

**A Comparison of Various Healthcare Disciplines Satisfaction with Clinical Training:  
Discipline-Specific Short Forms Developed from the Veterans Health Administration Learners' Perceptions Survey**

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Over 75,000 individuals train each year at VA's 170 medical centers. Training is typically conducted in conjunction with an affiliated educational institution in over 20 fields including audiology, dentistry, medicine, nursing, pharmacy, and social to name only a few. Time at a VA facility ranges from several hours a week for nursing trainees up to several years for physician residents or post-residency programs. It is estimated that one-third to one-half of all healthcare professionals train at a VA facility. In some fields the proportion is higher.

With the passage of the Government Performance and Results Act (GPRA), VA needed to assess the satisfaction of this large group of customers. The development of the Learners' Perceptions Project was the response to that need.

Work began on this project in the fall of 1999. A literature review identified a host of determinants of training satisfaction. These were grouped into seven domains: Faculty, Program of Studies, Quality of life, Learning Experience, Working Conditions, Ancillary Services, and Physical Plant.

After a series of 15 focus groups held at five locations with both faculty and trainees in a variety of disciplines, the list of determinants of satisfaction were reduced and the seven domains were recast into five: Clinical Faculty/Preceptors, Learning Environment, Working Environment, Educational Resources, and Physical Plant.

A questionnaire was then pilot tested at 22 facilities in spring of 2000 with some 1,100 completed forms being returned. In response to the results of the pilot there was a further reduction in the number of elements and the elimination of the Educational Resources domain by moving the few remaining elements into Working Environment.

System-wide administrations have been conducted annually since 2001. While minor changes were implemented from year to year, an entirely new domain covering Personal Experience was added in 2004. Also beginning in 2004, responses were accepted only over the Internet.

The Personal Experience domain was developed primarily for physician residents. A few years ago, a limit was placed on the number of work hours a physician resident could be on duty in a given week. The feeling among VA educators was that this would be a double edge sword. On the positive side, the new rules would lower stress and fatigue as well as leave more time for a personal life. On the down side there was less time to develop a personal relationship with patients and the feeling of ownership for their patients. After the list was

developed, it was felt that the elements could also be applicable to other disciplines.

The 2004 Learners' Perceptions Survey (LPS) included 102 items. Of this number 71, or 70%, were associated with the five domains. Responses were received from 8,869 trainees.

A previous ASA presentation (Dienstfrey, Milander, & Dusch, 2004) discussed methods of developing a "short form" to reduce the 71 elements in the five domains to a single list of 25. It was hoped that reducing the questionnaire by over 40% would increase the response rate as well as reduce the number of partially completed questionnaires. While VA ultimately decided not to proceed with the short form, the possibility of developing discipline-specific short forms was an outstanding issue.

Early in the development of the LPS project there was discussion regarding the appropriateness of developing one universal questionnaire that would be used in all disciplines vs. developing a series of discipline-specific questionnaires. At that time the decision was made to develop one universal form primarily due to the difficulty of administering 20 or more different paper forms. Now that the LPS is conducted over the Internet, this is more feasible. While it is unlikely that the format will change, the question remains as to whether there was a statistical advantage to developing discipline-specific forms.

An example of the wording of a domain satisfaction question is "Please rate your satisfaction with you CLINICAL FACULTY/PRECEPTORS at the VA facility as a group in the following areas." This was followed on the screen by a matrix with the areas (elements) going down the side and the answer categories (Very satisfied, Some what satisfied, Neither, Somewhat dissatisfied, Very dissatisfied, and Not applicable) going across the top. Respondents clicked on the appropriate "radio button" for each element. The last item in each list asked for overall satisfaction in each domain. (A complete list of all elements in each domain is shown in the Appendix.)

**Sample Sizes of Disciplines Included**

Discipline	Sample Size
Physician Residents	2,793
Nursing	1,471
Medical Students	1,127
Psychology	402
Pharmacy	307
Social Work	270
Dentistry	190

As shown in the table above, there were only seven disciplines that had a large enough sample size to provide

valid results. The next largest discipline had 116 cases. Somewhere between 190 and 116 the mathematics fell apart in that the regression no longer generated at least five elements in the final model. This was likely due to the clustering effects of small numbers of trainees at a given facility with similar views of the training they received.

The paper cited above showed that the simplest method was best. Specifically, calculate a step-wise regression where the domain elements were used to predict the overall domain satisfaction, and select the first five elements to enter the model. Elements that had 10% or more item non-response (Not applicable or left blank) were not included in the analysis. This was done since it was assumed that additional cases were more important than additional elements.

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A comparison was made between the system-wide short form elements and the discipline-specific short form elements to see which was better able to predict the overall domain satisfaction within a given discipline.

