

# Study of West County ED & Critical Care Access/Capacity Issues

Final Report



## Contra Costa County Emergency Medical Services Agency

Prepared by:



ABARIS GROUP

March 31, 2004

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**Contra Costa EMS Agency  
Study of West County ED and Critical Care Access/Capacity Issues  
By The Abaris Group  
Executive Summary**

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Overview

Tenet Healthcare Corporation has recently announced that it will terminate, effective July 31, 2004, its contract with the West Contra Costa Healthcare District for the operation of Doctors Medical Center San Pablo Campus as part of Tenet's downsizing. While the West Contra Costa Healthcare District is seeking to continue hospital services, the Contra Costa EMS Agency believes it prudent to undertake an analysis of the potential impact of a change of services or closure of the hospital on the provision of emergency care in the West County area. Thus, The Abaris Group has been asked to undertake an independent analysis of the impact of a potential closure or downsizing of Doctors Medical Center San Pablo.

Conclusions

The Abaris Group has conducted an assessment of the public demand for emergency department (ED) services in the West County and also a detailed inventory of ED and inpatient capacity in the region. It is The Abaris Group's opinion that the downsizing or closing of the ED at Doctors Medical Center San Pablo will have a substantial effect on local health care providers and the public. While this effect will vary depending on the actual change that occurs and the location of alternative providers, it will disproportionately affect Kaiser Medical Center Richmond.

The full closure of the ED at Doctors Medical Center San Pablo should be the biggest concern for the community and other health care providers in the region. In the event of such a closure, Kaiser Medical Center Richmond will immediately experience 90 plus new patients per day in their ED. While there are 12 other EDs in the region, Kaiser Medical Center Richmond will be disproportionately impacted. The reason for this is that patients will choose the next closest ED for their ED needs, barring significant new healthcare resources in the community or an extensive public education campaign. Additionally, public education processes alone will not likely change a majority of the public's behaviors as they relate to selecting an ED. The resultant additional volume at Kaiser Medical Center Richmond will quickly overwhelm their small 15-bed ED and force extraordinary delays in the assessment, treatment and disposition of all patients arriving at that ED. This will lead to significant public frustration, risk to patient safety and ultimately will discourage some patients from going to the ED when they need to. ED overload and ambulance diversion will be pervasive, occurring perhaps even hourly during peak hours of the day at Kaiser Medical Center Richmond. The initial impact on other EDs in Alameda and Solano Counties is likely to be low and thus only have a nominal impact on these institutions. However, during periods of diversion at Kaiser Medical Center Richmond, these hospitals would receive a greater additional load.



In the event of a downsizing of ED operations at Doctors Medical Center San Pablo and the resultant limitation on ambulance arrivals at that facility, all area hospitals are likely to be impacted but Kaiser Medical Center Richmond again will be the most impacted. Even with the potential for the County EMS Agency to reallocate ambulance patient destinations by policy for more equitable distributions, only a portion of those patients will lend themselves to those changes. The Abaris Group calculates an increase of 18 to 19 new ambulance patients per day at Kaiser Medical Center Richmond. These patients will have a higher acuity than walk-in ED patients and will require more resources with nearly half of these patients needing inpatient beds including critical care beds. In an ED the size of Kaiser Medical Center Richmond, this is a substantial increase of higher-acuity patients that will lead to ED overload and ambulance diversion on a frequent daily basis. This will affect general ambulance traffic and Kaiser patients attempting to arrive by ambulance to their hospital of choice. Approximately 230 burn patients now treated at Doctors Medical Center San Pablo would also need to be transported to burn centers in San Francisco, San Jose and Chico. The remaining 5-6 daily ambulance cases transported to other regional EDs will not likely have a substantial effect on these EDs, but diversion of ambulances by Kaiser Medical Center Richmond would result in a greater impact on these hospitals.

Many of the new ambulance patients will also require inpatient bed capacity. Should Doctors Medical Center San Pablo not be able to accept ambulance patients or close, The Abaris Group calculates there would be a sufficient number of medical/surgical beds in the region (see discussion on bed calculations later in this report) but there would be a dramatic shortage of intensive care beds. Non-ED admission needs are another concern for the community if Doctors Medical Center San Pablo closes their hospital. Assumptions on medical/surgical and intensive care beds would dramatically change should private physicians, currently admitting non-ED admissions at Doctors Medical Center San Pablo, pre-empt the use of these limited available beds at regional hospitals for their private admission practices.

There will also be a substantial impact on pre-hospital care resources in the West County. A significant increase in ambulance coverage (337 additional unit hours per week) will be needed to offset longer transport times due to any change in status at Doctors Medical Center San Pablo and resultant ambulance diversions at Kaiser Medical Center Richmond. In addition, there would likely be increased "off-load" times for the ambulance provider due to capacity issues at Kaiser Medical Center Richmond that would leave ambulances out of service for longer period of times due to delays in finding a patient bed. There will also likely be a modest impact on fire first responders assisting ambulances with some transports and a potential impact on air medical providers should their services be needed to back up the ground ambulance service. Additional ambulance resources will be needed to assist with the resultant secondary transfers that will occur with patients arriving at hospitals with insufficient capacity. This will also add considerably to patient and payer costs.

Any reduction of hospital services at Doctors Medical Center San Pablo would also have an impact on resources available for major emergencies in the community. Should the hospital close and the West County be isolated during such an emergency, this could have an enormous impact on mortality and morbidity.



In summary, The Abaris Group's conclusions are as follows:

- (1) Downsizing or closure of the ED at Doctors Hospital San Pablo will have a substantial affect on local health care providers and to the public in general in the West County.
- (2) Kaiser Medical Center Richmond will be disproportionately affected with a significant increase in ambulance traffic (approximately 19 new ambulance cases per day) and/or a combined new ambulance and walk-in patient volume (approximately 91 additional patients per day) depending on whether the hospital would downsize their ED permit status to "Standby" or to close the ED all together.
- (3) Kaiser Medical Center Richmond's ED and inpatient capacity would not be sufficient to handle the new volume of cases from the ED walk-in and subsequent hospital admissions.
- (4) It is unlikely that walk-in patients would travel to considerably more distant EDs for their care, thus creating higher volumes at Kaiser Medical Center Richmond and long waits.
- (5) The long waits for walk-in patients would be frustrating for these patients, delay their assessment and ultimately may discourage patients that need an ED from seeking care there.
- (6) Waiting times at Kaiser Medical Center Richmond will likely reach 10-12 hours for walk-in patients.
- (7) The significant increase in ambulance volume at Kaiser Medical Center Richmond will likely lead that hospital to substantial increases in ambulance diversions and long "off-load" time for ambulance cases arriving at the hospital.
- (8) Increasing ambulance diversion at Kaiser Medical Center Richmond will mean higher volumes to other EDs in the region who are already at maximum capacity and cannot handle this additional load.
- (9) It is unlikely that all ambulances could be safely diverted to other regional EDs without some risk to patient care.
- (10) There is insufficient intensive care bed (ICU) capacity in the region to handle the potential new volume of admissions from Doctors Hospital San Pablo.
- (11) Burn patients would need to be admitted to more distant Burn Centers in San Francisco, San Jose or Chico.
- (12) The prehospital care system is likely to be moderately or substantially impacted depending on the type of provider (first responder, air or ground ambulance).
- (13) Should Doctors Hospital San Pablo close or downsize their ED, there would be a significant drop in emergency resources available in the event of a major emergency.

