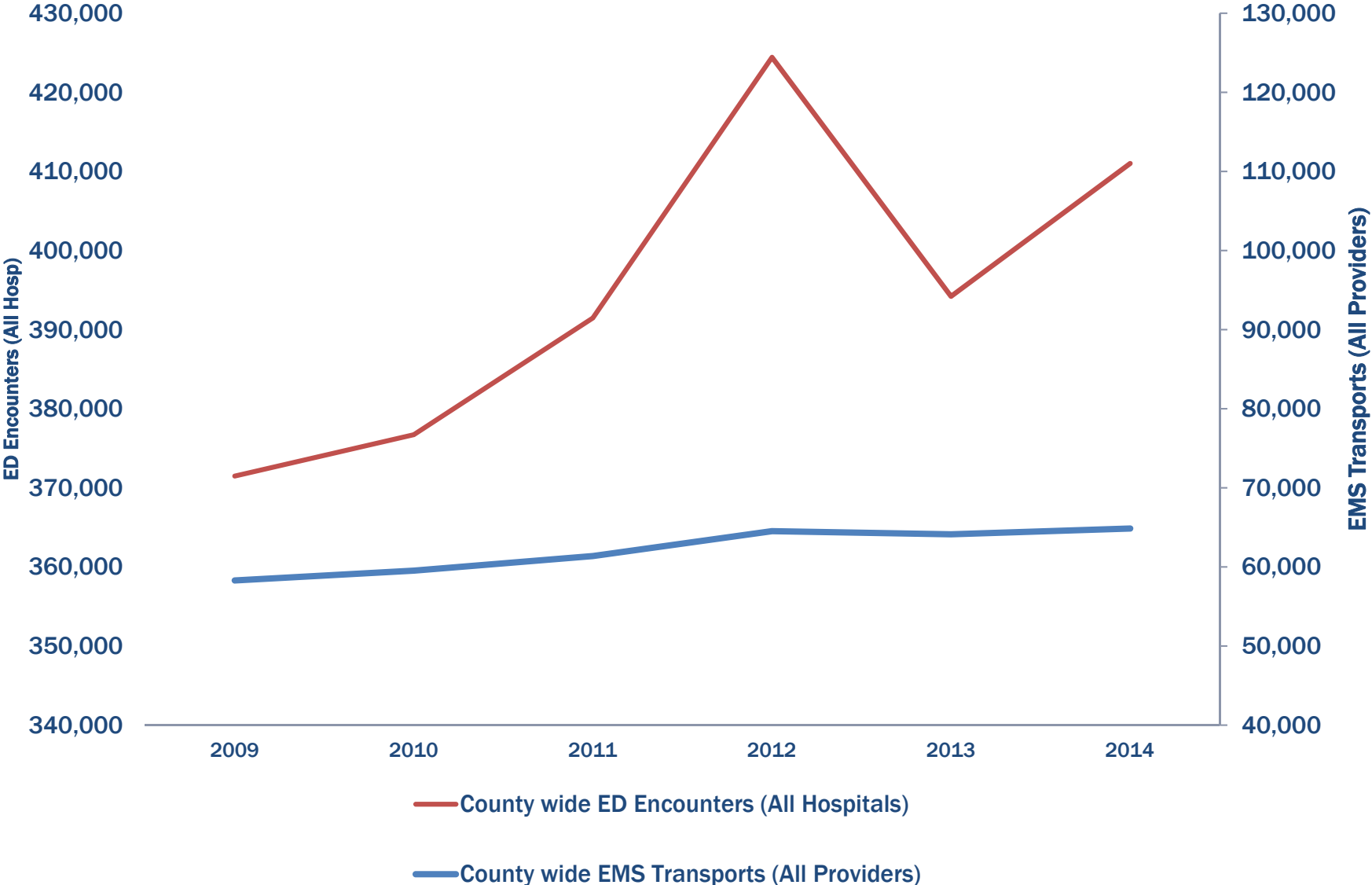
Emergency departments (EDs) have different capacities and utilization. During 2014 and 2015 Contra Costa County Hospitals received 11%-19% of their patients via EMS while over 80% of all patients arrived at the ED, via personal vehicle, for both urgent and routine medical care. EMS transports to Contra Costa Hospitals fluctuate from year to year but are increasing. Typically 10%-12 % of all walk-in ED patients require admission for inpatient services. While local data suggests that patients brought by EMS may have admission rates as high as 40% due to their medical condition. During 2014 overall ED admission rates (walk-in and EMS combined) averaged between 9 and 22 % in throughout Contra Costa. Although the overall volume of EMS and ED patients are increasing the proportion of EMS transports remain between 15%-16.3%. This suggests increases are most likely associated with the county's population growth and the increased use of ED services is also associated with more people having access to health insurance under the Affordable Care Act. While ED crowding is a statewide and national problem patients transported by EMS appear not to be the cause.

Countywide EMS-ED Annual Utilization	2009	2010	2011	2012	2013	2014
County wide ED Encounters (All Hospitals)	371,492	376,719	391,485	424,431	394,217	411,022
County wide EMS Transports (All Providers)	58,292	59,534	61,390	64,527	64,133	64,870
EMS Transport Percent of all ED Encounters	15.7%	15.8%	15.7%	15.2%	16.3%	15.8%
Number of ED Stations/Beds	227	243	367	267	269	269
Number of ED Encounters per ED station	1,637	1,550	1,067	1,590	1,465	1,528
Number of EMS Receiving Facilities [4]	9	9	9	9	9	8

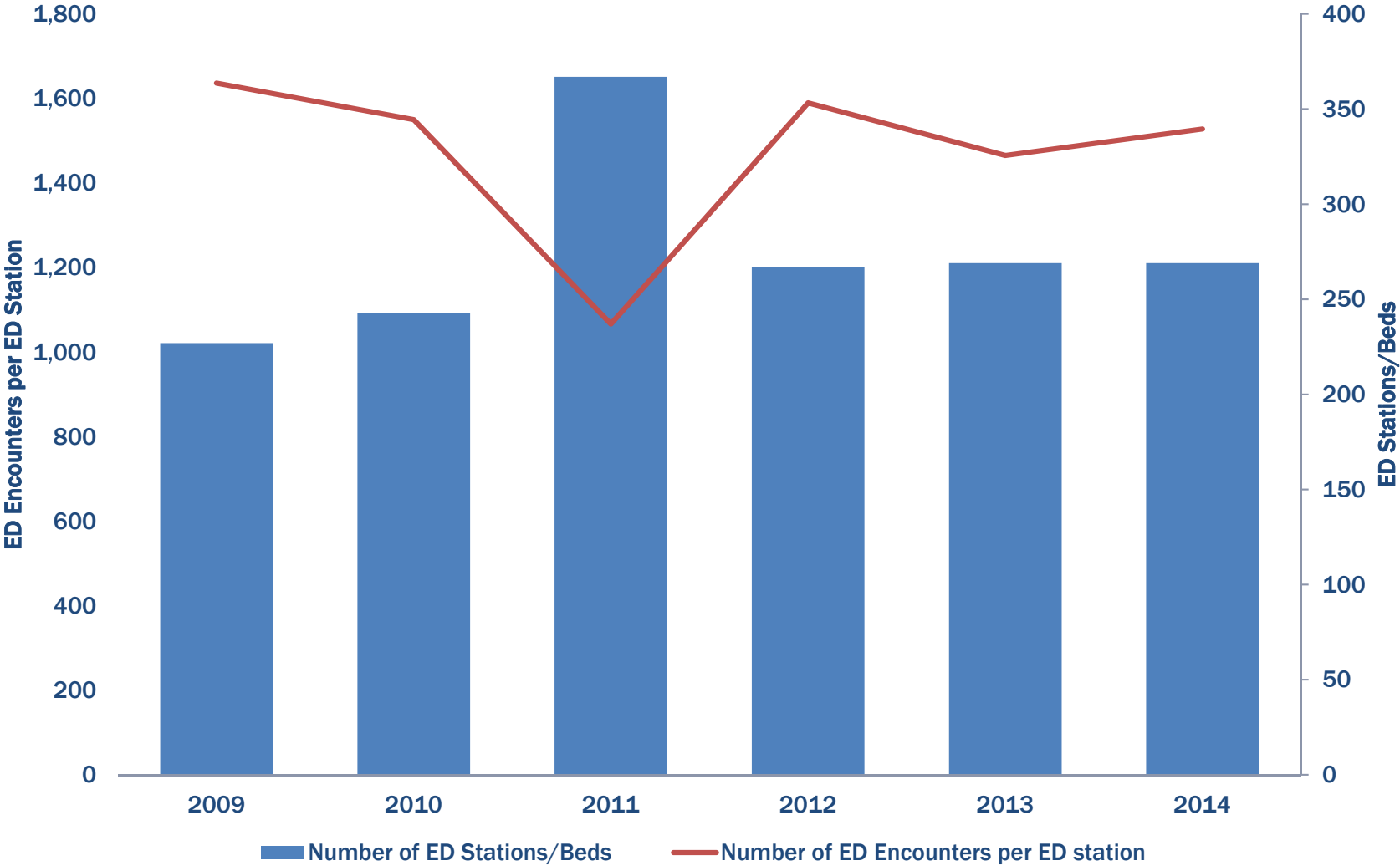
## EMS Transport Percent of all ED Encounters (Visits)