Since the correlation coefficient, R, is not normally distributed, it has to be converted to a z-value. The formula to do this, as well as the formulas that compute the significance of the difference between the two regressions, are shown in the figure below:

**Formulas for Significance Testing**

$$z = 1.151 \log \frac{1 + r}{1 - r}$$

$$\sigma_{z_1-z_2} = \sqrt{\frac{1}{N_1 - 3} + \frac{1}{N_2 - 3}}$$

$$Z = \frac{z_2 - z_1}{\sigma_{z_1-z_2}}$$

The first domain dealt with clinical faculty and preceptors at the VA medical facility and covered those aspects related to teaching in a medical setting.

**Short Form Elements: Clinical Faculty/Preceptors**

	Physician Resident	Nursing	Medical Student	Psychology	Pharmacy	Social Work	Dentistry
<b>Clinical skills</b>			X				X
<b>Teaching ability</b>	X	X	X	X	X		X
Interest in teaching						X	
Research mentoring							
<b>Accessibility/Availability</b>	X			X	X	X	X
Approachability/Openness		X	X	X			
Timeliness of feedback							
Fairness in evaluation							
<b>Being role models</b>	X	X	X	X	X	X	
Mentoring by faculty							X
Patient-oriented							
<b>Quality of faculty</b>	X	X	X	X	X	X	X
Evidence-based clinical practice	X	X			X	X	

*Bold items on system-wide short form. Highlighted cells have 10% or more item non-response.*

As can be seen, there is little difference between the system-wide short form elements and those selected in each discipline (see table above). Each discipline had at least 3 identical elements and three disciplines matched on 4 of the elements. It would follow, then, that no difference would be expected and, in fact, no disciplines showed a statistically significant improvement.

**Statistical Significance: Clinical Faculty/Preceptors**

	Physician Resident	Nursing	Medical Student	Psychology	Pharmacy	Social Work	Dentistry
<b>Total Sample</b>							
R	0.914	0.908	0.906	0.893	0.921	0.840	0.930
Adj R <sup>2</sup>	0.836	0.824	0.821	0.795	0.846	0.699	0.861
N	2,746	1,396	1,103	388	293	262	182
<b>Discipline Specific</b>							
R	0.917	0.912	0.908	0.892	0.923	0.859	0.933
Adj R <sup>2</sup>	0.840	0.832	0.823	0.792	0.849	0.732	0.867
N	2,735	1,380	1,106	388	288	260	177
Z	0.684	0.613	0.265	-0.069	0.159	0.776	0.213

The second domain, shown on the next page, concerned the environment in which the learning took place.

**Short Form Elements: Learning Environment**

	Physician Resident	Nursing	Medical Student	Psychology	Pharmacy	Social Work	Dentistry
Time working with patients	X						
<i>Degree of supervision</i>		X	X	X	X		X
Degree of autonomy						X	
Amount of non-educational work							
Interdisciplinary approach					X	X	
Preparation for clinical practice				X	X	X	X
<i>Preparation for future training</i>	X	X	X	X			X
Preparation for business aspects of clinical practice							
<i>Time for learning</i>	X	X	X	X	X	X	
Access to specialty expertise		X					
Teaching conferences			X				
<i>Quality of care</i>	X	X	X	X			X
Culture of patient safety					X		
<i>Spectrum of patient problems</i>	X	X	X				X
Diversity of patients						X	

Once again there is a great deal of agreement between the system-wide short form elements and the discipline-specific elements. Five of the seven disciplines matched 4 of the elements. The exceptions were Pharmacy, where only two matched, and Social Work with only one match. However, as can be seen below, there was no difference in Pharmacy and Social Work had a relatively modest difference. Oddly, the largest difference was in Dentistry with four matched elements. Preparation for clinical practice among dental students is so important as to overpower everything else for this group of trainees.

**Statistical Significance: Learning Environment**

	Physician Resident	Nursing	Medical Student	Psychology	Pharmacy	Social Work	Dentistry
<b>Total Sample</b>							
R	0.876	0.875	0.848	0.794	0.910	0.865	0.863
Adj R <sup>2</sup>	0.766	0.764	0.718	0.626	0.825	0.743	0.737
N	2,723	1,410	1,104	398	294	268	180
<b>Discipline Specific</b>							
R	0.877	0.876	0.851	0.797	0.910	0.872	0.878
Adj R <sup>2</sup>	0.769	0.767	0.723	0.631	0.826	0.756	0.764
N	2,668	1,364	1,050	398	294	267	181
Z	0.158	0.113	0.250	0.114	0.000	0.328	0.584

Working Environment, the third domain, poses a different problem. This domain contains elements which are of interest primarily to physician residents. Most disciplines do not have any interaction with laboratory services, radiology, or ancillary staff [housekeeping, maintenance, food services, etc.]. This can be seen by the large number of system-wide short form elements that

had 10% or more item non-response (marked with by “?” in the table below).

