SJUSD School Nurse Demonstration Project Year 6 Evaluation Report (2012-13)

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I. School Nurse Demonstration Project: Six-Year Overview 2007-13

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Background:

With increasing budget cuts rigorous evaluation is needed to document the impact of school nurses on student health and academic outcomes. School nurses serve nearly 50 million students across 97,000 public schools, providing a wide continuum of care, including assessments, direct patient care, emergency response, education, referrals, coordination of care, and follow-up. Yet, the lack of awareness and research on the impact and cost-effectiveness of school nurses have contributed to decreasing nurse-to-student ratios across public schools.

As part of the San Jose Unified School District (SJUSD) School Nurse Demonstration Project funded by the Lucile Packard Children's Hospital (LPCH) and the Lucile Packard Foundation for Children's Health (LPFCH),⁴ full-time school nurses were placed in four SJUSD schools, serving children from Pre-Kindergarten through Grade 8 over a six years period (2007-13), and a nurse practitioner was recruited at School Health Clinics of Santa Clara County.

The main goals of the project were to: 1) improve access to primary care and prevention services for students in kindergarten through 8th grade, with a special emphasis on chronic conditions; 2) facilitate establishment of a medical home for students who do not have one

Program Evaluation Outcomes Summary

Accessed September 13, 2010.

During the first phase of the project (2007-2009) a mixed methods quasi-experimental evaluation was used to compare four schools with added full-time nurses with five schools with part-time nurses in San Jose Unified School District. As described in Figure 1a, results suggest that when full-time nurses were added to demonstration schools, the

¹ American Academy of Pediatrics Council on School Health, Magalnick H, Mazyck D. Role of the school nurse in providing school health services. *Pediatrics*. 2008;121(5):1052-1056.
² Proskurowski M, Newell M, Vandriel M. School nurses, school-based health centers, and private programs

² Proskurowski M, Newell M, Vandriel M. School nurses, school-based health centers, and private programs successfully improve children's health. In: Committee on the Robert Wood Johnson Foundation Initiative on the Future of Nursing, at the Institute of Medicine. *The Future of Nursing: Leading Change, Advancing Health.* Washington, DC: National Academies Press; 2011. Available at: http://www.nap.edu/catalog/12956.html. Accessed March 23, 2011.

³ Robert Wood Johnson Foundation. Unlocking the potential of school nursing: keeping children healthy, in school, and ready to learn. *Charting Nursing's Future*. 2010;14:1-8. Available at: http://www.rwjf.org/files/research/cnf14.pdf.

⁴ Lucile Packard Children's Hospital. Packard Children's Hospital, Foundation Provide Financial Support for School Nurses in San Jose. Available at: http://www.lpch.org/newsEvents/NewsReleases/2007/school.html. November 5, 2005. Accessed December 1, 2008.

number of absences due to illness dropped. Students with asthma in demonstration schools were less likely to visit hospital emergency departments for asthma related events, and narrowed the academic gap in scoring advanced or proficient on standardized tests when compared with students with no health conditions. Savings due to reduction in absenteeism and lower utilization of emergency department services due to asthma were significant.

During the second phase of the project (2010-2013), many of the proven benefits associated with having full-time nurses in the most underserved schools in the district were disseminated and shared with other schools. Those benefits included the possibility of offering H1N1 vaccine to all students in the district during the 2010 epidemic, the sharing of asthma forms and protocols used by schools with full-time nurse, and other developments summarized in Figure 1A.

Some of the benefits of having full-time nurses in the demonstration schools were shared with those originally selected as comparison schools in the first phase of the project. Yet, the program evaluation uncovered that a number of positive outcomes were still more evident in the demonstration schools. Those included: a) significant improvements in screening and follow-up rates for students with vision (96%), hearing (100%), and dental (80%) problems. b) A 100% follow-up for students identified for asthma, which resulted in an increase in flu vaccination and a reduction in absenteeism due to illness in the demonstration schools after a year of full program implementation (2009). In 2011, parents in comparison schools reported twice as many emergency department (ED) visits for asthma compared to demonstration schools, and in 2012 parents reported less ED visits for all combined causes. c) In demonstration schools, the gap between the percentage of students with asthma and percentage of students with no health conditions who scored advanced or proficient on English Language Arts (ELA) California Standardized Test (CST) was reduced from 2008-09 to 2009-10, and sustained in 2010-11 and 2011-2012.