### County-Wide ED Encounters (Visits) compared to EMS Transports



### ED Stations and Encounters per ED station/bed Countywide



2014 County Wide Emergency Department Capacity and Utilization	ED BEDS	OSHPD TOTAL ED TRAFFIC [1]	OSHPD ED VOLUME PER ED BED [2]	TOTAL EMS TRANSPORTS (All EMS Transports)[3]	PERCENT OF EMS TRANSPORTS BY TOTAL ED VISITS [3]	AVERAGE DAILY NUMBER OF CCEMS TRANSPORTS [3]	TOTAL NEVER EVENTS [6]	NEVER EVENT RATE PER 100 TRANSPORTS [6]
Contra Costa Regional Medical Center[4]	20	56,920	2846	10,538	19%	29	49	0.5
Doctors Medical Center [5]	25	32,407	1296	4,224	13%	12	NA	NA
John Muir-CONCORD	32	52,747	1648	9,345	18%	26	19	0.2
John Muir-WALNUT CREEK	44	45,406	1032	8,008	18%	22	17	0.2
KAISER ANTIOCH	35	45,922	1312	5,259	11%	14	10	0.2
KAISER RICHMOND	15	50,303	3354	6,289	13%	17	13	0.2
KAISER WALNUT CREEK	52	55,128	1060	6,907	13%	19	8	0.1
SAN RAMON REGIONAL [6]	12	17,230	1436	2,021	12%	6	NA	NA
SUTTER DELTA	32	54,959	1717	8,433	15%	23	285	3.4
COUNTYWIDE TOTAL [5]	269	411,022	1528	61,024	15%	167	401	0.7

[1] Source: OSHPD 2014 Final Validated Data as of 12.29.2015: [http://www.oshpd.ca.gov/hid/Products/Hospitals/Utilization/Hospital\\_Utilization.html](http://www.oshpd.ca.gov/hid/Products/Hospitals/Utilization/Hospital_Utilization.html)

[2] The American College of Emergency Physicians (ACEP) recommended standard is 2000 visits per ED bed

[3] This data includes all Contra Costa emergency ambulance transport data for San Ramon Fire and Moraga Orinda Fire Departments and AMR.

[4] Includes Contra Costa Regional Emergency Department and Psychiatric Emergency Patient Volume

[5] Doctors Medical Center Closed to EMS Traffic on August 7, 2014

[6] Reported ambulance TOC never events limited to AMR data. TOC Never Event Data not available for transports provided by San Ramon and Moraga Orinda Fire

County Wide Emergency Department Capacity and Utilization January thru September 2015	ED BEDS	OSHPD TOTAL ED TRAFFIC [5]	OSHPD ED VOLUME PER ED BED [1]	EMS TRANSPORTS (All EMS Transports) [2][8]	PERCENT OF EMS TRANSPORTS BY TOTAL ED VISITS [2]	AVERAGE DAILY NUMBER OF CCEMS TRANSPORTS[2]	2015 NEVER EVENTS [4][7]	2015 NEVER EVENT RATE PER 100 TRANSPORTS [4] [7]
Contra Costa Regional Medical Center[3]	20	37,905	1,895	9,737	26%	27	74	0.8
Doctors Medical Center [4]	25	9,343	374	NA	NA	NA	NA	NA
John Muir-CONCORD	32	39,920	1,248	7,746	19%	21	4	0.1
John Muir-WALNUT CREEK	44	29,255	665	6,862	23%	19	20	0.3
KAISER ANTIOCH	35	37,549	1,073	4,493	12%	12	16	0.4
KAISER RICHMOND [6]	15	78,434	5,229	6,295	8%	17	8	0.1
KAISER WALNUT CREEK	52	38,949	749	5,687	15%	16	18	0.3
SAN RAMON REGIONAL [7]	12	11,501	958	1,513	13%	4	NA	NA
SUTTER DELTA	32	39,734	1,242	7,018	18%	19	303	4.3
<b>COUNTYWIDE TOTAL [4]</b>	<b>269</b>	<b>322,590</b>	<b>1,199</b>	<b>49,351</b>	<b>15%</b>	<b>135</b>	<b>443</b>	<b>0.9</b>

[1] The American College of Emergency Physicians (ACEP) recommended standard is 2000 visits per one ED bed

[2] This data includes all Contra Costa emergency ambulance transport data for San Ramon Fire and Moraga Orinda Fire Departments and AMR.

[3] Includes Contra Costa Regional Emergency Department and Psychiatric Emergency Patient Volume

[4] Doctors Medical Center Closed to EMS Traffic on August 7, 2014 and the Hospital Closed on April 21, 2015.

[5] Source: OSHPD 2015 Facility Summary Report Data as of 12.29.2015

[6] Kaiser Richmond ED Bed Capacity increased from 15 to 25 in December 2015 with OSHPD reporting ED stations as 23.

[7] Reported ambulance TOC never events limited to AMR data. TOC never event data is not yet available for transports provided by San Ramon and Moraga Orinda Fire

[8] Reflects All EMS Transports to all destinations including out of county destinations

## Never Events Demographics: Who are the patients affected?

Never Events (>1 Hour Drop Time) By Patient Gender	2013 (8/1/2013 - 12/31/2013)	2014 (1/1/2014 - 12/31/2014)	2015 (1/1/2015 - 12/31/2015)	2016 (1/1/2016 - 1/31/2016)	Grand Total
Female	32	235	338	34	639
Male	30	166	270	32	498

Women appear to be affected more than men

Never Events (>1 Hour Drop Time) By Patient Age	2013 (8/1/2013 - 12/31/2013)	2014 (1/1/2014 - 12/31/2014)	2015 (1/1/2015 - 12/31/2015)	2016 (1/1/2016 - 1/31/2016)	Grand Total
0-9	1	9	7	0	17
10-19	5	21	26	2	54
20-29	7	41	72	6	126
30-39	5	37	70	10	122
40-49	8	58	74	8	148
50-59	10	65	113	6	194
60-69	10	70	93	10	183
70-79	8	41	70	9	128
80-89	4	42	54	10	110
90-100	4	16	29	4	53
> 100	0	1	0	1	2