Both Pharmacy and Social Work showed a statistically significant improvement when the discipline-specific elements are used to predict the overall satisfaction within the domain. While not significant, Nursing shows a dramatic decrease in the ability to predict the overall domain satisfaction. This difference bears further investigation.

**Short Form Elements: Working Environment**

	Physician Resident	Nursing	Medical Student	Psychology	Pharmacy	Social Work	Dentistry
Faculty/preceptor morale		X		X	X	X	
Ancillary/support staff morale		X	X				X
<i>Peer group morale</i>	X	X	X			X	X
Laboratory services	X						
Radiology services			X				
<i>Ancillary/support staff</i>	X	?		?	?	?	X
Call schedule							
<i>Computerized Patient Record System</i>		?	X	X	X		?
Orientation program		X		X		X	X
Library services							
<i>Computer access</i>	X	?		X	X	X	?
Internet access					X		
<i>Workspace</i>	X	X	X	X	X	X	X

**Statistical Significance: Working Environment**

	Physician Resident	Nursing	Medical Student	Psychology	Pharmacy	Social Work	Dentistry
<b>Total Sample</b>							
R	0.837	0.853	0.820	0.751	0.781	0.656	0.777
Adj R <sup>2</sup>	0.699	0.726	0.671	0.557	0.602	0.417	0.589
N	2,703	1,074	1,050	304	245	204	141
<b>Discipline Specific</b>							
R	0.838	0.836	0.816	0.779	0.840	0.787	0.789
Adj R <sup>2</sup>	0.701	0.698	0.663	0.602	0.701	0.611	0.611
N	2,635	1,247	1,005	381	290	259	163
Z	0.120	-1.423	-0.274	0.904	1.986	2.947	0.267

As can be seen in the table at the top of this column, three of the system-wide short form elements did not meet the 10% item non-response threshold. These were Computerized Patient Records System with 10.1% item non-response, Computer access with 12.7% item non-response, and Ancillary/support staff with 16.7% item non-response. If the 10% item non-response rule is waved and all Working Environment elements are allowed into the step-wise regression, two of them (indicated by \*) – Computer access and Ancillary/support

staff – enter the model. They replace Ancillary/support staff moral and Peer group moral. The improvement over the system-wide short form while not significant is large.

**Working Environment: Nursing**

<b>Comp Pat Record System</b>	10.1%	In	In	In*	Out
<b>Computer access</b>	12.7%	In*	In*	Out	Out
<b>Ancillary/support staff</b>	16.7%	In*	Out	Out	Out
<b>Total Sample</b>					
R		0.853	0.853	0.853	0.853
Adjusted R <sup>2</sup>		0.726	0.726	0.726	0.726
N		1,074	1,074	1,074	1,074
<b>Discipline Specific</b>					
R		0.868	0.850	0.846	0.836
Adjusted R <sup>2</sup>		0.752	0.721	0.715	0.698
N		1,066	1,172	1,191	1,247
Z		1.337	-0.258	-0.596	-1.423

If the item non-response threshold is set at 15% then Ancillary/support staff is not allowed in the mix. In this case Computer access is in the model replacing Peer group moral. This change caused a major, but not significant, swing in the Z-value from 1.337 to -0.258.

If the threshold is set at 12.5% then only Computerized Patient Records System is in the calculations. It enters the model once again replacing Peer group moral. The Z-value show this new model degrades even more.

The last column is what was presented in the above table when the threshold is set at 10%. The overall difference in the Z-score from putting all three elements in the model to keeping all of them out is 2.8!

**Short Form Elements: Physical Environment**

	Physician Resident	Nursing	Medical Student	Psychology	Pharmacy	Social Work	Dentistry
Convenience of facility location		X					X
Parking	X						
<b>Personal safety</b>			X		X	X	
Availability of phones		X					
<b>Availability of needed equipment</b>	X			X	X		
Maintenance of equipment			X			X	X
Facility maintenance/upkeep	X	X		X	X		X
Lighting		X	X	X		X	
<b>Heating and air conditioning</b>	X		X	X	X	X	X
<b>Facility cleanliness/housekeeping</b>	X	X	X	X	X	X	X
Call rooms							
Availability of food at the medical center when on call							

Physical Environment, the next domain, presents a different problem. Two elements have consistently not met the 10% item non-response threshold – Call rooms and Availability of food at the medical center when on call. For those physician specialties that require overnight stays at the medical center to care for patients these two elements are very important. And they have consistently received low ratings.

Again, there are only slight improvements in the regression models using the discipline-specific elements. Since Pharmacy matched on all five system-wide elements there was no difference.