### Findings

Other findings of The Abaris Group on the potential closure or downsizing of Doctors Medical Center San Pablo's ED are as follows:

- (1) Doctors Medical Center San Pablo is licensed for 232 beds, 24 ED treatment stations and 29 ICU beds.



- (2) Doctors Medical Center San Pablo operates two hyperbaric chambers and six burn beds and is the only Bay Area burn facility outside San Francisco.
- (3) The hospital had a total of 7,727 hospital admissions in 2003 with 4,943 of these admissions coming from the ED (64 percent).
- (4) The hospital's burn center had 276 admissions in 2003 with an average length of stay of 5.8 days.
- (5) Doctors Medical Center San Pablo is the busiest ED in West County with a 2003 ED volume of 39,043 visits and has the second highest ambulance volume county-wide with 7,910 ambulance arrivals.
- (6) The hospital and ED resources in the West County are already strained with the past closure of Doctors Medical Center Pinole. This is evidenced by the need for the past expansion of the ED at Doctors Medical Center San Pablo and the recent Kaiser Medical Center Richmond announcement of plans to expand outpatient and inpatient services for the region.
- (7) The next closest hospital to Doctors Medical Center San Pablo is Kaiser Medical Center Richmond with 50 acute care beds, 8 ICU beds and 15 ED treatment stations.
- (8) Other hospitals in adjacent communities with travel times from Doctors Medical Center San Pablo include: Kaiser Richmond (5 minutes), Alta Bates Berkeley (15), Alta Bates Summit (15), Highland (16), Children's Oakland (16), Kaiser Oakland (16), Sutter Solano (21), Kaiser Vallejo (22), Contra Costa Regional (24), Marin General (26), Mt. Diablo (34) and Kaiser Walnut Creek (35).
- (9) Any change in ED services and resultant inpatient services will have a dramatic impact on access for the community members and on other West County and regional providers.
- (10) Alternative delivery systems (e.g. urgent care, public health clinics) and transportation resources are not currently available to assist with redirecting walk-in patients to other EDs beyond the facilities at Kaiser Medical Center Richmond.
- (11) In particular, Kaiser Medical Center Richmond would be the most impacted with an expected full year impact of 33,046 new ED patients (91 per day) including 6,889 new ambulance patients (18.7 per day). (In 2003, the Kaiser Medical Center Richmond ED saw 28,713 patients.)
- (12) Other hospitals, to a lesser extent, would be impacted with new volumes, including Alta Bates Berkeley with 1,348 more ED patients including 618 ambulance cases and 1,201 more cases at Sutter Solano and Kaiser Vallejo including 330 and 220 ambulance arrivals, respectively. Children's Oakland is estimated to receive 716 new ED patients of which 351 would be by ambulance.
- (13) The heavy increases of ambulance traffic at Kaiser Medical Center Richmond could require that hospital to divert ambulances, frequently having an even larger impact on hospitals in the region and thus further straining their resources.
- (14) The medical/surgical bed need generated by a closure might be absorbed by Kaiser Medical Center Richmond and Alta Bates Berkeley. However, during peak periods admissions may be much higher than average and may exceed capacity.
- (15) A Doctors Medical Center San Pablo closure would result in a shortage of critical care beds. Only an estimated 8.3 of the 18.3 beds needed to compensate for a closure would be available at Kaiser Medical Center Richmond and Alta Bates Berkeley, resulting in a gap of 10 beds.
- (16) There would likely be a significant resource impact on the ambulance delivery system with an additional 337 ambulance unit hours per week needed due to the additional transport times and to assure compliance with performance standards. There also would be an



unspecified impact on the fire first responder providers who would have longer call times due to longer transports and on air medical services that may be requested to conduct additional transports in the region.

- (17) There would be significantly less reserve resources to respond to a major incident or disaster.





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Overview

Tenet Healthcare Corporation has recently announced that it will terminate, effective July 31, 2004, its contract with the West Contra Costa Healthcare District for the operation of Doctors Medical Center San Pablo Campus as part of Tenet's downsizing. While the West Contra Costa Healthcare District is seeking to continue hospital services, the Contra Costa EMS Agency believes it prudent to undertake an analysis of the potential impact of a change of services or closure of the hospital on the provision of emergency care in the West County area. Issues raised by the EMS Agency to be addressed in this study include the overall impact on the emergency care system of the loss of the emergency department (ED) and critical care beds currently provided by Doctors Medical Center San Pablo, impact on the residents of west Contra Costa County of reduced resources and longer transport times, impact on the EMS system (ambulance/fire) of reduced local hospital emergency care resources, the potential impact on other hospitals and health care systems in Contra Costa and neighboring counties, and the potential impact of a major emergency or disaster on the remaining healthcare providers in the West County area.

The Abaris Group has been asked to undertake an independent analysis of the impact of a potential closure or downsizing of Doctors Medical Center San Pablo.

Scope

For this study, The Abaris Group conducted an assessment of ED and critical care bed demand and population changes in the West County to assist with the evaluation of the potential impact of a change in providers. The Abaris Group interviewed key stakeholders to assess their perception and input on the impact. The Abaris Group has also prepared various scenarios on the impact, cross connecting predicted demand and changes in demand on the various stakeholder groups including patients, EMS providers, hospitals and other healthcare providers. The Abaris Group also interviewed other providers to gauge their ability to respond to significant changes of emergency and critical care volume and associated impact on their staffing, capacity, throughput and on resource saturation.



Specific steps taken in this study included:

- (1) Collected data on historical, current and future West County population, ED utilization, critical care and EMS transports
- (2) Collected and evaluated historical documents and reports (e.g. Impact Evaluation Report on the Doctors Medical Center Pinole Proposed Closure of Emergency Services, January 14, 2000)
- (3) Conducted individual interviews of stakeholders
- (4) Prepared impact analysis including scenarios and their impact:
  - a. Impact on emergency and non-emergency medical care for residents of West County communities
  - b. Impact on EMS system (ambulance, fire)
  - c. Impact on other hospitals and health care systems (Contra Costa Regional Medical Center, Kaiser, Alta Bates, others)
  - d. Impact on other health care providers (County and community clinics, private physician practices)

### The Environment

Doctors Medical Center San Pablo is an acute care hospital licensed for 232 beds, 24 ED treatment stations and 29 ICU beds. The hospital is also licensed for six burn treatment beds and two hyperbaric chambers. They are the only site for these services in the county. The 2003 ED volume of 39,043 makes the ED the busiest in the West County area and they are the second highest volume ambulance destination site countywide with 7,910 EMS arrivals during 2002. The hospital is the destination for approximately 71 percent of all ambulance transports for the West County area. According to data from the Office of Statewide Health Planning and Development (OSHDP), the hospital admitted from the ED 4,943 patients (12.7 percent of ED visits) during 2003.