All ages are affected

Never Events (>1 Hour Drop Time) By Patient Ethnicity	2013 (8/1/2013 - 12/31/2013)	2014 (1/1/2014 - 12/31/2014)	2015 (1/1/2015 - 12/31/2015)	2016 (1/1/2016 - 1/31/2016)	Grand Total
White	2	17	15	0	34
African American	19	106	159	14	298
Hispanic	29	200	291	38	558
Asian or Latino	11	49	99	10	169
Other Race	1	29	44	4	78

All ethnicities are affected

## Understanding the Clinical Characteristics of “TOC Never Event” Patients May Assist Hospitals in Identifying At-Risk Populations

Paramedic Primary Impressions Never Events (>1 Hour Drop Time)	2013 (8/1/2013 - 12/31/2013)	2014 (1/1/2014 - 12/31/2014)	2015 (1/1/2015 - 12/31/2015)	2016 (1/1/2016 - 1/31/2016)	Grand Total
Pain	15	96	126	11	248
Other - Sick/Dizzy/Weakness	11	50	71	8	140
Trauma	5	45	81	9	140
Behavioral / Psychiatric	7	51	82	13	153
Neurological	5	36	49	1	91
Respiratory	4	26	37	6	73
Gastrointestinal	5	24	44	5	78
Toxicological	3	25	52	3	83
Cardiac	5	17	25	2	49
Vascular	1	23	31	6	61
Diabetes	0	5	4	2	11
OB/GYN	0	3	3	0	6
Allergic Reaction	1	0	3	0	4

**Patients with a  
variety of  
conditions appear  
are affected**

**Many of these conditions may be minor; however no patient should wait more than 60 minutes for EMS/ED transfer of care.**

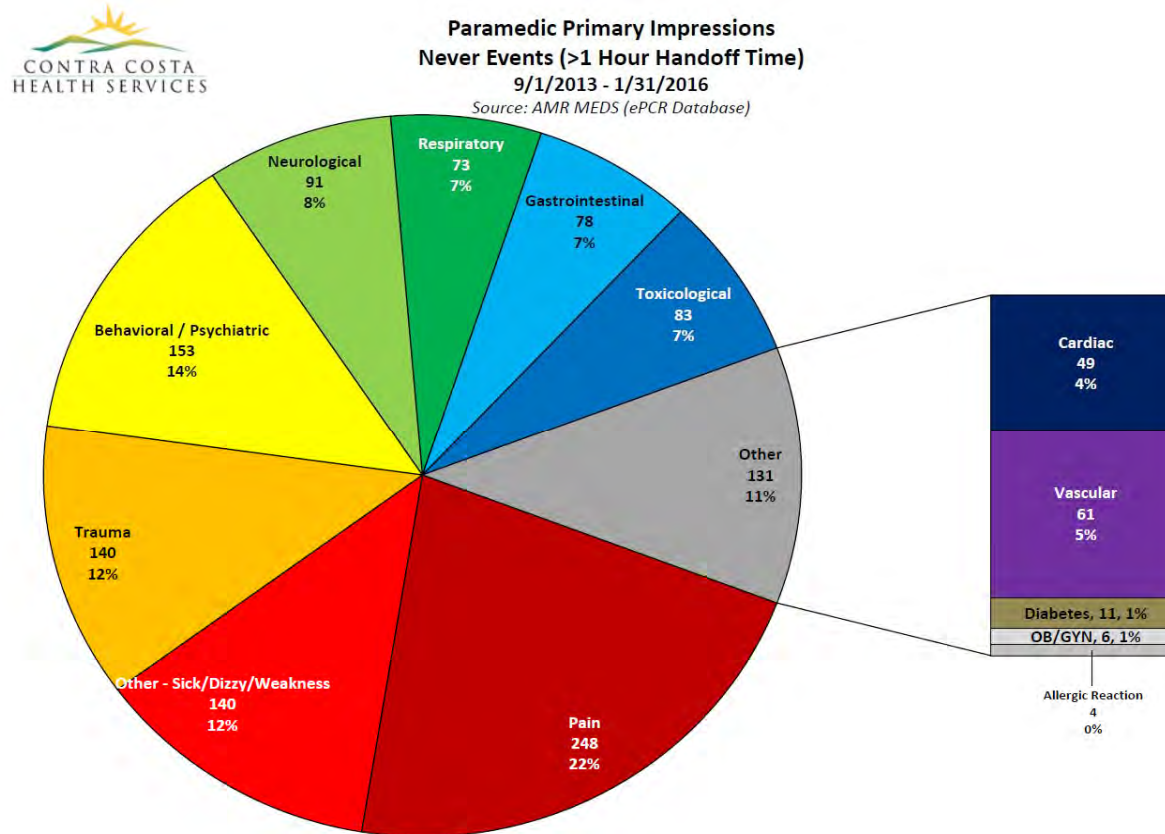
In California, when 9-1-1 is contacted, the EMS ambulance provider is required by law to take the patient to an ED although up to 60% of all EMS transports are “treat and release” within 24 hours. Future EMS and Hospital partnerships could redirect patients to non 9-1-1 resources and encourage the use of alternative primary or urgent care settings more appropriate for the patient condition. Such options could play an important role in conserving EMS ambulance and ED resources for the sickest of patients. However until the laws governing EMS services would need to change to create alternatives.



## “TOC Never Events” Affect a Wide Range of Patient Conditions

Patients with low, moderate or high acuity conditions may experience prolonged patient transfer of care events (wait times on the gurney of an hour or more). Patients with low acuity conditions may be better served by urgent care or same day appointments. However under California law EMS is prohibited from taking patients to any other destination than a hospital ED.

Paramedic primary impressions are not clinical diagnoses and may not reflect the condition of the patient. Paramedic primary impression categories reflect the field paramedic assessment of the patient prior to being evaluated in the ED.



- Trauma “Never Event” data reflect patients who do not have major trauma by paramedic impression

# Addendum

Performance Trends by Facility  
Patient Handoff (TOC) Times  
90 Percentile and Average