Those overall results are encouraging and are summarized in Figure 1B. Yet, there were also a number of shortcomings. For example, although a reduction of scholastic achievement gap was observed at the school level, it was not possible to assess the change at the individual child level because the number of children with chronic conditions (such as asthma) who stayed in the same school for a period of at least three years (before and after the program implementation) was relatively small.

Overall, the SJUSD nurse demonstration project what successful in accomplishing its main two goals: 1) improve access to primary care and prevention services for students, with a special emphasis on chronic conditions; and 2) facilitate establishment of a medical home for students who do not have one. A summary of the key findings of evaluation outcomes with reference to the logic model developed for this project are presented in Tables 1a and 1b.

Figure 1A: Summary of SJUSD Nurse Demonstration Project: Development, Implementation and Evaluation (2007-13)

PHASE I: 2007-2009:	2009:			omeo C	Octobromet of Evoluction Disc	
Project Developi	Project Development and Implementation	or de la constant de	احالاكار مزامناء طهاممها ام	1 Logic model development	development	
2. SHC health educat	 SHC health education program initiated at demonstration schools 	re practitioner mred at scriot tration schools	ט וופמונון כווווכ (אחכ)	2. Quasi-exper	mental intervention with	2. Quasi-experimental intervention with full time nurses in 4 demonstration
				schools and pa 3.Evaluation to	schools and part time nurses in 5 comparison schools 3.Evaluation tools development	arison schools
PHASE I:	Preventive Services:	Asthma Management	Student absenteeism due to		Academic Performance	Teacher perceptions and
2007-2009	Screenings, referrals	and Utilization of ER	illness	•	 Academic gap reduction 	satisfaction
Vou Outsome	Student referrals to health care	e • 99% students with	Absence due to illness decreased in	ness decreased in	observed in 2009-10.	71% teachers in demonstration
vey Outcomes	providers in demonstration vs	asthma followed up by	y demonstration schools from 3.16 in	ools from 3.16 in	Students with asthma	schools reported having school
	comparison schools in 2008-09:	school nurse.	2007-08 to 3.03 in 2008-09. In	2008-09. In	scored at the same level or	or nurse is important and helps
	• Vision: 87% vs 37%	Fewer parent reported	d comparison schools there was an	Is there was an	higher than students with	them teach effectively
	 Hearing: 100% vs 40% 	repeat visits to ER for	increase from 3.58 in 2007-08 to	in 2007-08 to	no health conditions in ELA	4
	• Dental: 70.4% vs N/A	asthma episodes in 2008-	3.68 in 2008-09.		in demonstration schools	
	• Scoliosis: 56% vs 25%	09 (16.7% vs 26.3% in	Cost savings of \$48,518.62 in ADA	3,518.62 in ADA	but not in comparison	
		comparison schools).	funding in 2007-09		schools.	
PHASE II: 2010	PHASE II: 2010-2013: Highlights of Project Grounding and Dissemination of Project Benefits to Other SJUSD Schools	ct Grounding and Disso	emination of Project B	enefits to Other S	JUSD Schools	
1. Vaccination: H1N1	1. Vaccination: H1N1 vaccination offered to all SJUSD schools in 2010. Vaccination covered 41.1% elementary students, 40.6% middle school students, and 25.7% high school students.	chools in 2010. Vaccination	covered 41.1% elementary s	students, 40.6% midd	le school students, and 2	5.7% high school students.
2. Astnma Wanageme	2. Astrima Management: Astrima Torms and protocol snared with all schools.	nared with all schools.	14	400 000 110 000 400 000 110	- A - A - A - A - A - A - A - A - A - A	
students parents teachers and purses	 Health education provided by School Health Clinics of Santa County and other health services expanded to other SUCSU schools. Astrima and HINL education sessions offered to equidante hazabare and pureses 	or santa clara county and ot	ner nealth services expande	ed to other SJUSD sch	oois. Astrima and HINI e	ducation sessions offered to
4. Community Partner	rship Nurse data monitoring tools	s developed by Stanford me	dical students used by all nu	rses in the district. Pa	rtnership with Stanford/	4. Community Partnership Nurse data monitoring tools developed by Stanford medical students used by all nurses in the district. Partnership with Stanford/LPCH Pediatrics Residency program.
PHASE II:	Preventive Services:	Asthma Management	Student absenteeism	Academic Performance		Teacher perceptions and satisfaction
2010-2013	Screenings, referrals	and Utilization of ER	due to illness	Improvement in ELA scores		Majority of teachers agreed that having full-time
Total of the Paris	Higher rates of screening	In 2011-12 parents	Between 2010-11 and	between 2010-11 and 2011-	nd 2011- nurse contributed to:	ibuted to:
End or project		reported:	2011-12:	12 in demonstration vs		 Wellbeing of students with chronic conditions
key outcomes	care provider in	 Fewer symptoms of 	 Full day absence due to 	comparison schools:		(92.6% demonstration vs 82.1% comparison
	demonstration vs	asthma (9.7% in	illness decreased in	• All Students 7.1% vs 3.6%		
	comparison schools in	demonstration vs 11.8%	both school groups.	• Students with asthma 6% vs	_	 Help them teach more effectively (70% both
	2011-12:	in comparison)	 Absence due to illness 	4%		ps)
		 Fewer visits to ER for all 	for students with	 Students with other 	•	95% teachers were satisfied with school nurse in
	 Hearing: 100% vs 75% 	causes (9.8%	asthma decreased by	physical conditions 10% vs		groups
	Dental: 80% vs N/A	demonstration vs 11.3%	44% in demonstration	%9	• Teachers in	Teachers in schools with part time nurses voiced
		companison schools)	and 51% in comparison		וופבת וחו	וופבת וסו ומיו רוונופ וותנאבא
			SCHOOLS			