The only other hospital in the immediate area serving the West County is Kaiser Medical Center Richmond. In comparison, Kaiser Medical Center Richmond has 50 licensed beds, 15 ED treatment stations (14 beds and 1 ear, nose and throat chair), and 8 ICU beds. The number of ED arrivals at Kaiser Medical Center Richmond for 2003 was approximately 35,713 with approximately 7,000 of these patients being triaged to the hospital's minor surgery clinic leaving approximately 28,713 treated in the ED. While Kaiser Medical Center Richmond is a full-service hospital, it does not offer some tertiary services such as cardiac surgery, orthopedics or pediatrics. These services are offered at the Kaiser Oakland campus. Kaiser Medical Center Richmond's ED admissions were approximately 2,700 (9 percent) of their ED patients with an additional 2,799 patients being transferred to other hospitals for a higher level of care in 2003. The total admission rate from the ED to their own hospital or by transfer to another hospital is 19.2 percent.

Kaiser Medical Center Richmond announced in March that they will significantly expand their inpatient and outpatient capacity in the West County. They will add 22 inpatient beds, 3 operating rooms and potentially 2 ED treatment stations. Kaiser will also add outpatient capacity and services to a new medical building in Pinole. In their announcement, Kaiser indicated that this expansion, which could take up to two years to



complete, is designed to meet current and near future Kaiser membership growth and is not in response to any potential changes at Doctors Medical Center San Pablo.

The following is a list of other hospitals in the adjacent area of Doctors Medical Center San Pablo with EDs and the number of licensed ED treatment stations:

- Alameda County Med Center - Highland Campus – 30 treatment stations
- Alta Bates Summit Medical Center - Alta Bates (Berkeley) Campus – 22 treatment stations
- Alta Bates Summit Medical Center - Summit Campus – 31 treatment stations
- Children’s Hospital and Research Center at Oakland – 14 treatment stations
- Contra Costa Regional Medical Center – 19 treatment stations
- Kaiser Foundation Hospital, Vallejo – 23 treatment stations
- Marin General Hospital – 18 treatment stations
- Sutter Solano Medical Center – 9 treatment stations

With the exception of modest changes planned in the ED at Kaiser Medical Center Richmond (2 beds), none of the other hospitals in the community have indicated plans for expansion.

#### Pinole Campus Impact Evaluation Report

In November 1999, Doctors Medical Center notified the Contra Costa EMS Agency of a planned realignment of services between the Pinole and San Pablo campuses effective March 2000. The proposed realignment included the closure of the acute medical care and intensive care units at the Pinole campus and replacement of the Pinole ED with an urgent care center. The Pinole campus was to retain outpatient surgery services, transitional care, long-term care, substance abuse, sleep lab, and cardiac rehabilitation.

An Impact Evaluation Report was prepared by the Contra Costa EMS Agency to assess the impact of the ED closure on the community, including the impact on access to emergency care and the impact on emergency services provided by other entities such as ambulance, police, fire, and other area hospitals. The impact report was submitted to the State Department of Health Services in accordance with provisions of Health and Safety Code Section 1300. The State Department of Health Services allowed the downgrading of emergency services at the Pinole campus to urgent care status.

The existence of the Impact Evaluation Report for the Pinole campus provides an opportunity to compare the predictions of the earlier report with actual experience. Several scenarios were provided in the original analysis. For example, the report indicates that anywhere from 0 to



10,091 visits were projected for the Pinole Urgent Care Center during 2000. In actuality, the current Pinole Urgent Care Center is treating approximately 5,200 patients annually. The report also predicted an ED visit impact on Doctors San Pablo of anywhere from 3,604 to 13,837 new ED visits in 2000 (a range of 11 to 42 percent), based on reallocation of the Doctors Pinole ED volume for the full year. The actual 2000 increase in ED visits at Doctors San Pablo was 6,739 (26 percent), but given that the Pinole campus did not close their ED until April 3, 2000, the annualized increase at Doctors San Pablo was 8,985 (34 percent) (assuming all of the growth was due to the Pinole closure). In 2001, Doctors San Pablo experienced an additional increase of 3,745 ED patients (11 percent). The hospital had been experiencing a decline of ED visits averaging 1.4 percent for the previous five years (1994-1999).

At the time of the County impact analysis, Kaiser Medical Center Richmond had a Standby ED permit but was authorized to accept most ambulance patients due to having recently added ICU beds. ED visits to Kaiser Medical Center Richmond decreased by 1,701 (5.4 percent) for 2000 and the hospital experienced a small increase in 2001 of 344 ED patients (1.1 percent). The decline may have been a function of changes in reporting ED visits as Kaiser, which has a triage system that sends lower acuity patients to their urgent care area.

Thus the Urgent Care Center in Pinole did not achieve as high a volume of patients as expected, but Doctors San Pablo did experience the predicted large growth in ED volume in the year of closure and the next year primarily due to the closure of Doctors Pinole. Kaiser Medical Center Richmond does not appear to have been impacted.

Demand and Resources

*Population*

The 2004 population of the West County area most served by Doctors San Pablo is approximately 197,700 and expected to grow to 205,500 by the year 2010. This is an annual average growth rate of slightly below one percent.

**Exhibit 1: Population Projections for Cities in West County, 2000-2010**

Population Projections, 2000-2010					
City	2000	2005	Average Growth per Year, 2000-2005	2010	Average Growth per Year, 2005-2010
Richmond	99,216	104,100	1.0%	107,200	0.6%
San Pablo	30,215	30,800	0.4%	31,100	0.2%
El Cerrito	23,171	23,900	0.6%	24,500	0.5%
Pinole	19,039	19,600	0.6%	20,200	0.6%
Hercules	19,488	20,900	1.4%	22,500	1.5%
Total	191,129	199,300	0.8%	205,500	0.6%

Source: Association of Bay Area Governments, *Projections 2003*



## ED Capacity

The region has two EDs that primarily serve the West County area with an additional six hospitals within the county that partially serve the ED visit needs of the West County and an additional eight hospitals that serve the fringe population needs of the West County.