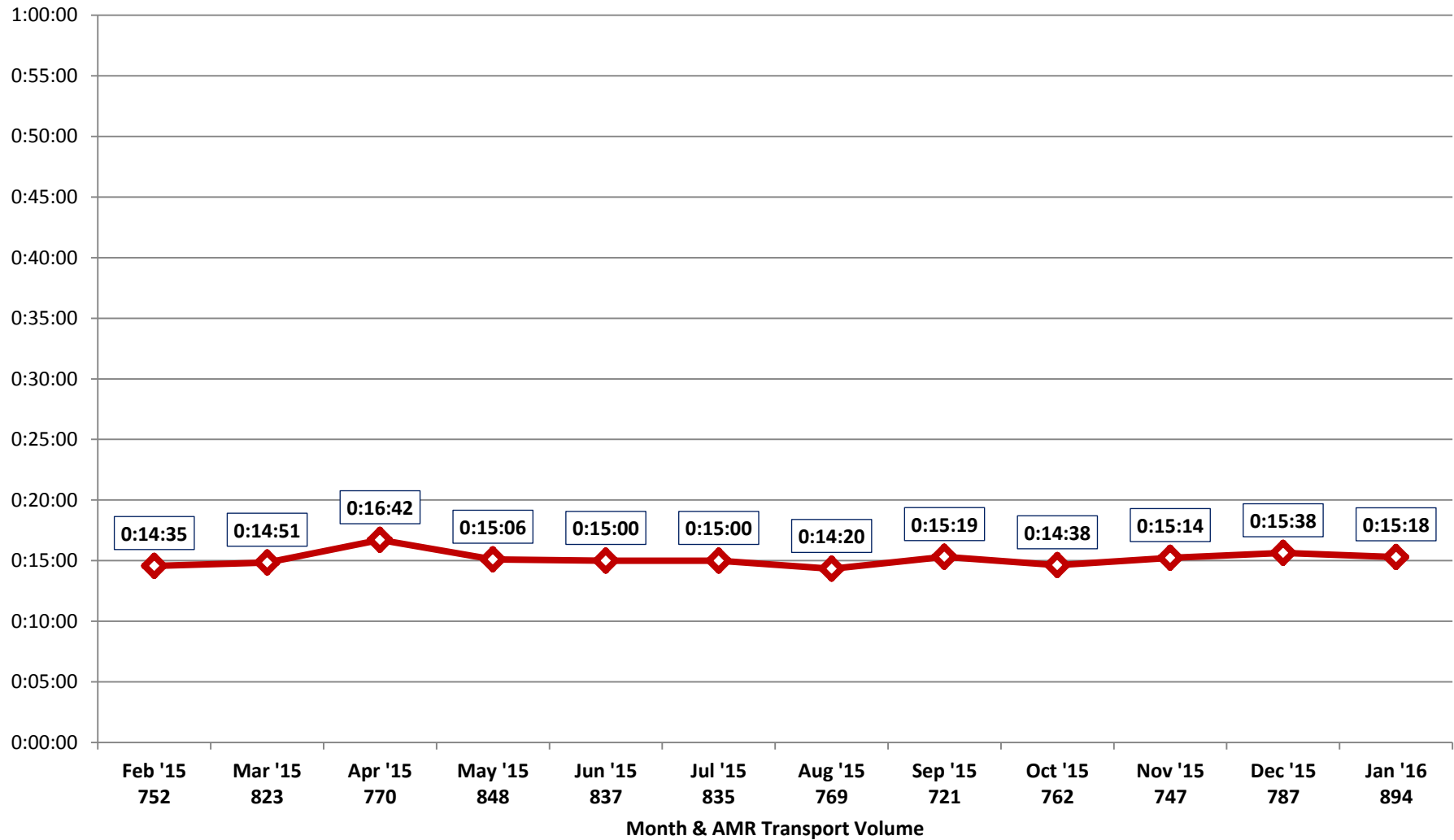
## Patient Handoff Times by Facility (90th Percentile)

### John Muir - Concord

February 2015 - January 2016

9,545 Total Transports (795 per Month)

Source: AMR MEDS (ePCR Database)





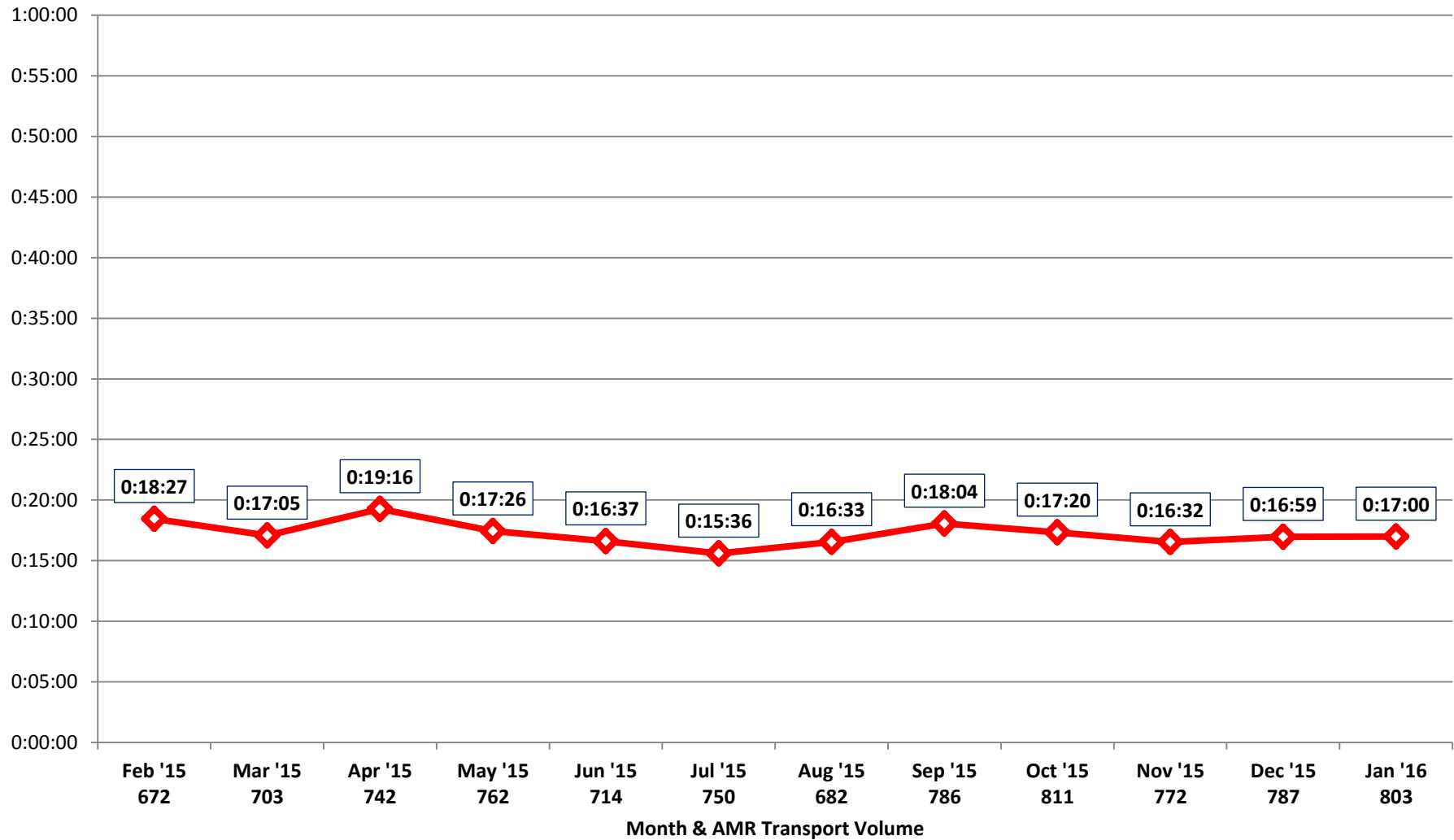
## Patient Handoff Times by Facility (90th Percentile)

### John Muir - Walnut Creek

February 2015 - January 2016

8,984 Total Transports (749 per Month)

Source: AMR MEDS (ePCR Database)