Figure 1B

Benefits of Having Full Time Nurses in Underserved Schools: Highlights of the Nurse Demonstration Project San Jose Unified School District (SJUSD), 2007-13¹

- 100% rates of follow-up after screening for hearing and 96% for vision problems²
- 100% follow up by school nurses for students identified with asthma²
- Reduction in student absenteeism due to illness demonstrated in a 2007-09 quasiexperimental study. Resulted in cost savings of \$ 48,518.62 in funding for the district³
- Parents reported fewer emergency room (ER) visits for all causes in 2011-12 and less use
 of ER for asthma related events in 2010-11^{1,4}
- Dissemination of nurses' monitoring protocols to all district schools⁴
- Increased opportunities for preventive services like H1N1 and TDap immunization in all SJUSD schools⁴
- Collaborations with multiple agencies to provide health services to students and families including School Health Clinics of Santa Clara County (SHCSCC), Stanford University School of Medicine and Santa Clara Dental Society⁴
- SHCSCC provided 642 health education presentations reaching 16,085 students and families from 2009-13*
- Students with health needs improved academic performance in standardized ELA state tests achieving scores to reach the same level or higher than students with no health conditions in 2009-10⁴
- Overwhelming support from school administrators and teachers for full time nurses.³ 96% teachers satisfied by services provided by full-time nurses.⁴
- A majority of teachers indicated that full-time nurses at their school helped them teach more effectively**
- Overwhelming support and satisfaction expressed by parents⁴

References

¹SJUSD School Nurse Demonstration Project, Year 6 Evaluation Report, June 2013, prepared by Ashini Srivastava and Eunice Rodriguez, Stanford University

²Lucile Packard Foundation for Children's Health, Programs and Partnerships Department, Interim Grant Report (multi-year grants), August 2012, prepared by Melinda Landau

Evaluation Report Summary: Rodriguez, E and Srivastava, A, June 2013

Notes

*The presentations covered a wide range of topics such as nutrition, healthy eating, diabetes, STD and HIV/AIDS, CPR, asthma, hand washing, tobacco use, and stress management.

**Between 93% and 70% teachers in schools with full-time nurses expressed that having a full-time credentialed nurse helped them teach more effectively (between 2008 and 2012).

³Rodriguez, E, Austria, D, Perlroth, D; Becker E.R, Wang, E, Landau, M. "School Nurses' Role in Asthma Management, School Absenteeism, and Cost Savings: A Demonstration Project" <u>Journal of School Health</u>, 2013 (*In Press, December 2013*).