**Exhibit 2: Comparison of Emergency Departments**

Comparison of Emergency Departments in Vicinity of Doctors Medical Center, San Pablo							
Hospital	Hospital Licensed Beds	Intensive Care Beds <sup>1</sup>	Med/Surg Beds <sup>2</sup>	ED Visits <sup>3</sup>	ED Treatment Stations <sup>4</sup>	ED Visits/Station	EMS Transports, 2002
<b>West County</b>							
Doctors Medical Center, San Pablo	232	29	183	39,043	24	1,627	7,868
Kaiser Foundation Hospital, Richmond	50	8	42	28,713	15	1,914	3,142
<b>West County Total</b>	<b>282</b>	<b>37</b>	<b>225</b>	<b>67,756</b>	<b>39</b>	<b>1,737</b>	<b>11,010</b>
Doctors Medical Center, San Pablo Share of Total	82.3%	78.4%	81.3%	57.6%	61.5%	-	71.5%
<b>Other Contra Costa County</b>							
Contra Costa Regional Medical Center	164	8	83	48,684	19	2,562	6,708
John Muir Medical Center	321	35	187	42,328	15	2,822	5,505
Kaiser Foundation Hospital, Walnut Creek	229	24	138	65,000	52	1,250	5,164
Mt. Diablo Medical Center	254	25	229	43,739	22	1,988	8,616
San Ramon Regional Medical Center	123	12	99	17,054	9	1,895	1,469
Sutter Delta Medical Center	111	12	90	47,285	16	2,955	7,095
<b>Total, Entire County</b>	<b>1,484</b>	<b>153</b>	<b>1,051</b>	<b>331,846</b>	<b>172</b>	<b>-</b>	<b>45,567</b>
<b>Outside Contra Costa County</b>							
Alameda County Med Center - Highland Campus	236	20	191	63,845	30	2,128	N/A
Alta Bates Summit Medical Center - Alta Bates Campus	342	36	176	42,438	22	1,929	N/A
Alta Bates Summit Medical Center - Summit Campus	342	36	273	39,148	31	1,263	N/A
Children's Hospital and Research Center at Oakland	169	23	91	53,701	14	3,836	N/A
Kaiser Foundation Hospital, Oakland	346	26	246	43,828	28	1,565	N/A
Kaiser Foundation Hospital-Rehabilitation Center, Vallejo	287	19	160	34,414	23	1,496	N/A
Marin General Hospital, Greenbrae	218	10	164	32,501	18	1,806	N/A
Sutter Solano Medical Center	102	12	60	27,191	9	3,021	N/A

1 Intensive Care Beds include all types except neonatal

2 Children's Hospital pediatric beds are reported here under the Med/Surg category

3 ED Visits for Doctors San Pablo, Kaiser Richmond, San Ramon Regional and hospitals outside Contra Costa are for CY 2003; ED Visits for the other Contra Costa hospitals are for FY2002

4 John Muir has 22 ED treatment stations from 11 am to 11 pm

Sources: OSHPD Annual Utilization Reports 2003 are the source of the med/surg beds data, San Ramon Regional ED visits, and all data for the hospitals outside Contra Costa

ED visits at Doctors San Pablo and Kaiser Richmond are from the respective hospitals

All other Contra Costa hospital data are from the Contra Costa EMS Agency



The total 2003 ED visits for the two hospitals located in the West County was 67,756. When compared to the West County population of 198,000, this calculates to an ED utilization rate of 342.2 ED visits per 1,000 population. California and Contra Costa County utilization data for the latest year available (2001) show an average ED utilization rate of 288 and 324 per 1,000, respectively. The calculated West County ED utilization rate may understate the utilization rate in the West County due to some residents seeking care in non-West County EDs. Likewise the rate may also be overstated if there is a large influx of employees who may use a West County ED during the daytime but would not be reflected in the area's population. Nonetheless this ED utilization rate appears to be higher than the state and the county as a whole.

There are a total of 39 licensed ED treatment stations in the two hospitals in West County and when compared to the number of ED visits this calculates to an average ED treatment station patient utilization rate of 1,737 ED visits for each treatment station. Doctors San Pablo has a treatment space to patient utilization rate of 1,627. A generally recognized national utilization rate is 1,800 to 2,000 patients per bed. Thus the West County appears to be just below full capacity when considering the number of ED treatment stations per volume of cases.

This is further identified with the ED closure data. The following table documents that the two hospitals in West County rarely, if ever, divert ambulances due to a shortage of ED treatment stations or go on "alert" status due to a shortage of inpatient beds.

**Exhibit 3: Diversion and Alert Status Summary, 2003**

Diversion Hours by Hospital, 2003								
Alert Level	CCRMC	Doctors	John Muir	Kaiser Richmond	Kaiser Walnut Creek	Mt. Diablo	San Ramon	Sutter Delta
Diversion Hours	38	2	28	0	15	50	13	233

Source: Contra Costa EMS Agency

Alert Events by Hospital, 2003								
Alert Level	CCRMC	Doctors	John Muir	Kaiser Richmond	Kaiser Walnut Creek	Mt. Diablo	San Ramon	Sutter Delta
Alert 1	33	-	47	1	70	11	6	39
Alert 2	186	-	64	-	232	169	-	121

Note: The alert levels apply to inpatient capacity and are used for the hospitals to communicate in-house. Level 2 is more severe than Level 1.

Source: Contra Costa EMS Agency



*Burn Beds*

Doctors Medical Center San Pablo has six licensed burn beds and averages a census of four patients. The six licensed burn beds listed on the Alta Bates Berkeley license are no longer active and the next closest licensed burn beds are at St. Francis Memorial Hospital, San Francisco (ten beds).

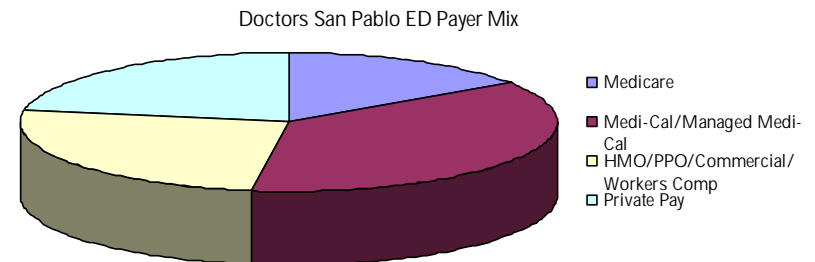
*ED Payer Mix*

Using data provided by Doctors San Pablo, the ED payer mix for Doctors San Pablo is 15.6 percent Medicare, 36.7 percent MediCal, 25.5 percent HMO/PPO/Commercial/Workers Comp, and 22.2 percent Private Pay. The MediCal rate and Private Pay mix is nearly double the rate in many EDs throughout the state.

**Exhibit 4: Doctors San Pablo ED Payer Mix, 2003**

Doctors Medical Center, San Pablo Emergency Department Visits by Payer, 2003		
Payer	Visits	Percent of Total
Medicare	\$ 6,090	15.6%
Medi-Cal/Managed Medi-Cal	\$ 14,329	36.7%
HMO/PPO/Commercial/Workers Comp	\$ 9,956	25.5%
Private Pay	\$ 8,668	22.2%
Total	\$ 39,043	100.0%

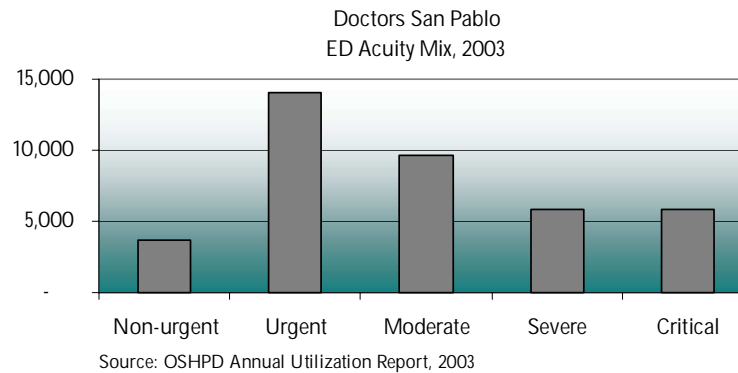
Source: Doctors San Pablo



### ED Acuity

The acuity (or level of severity) of Doctors San Pablo ED patients can be estimated by considering their rate of admission to the hospital following treatment in the ED. Doctors San Pablo has an ED patient admission rate of 12.7 percent, which is just slightly higher than the nation (12 percent) and the state (12.5 percent.). Another marker is the ED patient acuity mix reported to the state. The following table demonstrates that Doctors San Pablo reports a relatively modest acuity mix. In 2003, the greatest numbers of patients were classified as Urgent; 14.8 percent were defined as critical. Comparable state and countywide data were not available for 2003.