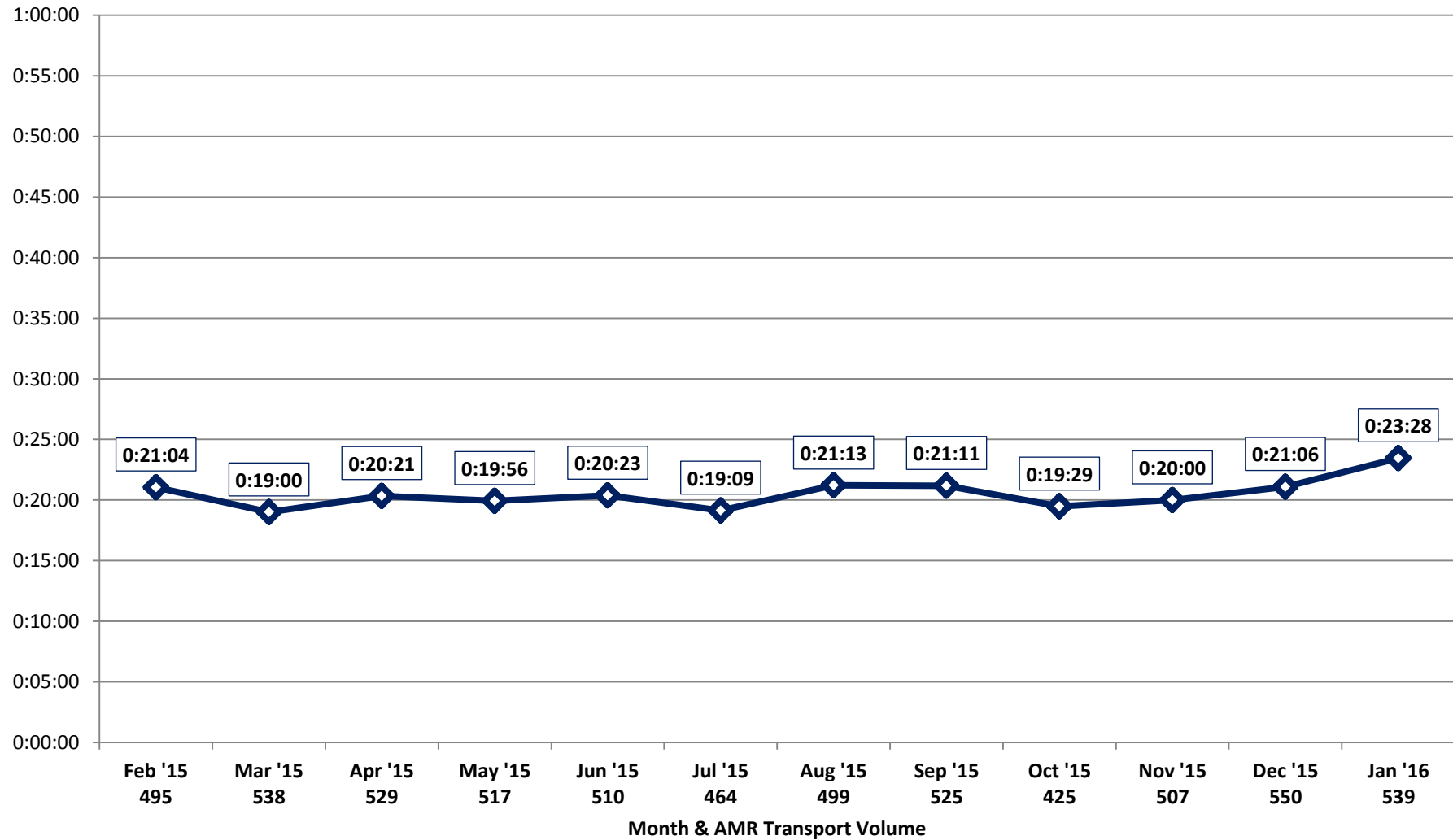
## Patient Handoff Times by Facility (90th Percentile)

### Kaiser - Antioch

February 2015 - January 2016

6,098 Total Transports (508 per Month)

Source: AMR MEDS (ePCR Database)





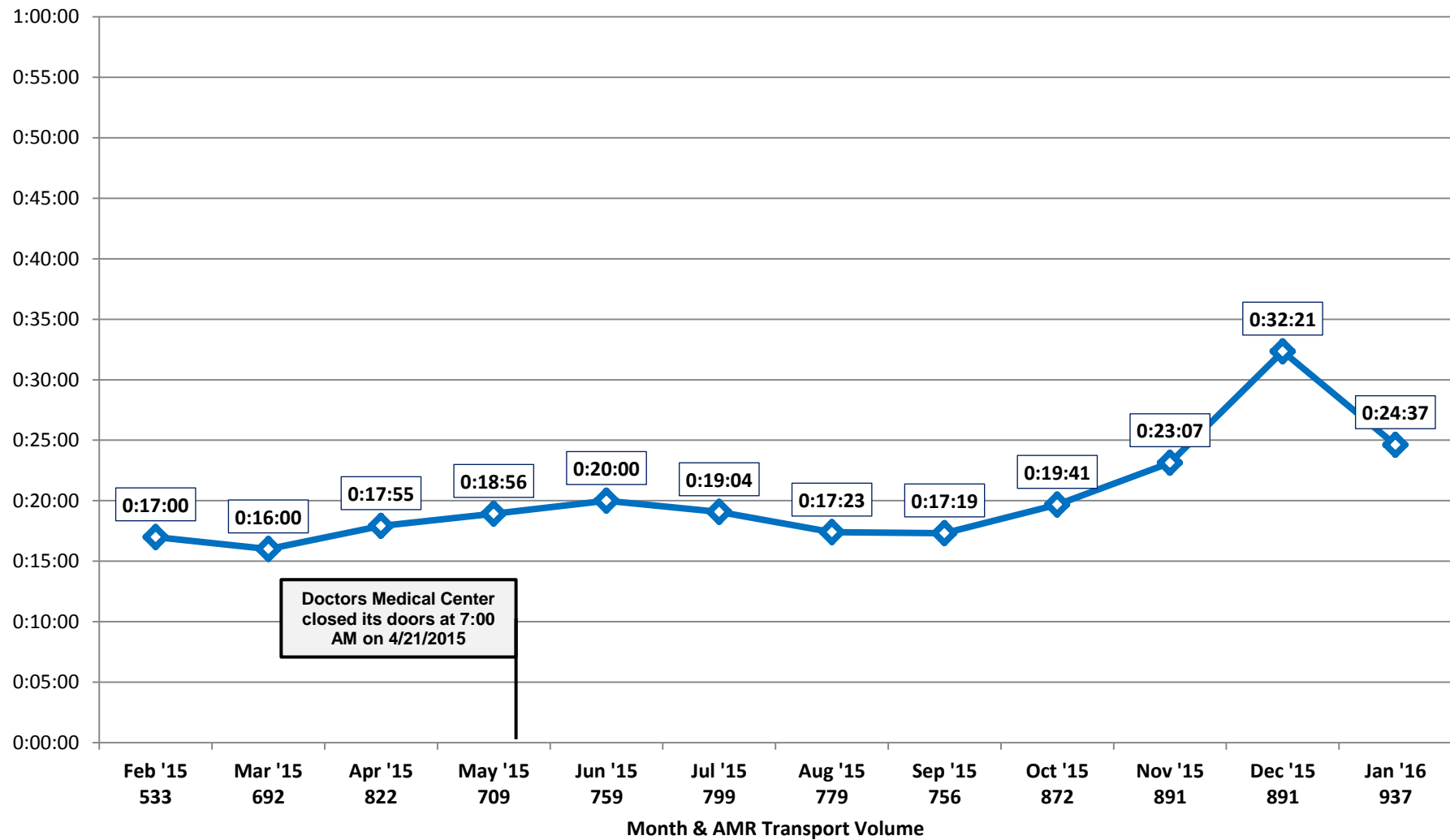
## Patient Handoff Times by Facility (90th Percentile)

### Kaiser - Richmond

February 2015 - January 2016

9,440 Total Transports (787 per Month)

Source: AMR MEDS (ePCR Database)