⁴SJUSD School Nurse Demonstration Project, Year 5 Evaluation Report, June 2012, prepared by Eunice Rodriguez and Diana Austria, Stanford University

Project Logic Model: Select Key Outcomes (2007-13) in Nurse Demonstration Project Schools

Table 1a. Goal 1: Managing Chronic Conditions

Table 1b. Goal 2: Establishing a Medical Home

	Inputs		Activities	End of Project Outcomes
•	School nurses	•	Identifying children without insurance	 Health Insurance
• .	School health clinic	•	Helping families without insurance coverage locate	o 93% parents reported health insurance coverage for their children in
•	Nurse practitioner		federal and state insurance resources	demonstration schools
•	Community	•	Referral to school clinic	o 63% were enrolled in public programs and 30% in private plans
	resources	•	Encouraging follow-up care at clinic	Primary Care Provider
•	Health education	•	Referring parents to community resources	 75% parents reported having a regular health care provider in 2011-12
	materials			o 77.6% parents take their child to a doctor's office when child is sick
	Teachers			ER Utilization
•	Student records			o Parents reported decreased number of urgent care and/or ER visits for asthma
•	Parent volunteers			related events in 2008- 09, and decreased number of visits to ER for all causes in
				2011-12.

Figure 1C. Students with Vision Problems Examined by Health Care Specialist After Nurse Referral in Demonstration and Comparison schools⁵

Source: SJUSD Nurse Monitoring Tools; Packard 2011-12 (Year 5) Grant Report by Melinda Landau 120% 98% 97% 96% 100% 87% 80% 69% Demonstration 60% Comparison 62% 58% 40% Non Demonstration 45% 37% 37% 58% 20% 41% 0%

Figure 1D. Mean Full-day Absences due to illness in students with asthma – Demonstration vs Comparison

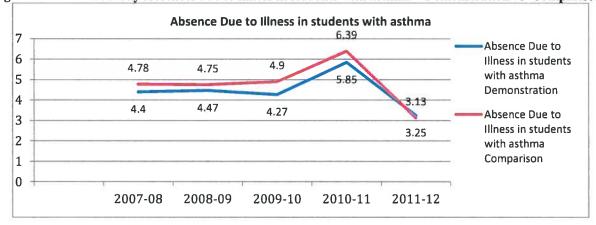
2010-11

2011-12

2009-10

2007-08

2008-09



Five **comparison schools** with part time nurses: Bachrodt Elementary, Lowell Elementary, Horace Mann Elementary, Gardner Academy, and Willow Glen Middle had a total student enrollment of 3445 in 2011-12

⁵ Four **demonstration schools** with full time nurses: Anne Darling Elementary, Empire Gardens Elementary, Hoover Middle and Peter Burnett Middle, had total student enrollment of 2785 in 2011-12

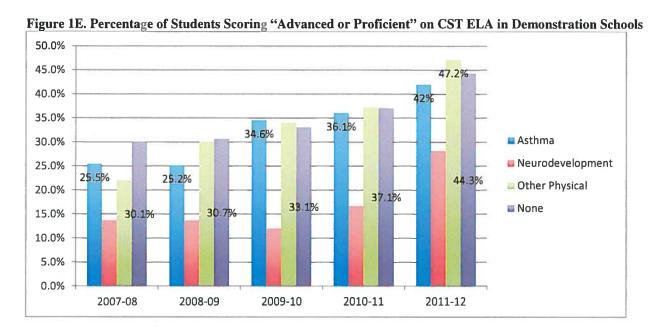
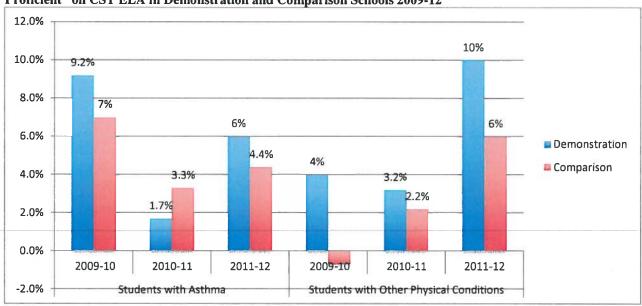


Figure 1F. Percentage improvement in students with chronic health conditions scoring "Advanced or Proficient" on CST ELA in Demonstration and Comparison Schools 2009-12



II. Executive Summary of Year 6 Key Findings

This section presents a summary of the key findings from year 6 (2012-13) of the nurse demonstration project. The two main focus areas of the program evaluation are chronic care management including impact of school nurses on health and academic outcomes, and establishment of a medical home for students who do not have one.