**Exhibit 5: Doctors San Pablo ED Acuity Mix, 2003**

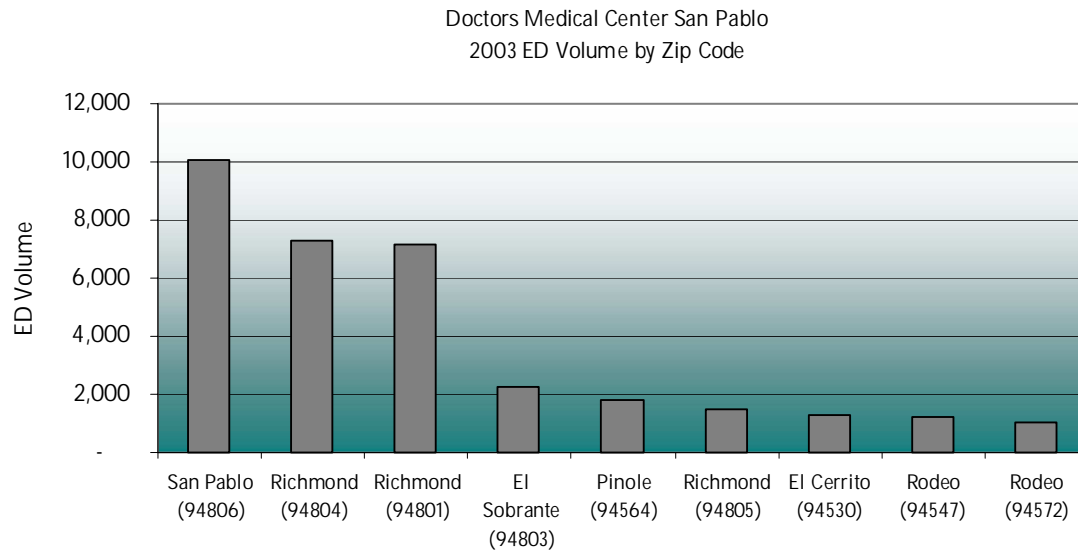




### ED Patient Origin

The Abaris Group studied the zip code of residence for ED visits at Doctors Medical Center San Pablo. Of the top four communities with originating ED patients (walk ins and ambulance traffic) to Doctors San Pablo during the year 2003, 26.7 percent came from the San Pablo zip code 94806, 19.4 percent from the Richmond zip code 94804, another 19.1 percent from another Richmond zip code, 94801, and 6.0 percent from the El Sobrante zip code 94803.

**Exhibit 6: Doctors San Pablo ED Volume by Zip Code, 2003**



Source: Doctors Medical Center San Pablo



The median income levels of the cities in the West County are listed on the following table.

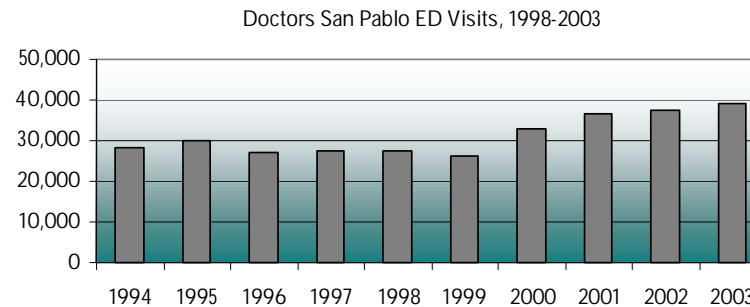
**Exhibit 7: Median Household Incomes by City, 1999**

Median Household Incomes by City, 1999	
City	Median Income
Richmond	\$ 44,210
San Pablo	\$ 37,184
El Cerrito	\$ 57,253
Pinole	\$ 62,256
Hercules	\$ 75,196
California	\$ 47,493

Source: US Census Bureau, 2000 Census

The following table provides historical ED volume growth for Doctors Medical Center San Pablo from 1994 to 2003. While there has been rapid growth since the year 2000, most of this was due to the closure of Doctors Pinole. The growth rate for the past two years (2001-2003) has been 3.1 percent.

**Exhibit 8: Doctors San Pablo ED Visits, 1998-2003**



Source: OSHPD 1994-2002; Doctors San Pablo, 2003



The following map provides a geographical portrayal of hospital locations within the region and the approximate area of the West Contra Costa Healthcare District.

Exhibit 9: Map of Area Hospitals and the West Contra Costa Healthcare District



Impact

The following chart provides an estimate of driving time from Doctors Medical Center San Pablo to hospitals in the same region. From a consumer standpoint, 15 minutes is traditionally used as a marker for discretionary time to an ED. That is, a consumer will often be willing to drive 15 minutes farther (assuming they have their own transportation) to obtain what might be perceived as more accessible ED care. While there is no published time for ambulance bypass, up to 25 minutes was chosen by The Abaris Group for this analysis.

The 15-minute private person (walk in patient) parameter would therefore only include Kaiser Medical Center Richmond and Alta Bates (both campuses). Children’s Hospital might draw more public utilization due to their specialty care. Highland Hospital is just outside the calculated 15 minute driving time by 1 minute as is Kaiser Oakland. For the 25 minute ambulance threshold, Highland, Kaiser Oakland, Children’s, Sutter Solano, Kaiser Vallejo and Contra Costa Regional would all be added as potential substitute ambulance destinations. Marin General Hospital falls just outside the 25 minute parameter by 1 minute.

Clearly driving times will vary by time of day, unusual traffic congestion, construction and by type of transport (e.g. lights and siren ambulance, air ambulance, etc.), or the method of transportation (e.g. private car, public transportation, etc).

**Exhibit 10: Travel Times from Doctors San Pablo to Nearby Hospitals**

Travel Times from Doctors San Pablo to Nearby Hospitals				
Hospital	City	Distance	Approx. Travel Time from Doctors San Pablo (minutes)	Assumed Average MPH
Kaiser Foundation Hospital, Richmond	Richmond	2.3	5	28
Alta Bates Summit Medical Center - Alta Bates Campus	Berkeley	11.0	15	44
Alta Bates Summit Medical Center - Summit Campus	Oakland	11.9	15	48
Alameda County Medical Center - Highland Hospital	Oakland	11.0	16	41
Kaiser Foundation Hospital, Oakland	Oakland	12.0	16	45
Childrens Hospital and Research Center at Oakland	Oakland	12.4	16	47
Sutter Solano Medical Center	Vallejo	16.4	21	47
Kaiser Foundation Hospital-Rehabilitation Center, Vallejo	Vallejo	16.7	22	46
Contra Costa Regional Medical Center	Martinez	16.2	24	41
Marin General Hospital	Greenbrae	14.2	26	33
Mt. Diablo Medical Center	Concord	22.8	34	40
Kaiser Foundation Hospital, Walnut Creek	Walnut Creek	25.8	35	44
John Muir Medical Center	Walnut Creek	26.0	38	41
San Ramon Regional Medical Center	San Ramon	36.0	46	47
Sutter Delta Medical Center	Antioch	34.8	51	41

Source: Yahoo Maps



The following tables list ambulance traffic to Doctors San Pablo by city of origin. The largest source of ambulance patients is Richmond (4,801) followed by San Pablo (1,194), El Cerrito (594) and Pinole (577). The remaining communities with ambulance originations are also listed.