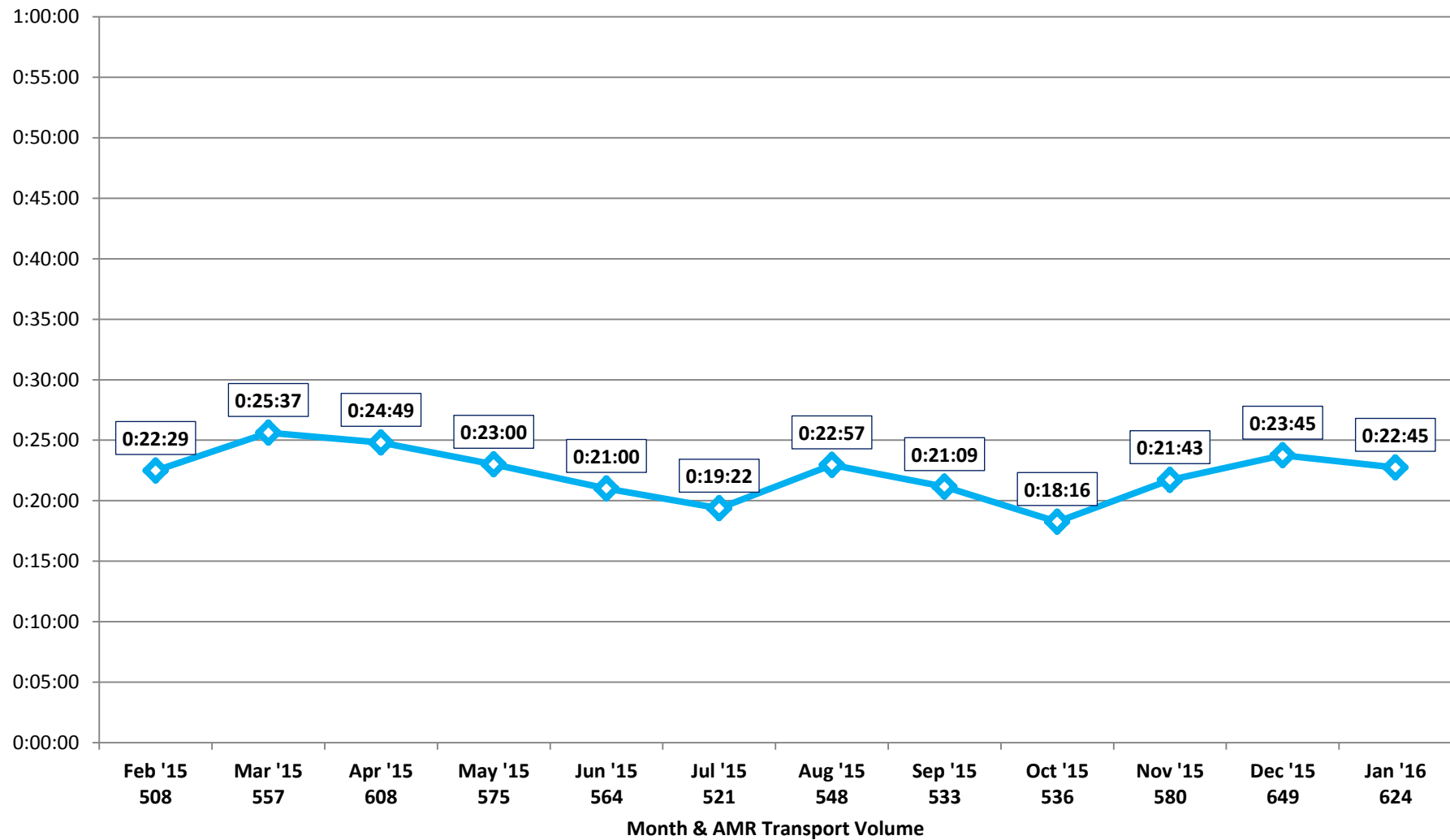
## Patient Handoff Times by Facility (90th Percentile)

### Kaiser - Walnut Creek

February 2015 - January 2016

6,803 Total Transports (567 per Month)

Source: AMR MEDS (ePCR Database)





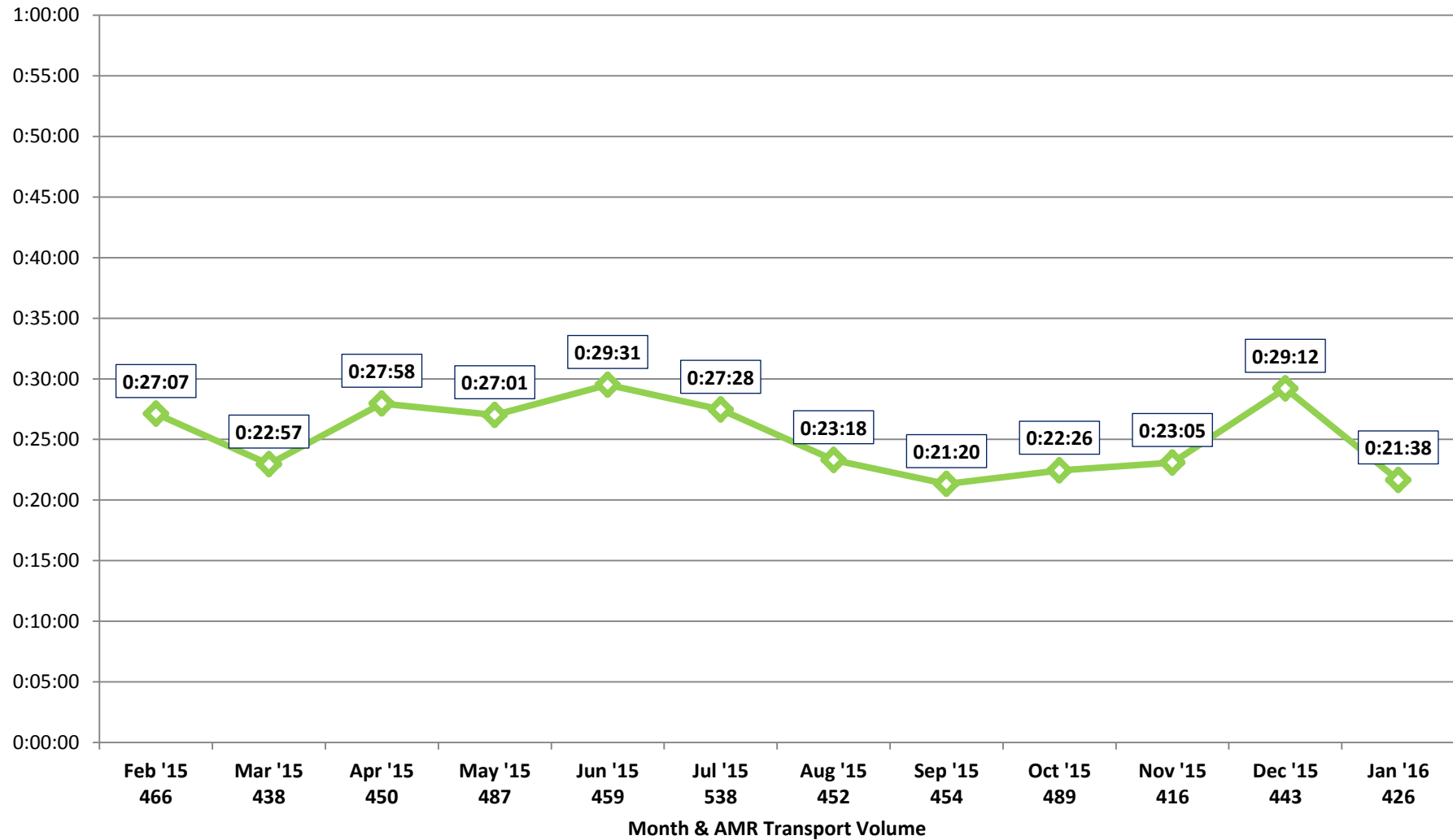
## Patient Handoff Times by Facility (90th Percentile)

### Contra Costa Regional Medical Center

February 2015 - January 2016

5,518 Total Transports (460 per Month)

Source: AMR MEDS (ePCR Database)