A) <u>Goal 1</u>: Improved access to primary care and prevention services, with an emphasis on chronic care management and students with asthma

1. Assessment of Health Impact of School Nurses

- 1) Health Screenings and Referrals in 2011-12
 - O Significant and sustained improvements in screening and referral rates for students with vision, hearing, and dental problems continued in demonstration schools. Students referred and evaluated by licensed health care provider after screening in demonstration versus comparison schools:
 - Vision: 96% demonstration vs 67% comparison schools
 - Hearing: 100% demonstration vs 75% comparison schools
 - Dental: 80% demonstration, data for comparison schools not available.
 - o Please see Section IV A 1 (pages 20-21) for complete report of findings.
- 2) Follow-up of Students with Asthma in 2011-12
 - o All students identified with asthma in demonstration schools were followed-up by the school nurse.
 - o School nurses effectively identified 50 previously undiagnosed cases of asthma in a demonstration middle school.
 - o Please see Section IV A 2 (pages 21-22) for complete report of findings.
- 3) Health Education 2012-13
 - o The School Health Clinics of Santa Clara County made 264 health education presentations that reached 6,148 students and parents in 2012-13.
 - o About 50% teachers in both demonstration and comparison schools attended one or more health education sessions.
 - o Please see Section IV A 3 (page 23) for complete report of findings.
- 4) Student Fitness Test Results in 2011-12
 - Overall, fewer 5th grade students passed fitness tests in 2011-12 compared to previous years in both school groups. 20% of 5th grade students in demonstration schools passed the physical fitness test compared with 17% in comparison schools.
 - o 20% 5th grade students with asthma in demonstration schools passed the fitness test in compared with 11.4% in comparison schools.
 - o 7th grade students with asthma in demonstration schools improved their fitness test results by 10% in comparison with previous year.
 - o Please see Section IV A 4 (pages 23-26) for complete report of findings.

5) Student Absenteeism Due to Illness in 2011-12

o All Students

- Mean full day absence for all reasons decreased by 20% in demonstration schools and by 15.5% in comparison schools.
- Mean full day absence due to illness decreased by 33% in demonstration schools and by 43% in comparison schools.

o Absence in students with asthma:

- Mean full day absence for all reasons in students with asthma decreased by 9.4% in demonstration schools and by 21% in comparison schools
- Mean full day absence due to illness for students with asthma decreased by 44% in demonstration schools and by 51% in comparison schools.

• Absence in students with other physical conditions:

- Mean full day absence for all reasons for students with other physical conditions decreased by 16.5% in demonstration schools and by 4% in comparison schools.
- Mean full day absence due to illness for students with other physical conditions decreased by 28% in demonstration schools and by 41% in comparison schools.
- o Please see Section IV A 5 (pages 27-30) for complete report of findings.

6) Health Care Utilization

- o Emergency Room Visits in 2011-12
 - Fewer parents in demonstration schools reported taking their children to the hospital emergency room (ER) for all reasons combined. 9.8% parents in demonstration schools reported visits to ER in last one year for all reasons combined vs 11.3% in comparison schools.
- o Please see Section IV A 6 (page 31-32) for complete report of findings.

2. Assessment of Academic Impact of School Nurses

(i) Teachers' and Administrators' Perspectives: 2012-13

- 93% teachers in schools with full-time nurses believed that school nurse had a positive impact in the overall health and well being of students with chronic health conditions, compared with 82% teachers in schools with part-time nurses.
- 61% teachers in schools with full-time nurses responded that the nurse made a positive impact in improving student academic performance compared with 43% in schools with part-time nurses.
- School administrators felt that having a full-time nurse helped them perform their work more effectively.
- 100% teachers in elementary schools with full-time nurses were satisfied with the services provided by the school nurse. Teacher satisfaction in elementary schools with part time nurses was 95%.
- Strong sentiment expressed by teachers in schools with part-time nurses requesting for more nurse time.
- o Please see Section IV A (i) (pages 32-38) for complete report of findings.