**Exhibit 11: Ambulance Volume to Doctors San Pablo, 2003**

<b>AMR Volume to Doctors San Pablo by City, 2003</b>		
<b>City of Origin</b>	<b>Count</b>	<b>Percent of Total</b>
Richmond	4,801	60.7%
San Pablo	1,194	15.1%
El Cerrito	594	7.5%
Pinole	577	7.3%
Hercules	320	4.0%
Other	424	5.4%
<b>Total</b>	<b>7,910</b>	<b>100.0%</b>

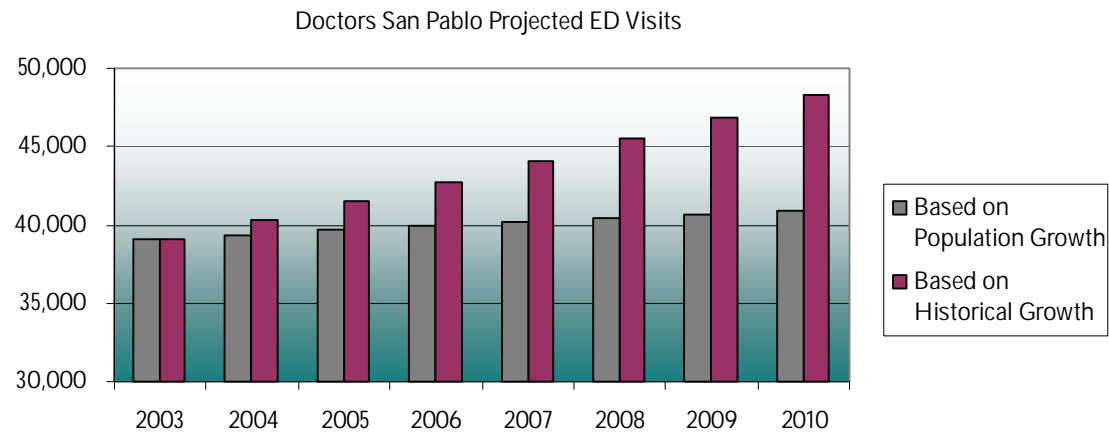
<b>Remaining Cities ("Other") Includes:</b>		
<b>City of Origin</b>	<b>Count</b>	<b>Percent of Total</b>
El Sobrante	182	2.3%
Rodeo	134	1.7%
Crockett	60	0.8%
Kensington	17	0.2%
Martinez	8	0.1%
Concord	7	0.1%
Port Costa	4	0.1%
Antioch	3	0.0%
Pittsburg	3	0.0%
Walnut Creek	3	0.0%
Bay Point	1	0.0%
Lafayette	1	0.0%
San Ramon	1	0.0%

Source: Contra Costa EMS Agency



The following table projects Doctors San Pablo ED potential volume growth until the year 2010. The ED volume projection assumes either that ED visit growth occurs at the same pace as population (0.8 percent annually until 2005 and 0.6 percent from 2006-2010) or based on the past two years ED volume growth rate of 3.1 percent.

**Exhibit 12: Doctors San Pablo ED Volume Projections, 2003-2010**



The table on the following page lists the current ED volume at Doctors Medical Center San Pablo and provides projections on the ED volume at nearby EDs should the ED at Doctors San Pablo close. The Abaris Group calculated current and projected future ED volume at Doctors Medical Center San Pablo and then reallocated that volume for the partial year for 2004 (assuming an August 1 closure date) and for the full year for remaining years. Allocations were made based on the next closest ED using the home zip code from data of current ED visits at Doctors Medical Center San Pablo. This data includes ED walk-ins and ambulance traffic.

It was assumed that reasonable adjustments would be made by some of the public in communities where the new commute distance to a farther away but less impacted hospital would be short and therefore be deemed more accessible to the public in that community. This included patients from El Cerrito using Alta Bates Berkeley and patients from Hercules/Rodeo using Solano County hospitals. No interventions were assumed (e.g. new EDs, new urgent care centers, increased ED capacity at adjacent EDs, extensive public education or marketing campaigns, etc.) Absent aggressive and substantial interventions it is not likely a substantial number of the public would use anything other than the next closest ED.



As the table demonstrates, the impact on Kaiser Medical Center Richmond would be dramatic. Kaiser Medical Center Richmond would experience an immediate 47 percent increase in their ED visits during 2004 and another 48 percent the following year. Using the 1 bed per 1,800 to 2,000 visit guideline, Kaiser Medical Center Richmond would treat nearly double that volume per treatment station. Under these circumstances, waiting times for walk-in patients would likely reach 10-12 hours. The impact on other nearby EDs was projected to be nominal and thus bed utilization was not calculated. However, ambulance diversion by Kaiser Richmond would result in additional impact on other EDs in the region.

Exhibit 13: Impact of Closure on ED Volume, 2004-2009

Impact on ED Volume 2004 - 2009												
Hospital	2004 <sup>1</sup>	Pts/bed <sup>2</sup>	2005	Pts/bed	2006	Pts/bed	2007	Pts/bed	2008	Pts/bed	2009	Pts/bed
<b>West County - Total Volume</b>												
Doctors Medical Center, San Pablo	23,481	1,677	-	-	-	-	-	-	-	-	-	-
Kaiser Foundation Hospital, Richmond	42,958	4,110	63,567	4,238	65,538	4,369	67,569	4,505	69,664	4,644	71,823	4,788
<b>Other Contra Costa County - New Volume Only</b>												
Contra Costa Regional Medical Center	63		155		159		164		169		175	
John Muir Medical Center	-		-		-		-		-		-	
Kaiser Foundation Hospital, Walnut Creek	-		-		-		-		-		-	
Mt. Diablo Medical Center	-		-		-		-		-		-	
San Ramon Regional Medical Center	-		-		-		-		-		-	
Sutter Delta Medical Center	-		-		-		-		-		-	
<b>Outside Contra Costa County - New Volume Only</b>												
Alameda County Med Center - Highland Campus	-		-		-		-		-		-	
Alta Bates Summit Medical Center - Alta Bates Campus	545		1,348		1,390		1,433		1,477		1,523	
Alta Bates Summit Medical Center - Summit Campus	-		-		-		-		-		-	
Children's Hospital and Research Center at Oakland	289		716		738		761		784		808	
Kaiser Foundation Hospital, Oakland	-		-		-		-		-		-	
Kaiser Foundation Hospital-Rehabilitation Center, Vallejo	485		1,201		1,238		1,277		1,316		1,357	
Marin General Hospital	-		-		-		-		-		-	
Sutter Solano Medical Center	485		1,201		1,238		1,277		1,316		1,357	
Other	885		2,189		2,257		2,326		2,399		2,473	

1 Assumes Doctors San Pablo closes ED on 8-01-04

2. Doctors San Pablo bed utilization for Jan - July 2004, Kaiser for August - December 2004

Note: All ED volumes assume 2.6 percent growth rate

Sources: Contra Costa County EMS Agency and The Abaris Group projections





### *Ambulance Arrivals*

Specific reviews of ambulance traffic in the West County was conducted as ambulance patients arriving to an ED account for the highest acuity levels and are generally more resource intensive. An impact on ambulance arrivals is anticipated should a change in the status of the ED at Doctors Medical Center San Pablo occur. This could be due to a downsizing of the permit status of the ED (e.g. Basic permit to Standby permit) thus limiting access to official EMS ambulance traffic. While Contra Costa County has discretion over whether to limit ambulance access at a Standby ED, this scenario assumes that traffic would be limited. This assumption would also be true if the ED closed or both the hospital and the ED closed.