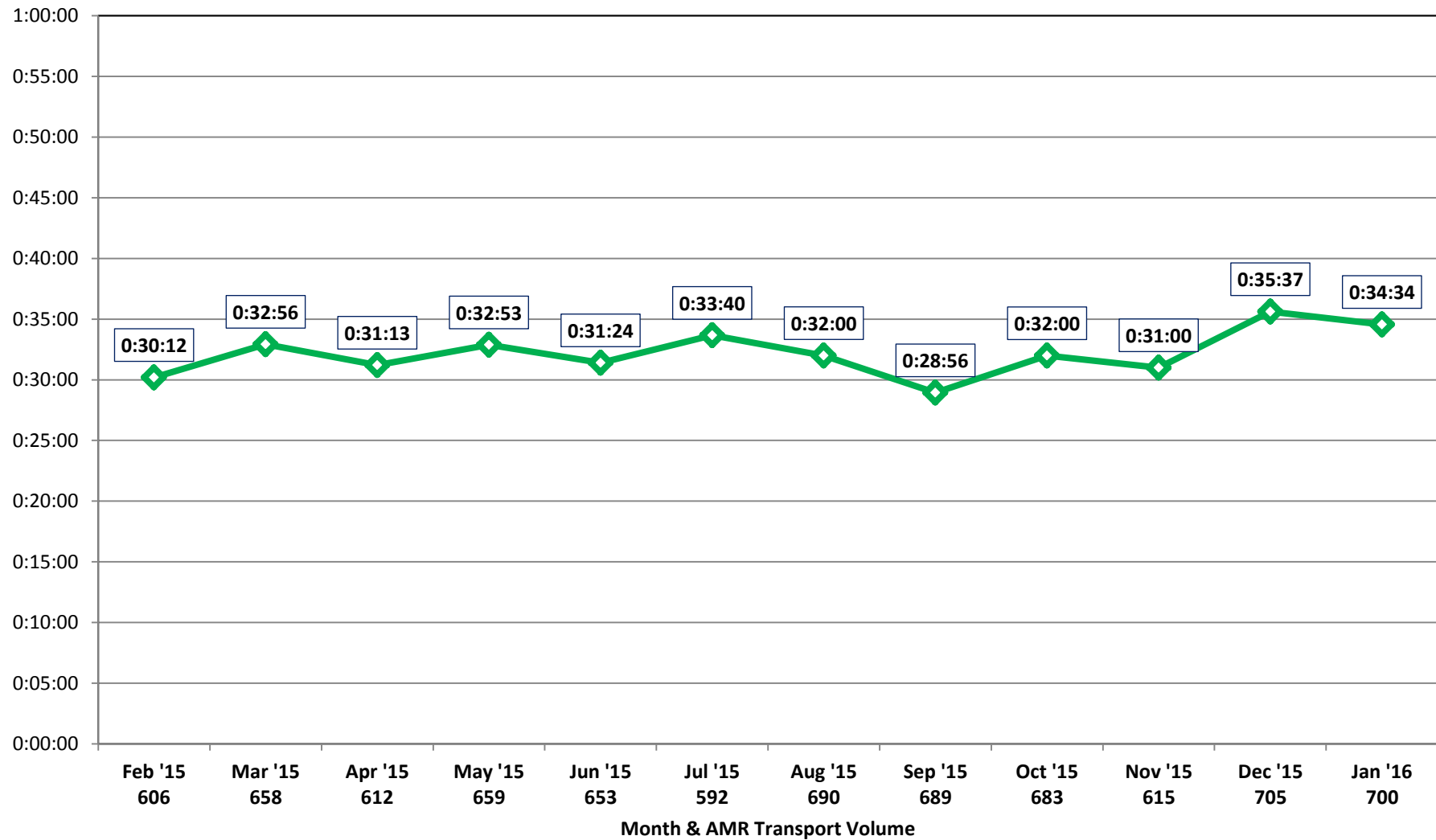
## Patient Handoff Times by Facility (90th Percentile)

### CCRMC - PES

February 2015 - January 2016

7,862 Total Transports (655 per Month)

Source: AMR MEDS (ePCR Database)





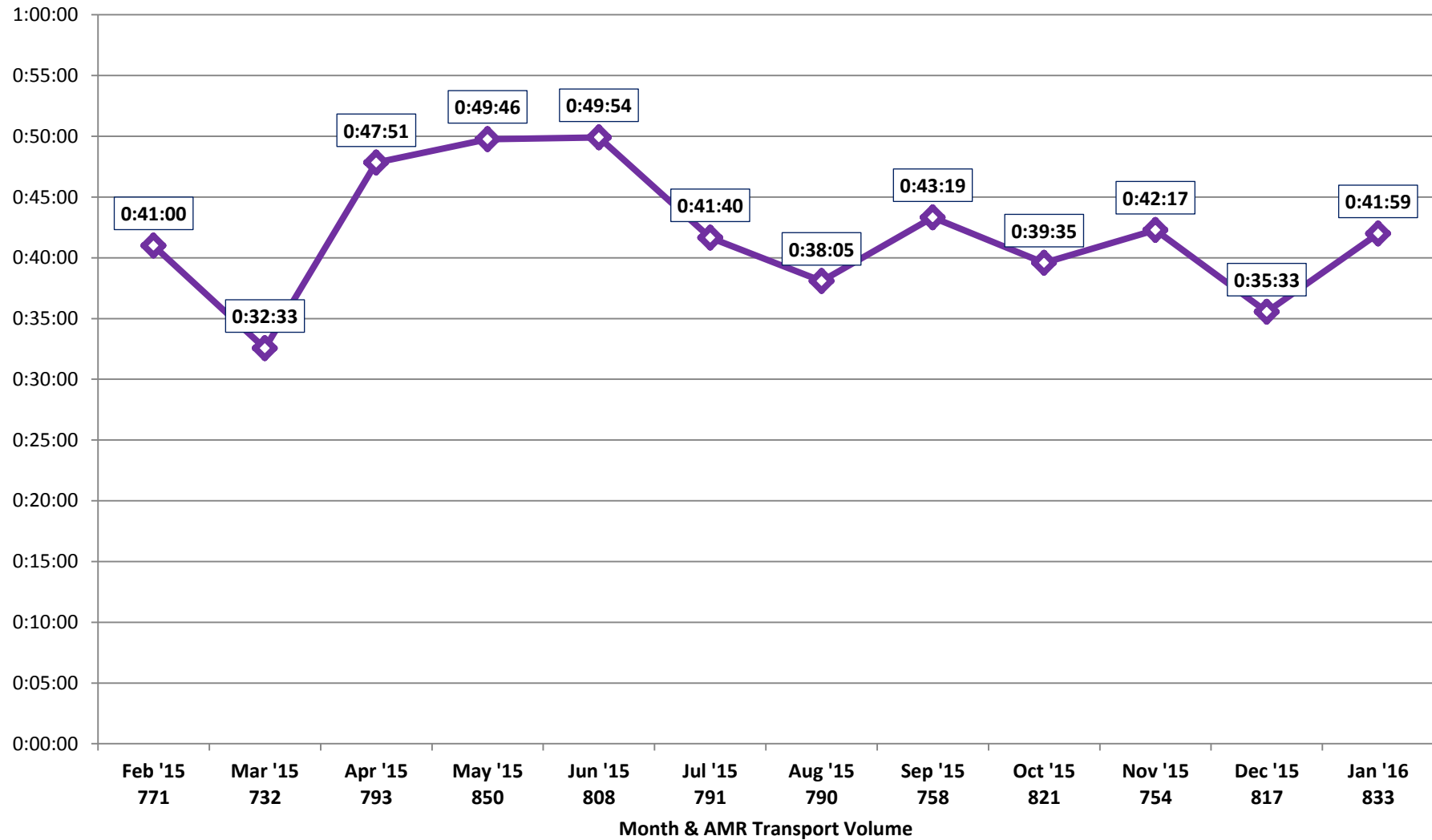
## Patient Handoff Times by Facility (90th Percentile)

### Sutter Delta Medical Center

February 2015 - January 2016

9,518 Total Transports (793 per Month)

Source: AMR MEDS (ePCR Database)