(ii) Student Academic Test Scores 2011-12

- o All students in demonstration schools (scoring advanced or proficient) improved upon their ELA test scores by 7.1% compared to 2010-11, while the improvement was 3.6% in comparison schools.
 - Students with asthma in demonstration schools improved upon their ELA test scores (scoring advanced and proficient) by 6% while the improvement in comparison schools was 4.4%.
 - Students with other physical conditions in demonstrations schools improved their ELA test scores (scoring advanced and proficient) by 10% and performed better than students with no health conditions, while students in comparison schools improved by 6%.
 - Students with neurodevelopmental conditions in demonstration schools improved their ELA test scores (scoring advanced and proficient) by 11.5%, while the improvement was 4% in comparison schools.
- O Students in demonstration schools did not show improvement in Math scores (scoring advanced and proficient) compared to previous year.
- o Please see Section IV A (ii) (pages 39-45) for complete report of findings.

B) Goal 2: Facilitate the establishment of a medical home for students

1) Health Insurance Enrollment in 2011-12

- o 93% parents in demonstration schools and 96% parents in comparison schools reported having health insurance for their children. 63% parents in demonstration schools were enrolled in public health insurance programs, while 30% were enrolled in Kaiser or other private programs. In comparison schools, 49% parents had public health insurance and 47% had Kaiser or other private health insurance.
- o Please see Section IV B 1 (pages 45-46) for complete report of findings

2) Primary Care Provider in 2011-12

- o 75% parents in demonstration schools and 84% parents in comparison schools reported having a regular health care provider.
- The majority of parents reported taking their child to the doctor's office when sick: 77.6% in demonstration schools vs 82.7% in comparison schools.
- o Please see Section IV B 2 (pages 46) for complete report of findings.

C) Dissemination & Advocacy

- We continued efforts to disseminate significant evaluation outcomes in 2011-12. In addition to community and school venues, the project and evaluation team presented their results in numerous professional meetings, including the American Public Health Association Annual Conference, Stanford Pediatrics Retreat, American Evaluation Association Annual Meeting, and Association of California School Administrators' conference. In May 2013, Melinda Landau made a presentation to the US Surgeon General's Working Group in Washington DC as part of Healthy School Campaign.
- New Publications:
 - o Casey Crump, M.D., Ph.D., Diana Austria, Rebecca London, Ph.D., Melinda Landau, M.S.N., Bill Erlendson, Ph.D., and Eunice Rodriguez, Dr.P.H. "Chronic Health

- Conditions and School Performance among Children and Youth." <u>Annals of Epidemiology</u>, 2013.
- Rodriguez, E, Austria, D, Perlroth, D; Becker E.R, Wang, E, Landau, M. "School Nurses' Role in Asthma Management, School Absenteeism, and Cost Savings: A Demonstration Project" <u>Journal of School Health</u>, 2013.
- The "School Health Evaluation" website was recently updated to reflect new publications and results.
- Please see Section IV C (pages 47-48) for additional information.

D) Additional Accomplishments

- <u>Dissemination of project benefits district-wide</u>: We observed that the schools selected as "comparison" have also seen the benefits from the efforts of the full-time school nurses in the demonstration schools. Two former comparison schools successfully completed a pilot Coordinated School Health (CSH) Project in 2012. The benefits of the additional full-time school nurses have disseminated widely across the entire district as well, including the implementation of professional best practices, nurse monitoring tools, and coordination of district-wide campaign and programs.
- <u>Leverage for additional school nurse funding</u>: The demonstrated successes and improvements in student screenings, referrals, follow-up, absenteeism, and academic scores in the demonstration schools have provided leverage for other schools in the district to garner support for full-time nurses at their school sites.
- Strengthened community collaboration and partnerships: One of the most significant outcomes of the project thus far has been in the increased and strengthened collaboration between the district and community health agencies and partners. The full-time nurses have been able to successfully build and coordinate partnerships to provide dental screenings and follow-up care for students, facilitate parent/student/staff health education sessions, as well as refer parents to appropriate resources for glasses, food, and clothing. Perhaps one of the most significant collaborations strengthened has been between the district and School Health Clinics (SHC) of Santa Clara County, another partner with the demonstration project who have presented 264 health education classes reaching 6,148 students and parents at various schools in 2012-13.
- Please see Section IV D (pages 48-49) for additional information.