During 2003, 7,910 ambulance patients were transported to the Doctors Medical Center San Pablo ED. Of these, 7,497 (91 percent) were Code 2 (emergency but no lights and siren) and 413 (9 percent) were Code 3 (emergency lights and siren). For purposes of this scenario, The Abaris Group assumed that ambulances originating in Richmond, San Pablo and Pinole would be transported to the closest ED, which would be Kaiser Medical Center Richmond. Ambulances originating in El Cerrito would be transported to Alta Bates Berkeley. Ambulances originating in Hercules, Crocket and that region would be transported to either Sutter Solano or Kaiser Vallejo depending on whether the patients were Kaiser members or not. A modest percentage of transports were assumed to be pediatric (5 percent) and thus transportable to Children's Oakland from any destination in the region.

This scenario does not contemplate the use of the EDs at Alta Bates Summit or Highland Hospital. Traffic patterns and the capacity at the other hospitals might dictate some transports to these facilities but the volume of calls would not have a material impact on either of the two hospitals. While it is possible, it is not likely that ambulances originating in this region would routinely be sent to Contra Costa Regional Medical Center or to Marin General Hospital due to perceived geographical or trade barriers.

The following tables demonstrate under this scenario that Kaiser Richmond would see an immediate and dramatic impact on their ambulance arrival volume, initially with an average of 19 ambulances per day and eventually growing to 22 per day by the year 2010. Other hospitals would see a smaller impact. However, ambulance diversion by Kaiser Richmond would increase the impact on the other EDs in the region.



**Exhibit 14: Annual Ambulance Arrivals Impact if Doctors San Pablo ED Moves to Standby, 2004-2010**

Hospital Impact - Standby ED at Doctors San Pablo						
Year	Baseline	New Volume to Nearby Hospitals				
	Doctors San Pablo	Kaiser Richmond	Alta Bates Berkeley <sup>2</sup>	Childrens <sup>3</sup>	Sutter Solano <sup>4</sup>	Kaiser Vallejo <sup>5</sup>
2003	7,910	0	0	0	0	0
2004 <sup>1</sup>	4,730	2,806	252	143	135	90
2005	0	6,889	618	351	330	220
2006	0	7,103	637	362	341	227
2007	0	7,323	656	373	351	234
2008	0	7,550	677	384	362	241
2009	0	7,784	698	396	373	249
2010	0	8,025	719	409	385	257

1. Partial year of Doctors San Pablo open (January - July 2004)
2. Assumes all El Cerrito EMS transports would be transported to Alta Bates.
3. Assumes 5 percent of EMS transport would be suitable to being transported to Children's Hospital.
4. Assume ambulances originating with non-Kaiser patients (60%) in the north portion of W. Co. (e.g. Hercules, Crockett, etc) would be transported to Sutter Solano.
5. Assumes ambulances originating with Kaiser patients (40%) in the north portion of W. Co. (e.g. Hercules, Crockett, etc) would be transported to Sutter Solano.

**Exhibit 15: Daily Ambulance Arrivals Impact if Doctors San Pablo ED Moves to Standby, 2004-2010**

Hospital Impact - Standby ED at Doctors San Pablo					
Year	Daily Average New Ambulance Arrivals				
	Kaiser Richmond	Alta Bates Berkeley	Childrens	Sutter Solano	Kaiser Vallejo
2003	0	0	0	0	0
2004	19	1.7	1.0	0.9	0.6
2005	19	1.7	1.0	0.9	0.6
2006	19	1.7	1.0	0.9	0.6
2007	20	1.8	1.0	1.0	0.6
2008	21	1.9	1.1	1.0	0.7
2009	21	1.9	1.1	1.0	0.7
2010	22	2.0	1.1	1.1	0.7



### Hospital Beds

Doctors Medical Center San Pablo provided data on ED arrivals and admissions as well as data on the admission location. The Abaris Group used the number of admissions from the ED to Doctors Medical Center San Pablo and calculated the average number of med/surg and ICU beds needed to manage the current number of admissions from the ED should the ED close or downsize. The bed impact was calculated by taking the hospital ED admissions by unit (e.g. med/surg, ICU and telemetry), multiplying these admissions by the estimated length of stay (OSHPD data) to obtain total patient days and then dividing these patient days by 365 days.

The bed calculations should only be considered a baseline as they assume an average array of admissions over a year’s period of time. However, admissions do not occur in an “average” manner as the actual activity varies and there are peak admission periods (e.g. November – February) that drive substantially higher admissions during these periods than the averages calculated.

**Exhibit 16: Doctors San Pablo ED Patient Disposition Array**

Doctors Medical Center San Pablo - ED Patient Disposition		
ED Visits by Disposition	Number	Percentage
Admissions (est)	4,943	12.7%
Discharges	34,100	87.3%
Total	39,043	100.0%
Med Surg	2,182	44.1%
Telemetry	1,336	27.0%
ICU	1,119	22.6%
Other	306	6.2%
Admissions (est)	4,943	100.0%
Bed Utilization	Length of Stay	Bed Impact/Day
Med Surg	5.2	31.1
Telemetry	2.0	7.3
ICU	3.6	11.0

Source: Doctors San Pablo, FY 2003, Admissions extrapolated from 6/03-2/04  
 Med/Surg & ICU LOS estimated form hospital OSHPD data  
 Telemetry LOS estimated from The Abaris Group databank



To determine available beds, The Abaris Group used current licensed beds and current admission volumes for nearby hospitals that would likely be impacted by an ED downsizing or closure at Doctors Medical Center San Pablo. The table on the following page provides this data using OSHPD reports for calendar year 2003.

The Abaris Group used national benchmarks to obtain a determination of “full.” The Healthcare Advisory Board suggests that a hospital’s acute care (or medical/surgical) bed capacity is at full capacity when total utilization reaches 85 percent. The Abaris Group defined critical care (or ICU) bed capacity full at 65 percent.

This following table demonstrates that three of the five hospitals within the region are at or near capacity for medical/surgical and ICU beds. The Abaris Group describes this capacity as theoretical as the actual available capacity in these neighboring hospitals may be overstated as often a hospital has less capacity than their license capacity due to beds being placed out of service or beds that are not staffed.