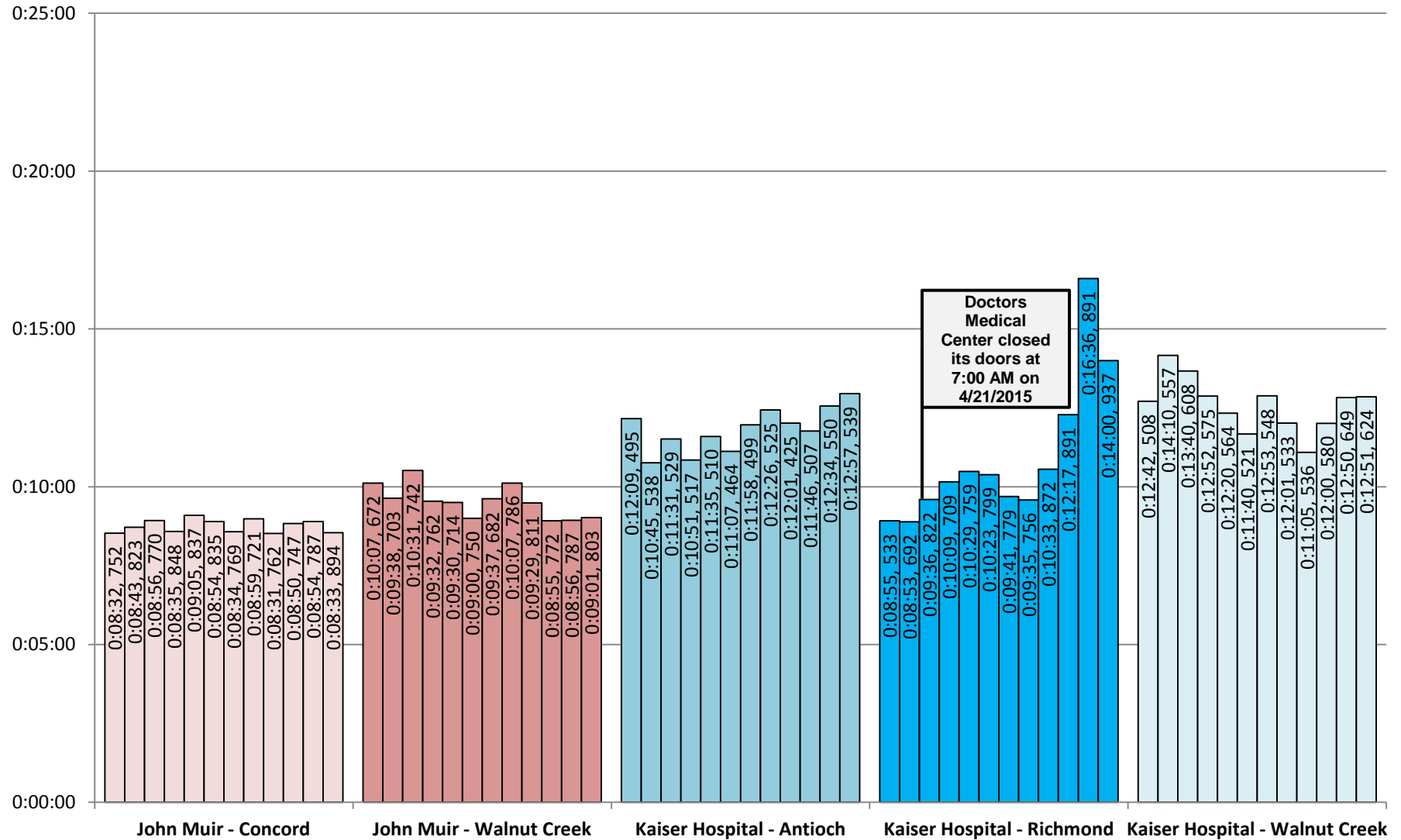




# Average Patient Handoff Times by Facility February 2015 - January 2016 by Month

40,870 Total Transports

Source: AMR MEDS (ePCR Database)

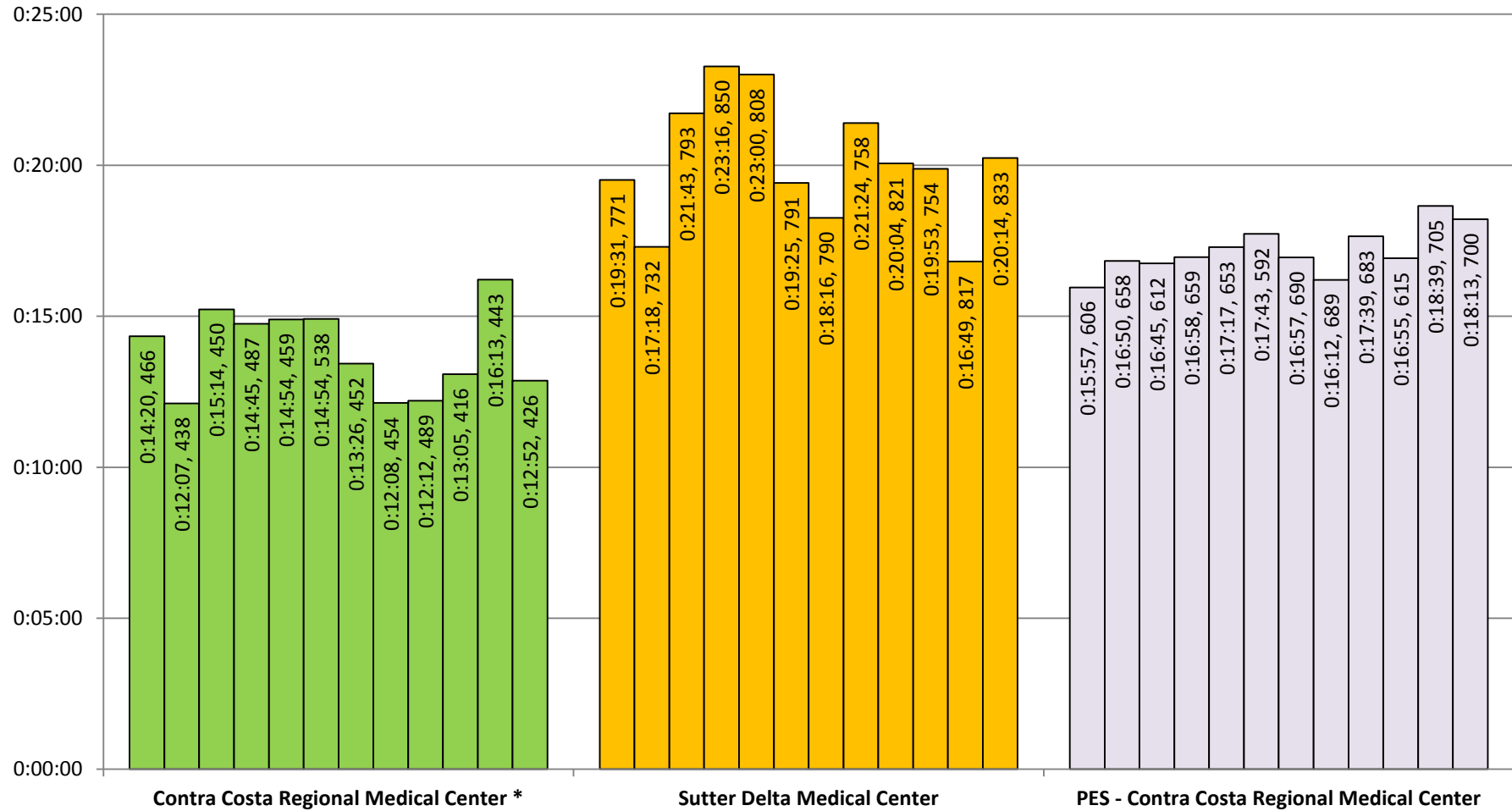




## Average Patient Handoff Times by Facility February 2015 - January 2016 by Month

22,898 Total Transports

Source: AMR MEDS (ePCR Database)



\*Note: CCRMC data may include patients who were actually taken to PES. Contra Costa EMS is working to more accurately identify whether patients were taken to CCRMC ED or PES.