The hospital with the lowest theoretical medical/surgical occupancy rate and thus a theoretical option for absorbing Doctors San Pablo inpatient admissions is Kaiser Medical Center Richmond, which is at a current medical/surgical occupancy of 64.8 percent. However, the hospital has a very small capacity overall (licensed at 50 beds) and The Abaris Group calculated that it could only handle on average an additional 8.5 new admissions per day before hitting the 85 percent occupancy level. This is far less than the 31 per day needed to support the new volume from Doctors Medical Center San Pablo. Another nearby hospital, Alta Bates Berkeley, operates at 70 percent capacity for its medical/surgical beds and has a theoretical additional capacity of 26.4 beds per day prior to reaching 85 percent occupancy.

The combination of these two calculated available medical/surgical capacities in theory could be sufficient to meet the average medical/surgical bed need generated by ED admissions from Doctors Medical Center San Pablo. However, this calculation does not take into account the current growing demand at these existing hospitals and their ability to staff these beds nor would it necessarily assure that unused beds would be placed into service. In addition, ED admissions at Doctors Medical Center only account for approximately 64 percent of the hospital’s admissions with the remaining admissions potentially pre-empting admissions at nearby hospitals making the calculated ED admission space unavailable.

As for ICU bed availability, OSHPD reports a 32.2 percent occupancy rate for the 8 intensive care beds at Kaiser Medical Center Richmond and thus they could theoretically handle an average of 2.6 additional patient admissions per day in their ICU before reaching 65 percent of capacity. Alta Bates Berkeley has 36 intensive care beds, which include 14 for coronary care (their 6 licensed burn care beds were not used for the calculation). OSHPD reports their current ICU occupancy rate at 49.2 percent. Therefore, Alta Bates Berkeley could theoretically receive an additional 5.7 beds of patients before reaching 65 percent of capacity. ICU capacity at Alta Bates Summit was also reviewed, but OSHPD reports a 68 percent occupancy rate for the Alta Bates Summit ICU, indicating they are already above the 65 percent benchmark.



Combined, Kaiser Medical Center Richmond and Alta Bates Berkeley could theoretically handle an additional 8.3 beds of ICU patients that would have been admitted to Doctors Medical Center San Pablo. This would still fall 10 beds short of the estimated 18.3 ICU beds that would be needed to compensate for a Doctors Medical Center San Pablo closure (the equivalent of 7.3 telemetry beds plus 11.0 ICU beds). This number also does not account for growth in demand at either the admitting hospital or from within West County.

Again, licensed status of ICU beds is not always a reflection of available beds. In addition, the current non-ED critical care admissions at Doctors Medical Center at San Pablo might pre-empt the use of these ICU beds at these other hospitals due to medical staff admission practices.

**Exhibit 17: Beds and Utilization at Area Hospitals, 2003**

<b>Hospital Beds and Utilization, CY 2003</b>						
Hospital	Beds	Available Bed Days	Patient Days	Number of Admissions	Length of Stay	Occupancy Rate
<b>Kaiser Richmond</b>						
Med Surg	42	15,330	9,934	2,808	3.5	64.8%
ICU	8	2,920	940	363	2.6	32.2%
<b>Alta Bates Berkeley</b>						
Med Surg	176	64,240	44,950	6,849	6.6	70.0%
ICU	30	10,950	6,459	1,927	3.4	59.0%
<b>Alta Bates Summit</b>						
Med Surg	273	99,645	68,180	14,700	4.6	68.4%
ICU	36	13,140	8,940	3,318	2.7	68.0%
<b>Children's Hospital Oakland</b>						
Med Surg (Pediatric)	91	33,215	30,057	7,853	3.8	90.5%
ICU	23	8,395	6,187	1,818	3.4	73.7%
<b>Sutter Solano</b>						
Med Surg	60	21,900	18,609	4,245	4.4	85.0%
ICU	12	4,380	3,170	1,217	2.6	72.4%
<b>Kaiser Vallejo</b>						
Med Surg	160	58,400	57,192	11,207	5.1	97.9%
ICU	19	6,935	1,808	1,803	1.0	26.1%

Note: ICU includes Coronary Care Units where applicable (Kaiser Richmond, Alta Bates Berkeley, Alta Bates Summit, and Kaiser Vallejo); burn care not included

Source: OSHPD, Annual Utilization Reports, CY 2003



### *Impact on the EMS System/Major Emergencies*

As indicated previously, the impact on the ambulance delivery system would likely be substantial if the ED were to downsize at Doctors Medical Center San Pablo to a Standby permit level and thus not able to accept most ambulance patients or for the ED to close.

American Medical Response (AMR) provided 44,468 ambulance transports countywide during 2003. The West County contributed to about 11,000 of these transports, or 25 percent. The number transported to Doctors Medical Center San Pablo in 2003 was 7,910 (or 17.8 percent of total county transports).

AMR will experience longer transport times to farther EDs and additional time returning to their service area. AMR's contract calls for a performance standard of a 10-minute response with 95 percent compliance. For AMR to maintain that performance standard they will be required to add ambulances to compensate for the longer transport times.

The current number of West County unit hours (number of ambulances on duty per hour) is 852 per week. To continue to meet the current County contract performance standard, AMR calculates that it would take an additional 337 unit hours per week for a total number of 1,189 unit hours per week for the West County. Any new cost would only likely be offset by a small amount of new revenue by charging for each mile. There would likely be a shortfall in revenue to offset these costs. In the past, revenue needs beyond the ambulance provider's ability to charge a fee for services have been provided by the county's EMS tax district which is currently set at its maximum authorized allocation.

There are other concerns. First, higher ED volume at Kaiser Richmond or other facilities could lead to extended off-load times for EMS, resulting in additional costs. Second, a current industry challenge is paramedic recruitment with the EMS industry experiencing a significant shortage similar to the nursing crisis. Third, the current fire and ambulance delivery plan for Contra Costa County assumes some cost savings countywide and the reduction of AMR resource needs to help fund the developing fire advanced life support (ALS) first response program. While no cost savings were projected from the West County to support this plan, adding new resources was also not anticipated and this may have an unexpected consequence on the overall countywide plan.

Another possible consequence is first responder impact. On occasion, a fire first responder will assist the ambulance by riding to the hospital to support the care of a more complicated patient. One fire department told The Abaris Group that they use a 20-minute total call for a unit to return to service. The impact today of this present resource use is minimal but this could change if ambulances are transporting to more distant EDs and the fire first responders are out of service for a longer period of time than 20 minutes.

There is also an unspecified potential impact on the air medical providers in the region that may be requested to transport a higher number of patients.



In addition, a reduction of resources at Doctors Medical Center San Pablo would have a significant impact on the reduction of backup capacity in the event of a major emergency for the West County. Such major emergencies are not unheard of. The oil refineries have had two such events in the past six years, one of which led to 3,000 patients treated at local EDs during a single day alone. The area is also prone to earthquakes and major vehicle crashes and because of the boundaries (water, Berkeley Hills) that frame the region, there is likely to be limited access to other regional emergency providers during a major emergency.





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