**Statistical Significance: Physical Environment**

	Physician Resident	Nursing	Medical Student	Psychology	Pharmacy	Social Work	Dentistry
<b>Total Sample</b>							
R	0.833	0.862	0.836	0.822	0.817	0.800	0.836
Adj. R <sup>2</sup>	0.693	0.742	0.698	0.671	0.662	0.633	0.691
N	2,750	1,373	1,081	392	294	256	183
<b>Discipline Specific</b>							
R	0.836	0.864	0.840	0.829	0.817	0.816	0.840
Adj. R <sup>2</sup>	0.698	0.745	0.704	0.683	0.662	0.659	0.698
N	2,572	1,304	1,062	392	294	255	183
Z	0.357	0.201	0.312	0.766	0.000	0.518	0.128

The last domain deals with the Personal Experience.

**Short Form Elements: Personal Experience**

	Physician Resident	Nursing	Medical Student	Psychology	Pharmacy	Social Work	Dentistry
Personal support from colleagues						X	
Personal reward from work							X
Relationship with patients							X
<b>Appreciation of your work by faculty</b>		X					X
Appreciation of your work by patients				X			
Balance of personal and professional life			X	X			
<b>Enjoyment of your work</b>	X	X	X	X	X		X
<b>Level of job stress</b>	X				X		X
Level of fatigue			X			X	
Continuity of relationship with patients						X	
Ownership/personal responsibility for your patients care	X	X		X	X	X	
<b>Quality of care your patients receive</b>	X	X	X				
<b>Enhancement of your clinical knowledge and skills</b>	X	X	X	X	X	X	X

As mentioned earlier, this domain was developed specifically for physician residents and expanded to other disciplines since it was felt to be relevant. It was developed, in part, to see the effect of the implementation of new work hour limits for physician residents. It was felt that these new limits would have a negative effect on physician residents' ability of developing a personal relationship with patients and a feeling of responsibility for the patients' care. So it is somewhat interesting that Continuity of relationship with patients had more than 10% item non-response among the very group for which this was felt to be critical.

**Statistical Significance: Personal Experience**

	Physician Resident	Nursing	Medical Student	Psychology	Pharmacy	Social Work	Dentistry
<b>Total Sample</b>							
R	0.901	0.876	0.892	0.856	0.880	0.844	0.888
Adj. R <sup>2</sup>	0.881	0.766	0.795	0.729	0.770	0.708	0.783
N	2,741	1,369	1,092	400	290	268	186
<b>Discipline Specific</b>							
R	0.903	0.883	0.895	0.862	0.889	0.869	0.896
Adj. R <sup>2</sup>	0.815	0.780	0.800	0.739	0.785	0.751	0.797
N	2,693	1,368	1,084	393	271	255	186
Z	0.394	0.807	0.347	0.321	0.486	1.069	0.375

Aside from the relatively large but not significant improvement for Social Work, again there is only a relatively modest improvement.

Early in the development of the Learners' Perceptions Survey, it was decided to select one item as THE performance measure. The question asks respondents to rate their most recent VA clinical training experience on a scale of 0 to 100, where 100 is a perfect score and 70 is a passing score. A 100-point scale was selected since it was easy to understand and would be sensitive to small movements.

Previous papers have shown that the elements which are effective in predicting overall domain satisfaction are not effective predicting the performance measure, or SCORE, as it has become to be known. None-the-less, it is worth looking at how the 25 elements (five from each domain) for entire sample compare to the 25 discipline-specific elements in the regression model.

**Statistical Significance: Performance Measure**

	Physician Resident	Nursing	Medical Student	Psychology	Pharmacy	Social Work	Dentistry
<b>Total Sample</b>							
R	0.752	0.814	0.712	0.762	0.840	0.819	0.825
Adj. R <sup>2</sup>	0.561	0.651	0.494	0.541	0.668	0.620	0.606
N	2,574	768	1,001	291	222	191	134
<b>Discipline Specific</b>							
R	0.748	0.788	0.720	0.781	0.823	0.840	0.822
Adj. R <sup>2</sup>	0.555	0.612	0.506	0.581	0.642	0.669	0.614
N	2,322	1,053	954	357	252	227	154
Z	-0.318	-1.529	0.362	0.591	-0.596	0.681	-0.078

In four of the seven disciplines using the discipline-specific elements produced models that were worse than when the system-wide elements were used. Once again nursing showed a marked decrease in the model's ability to predict the performance measure even though some 300 additional cases were included.

There are two conclusions that can be drawn from this exercise in trying to develop a discipline-specific questionnaire. First, there seems to be very little benefit from developing a discipline-specific instrument. In only two of the 35 domain comparisons and none of the seven performance measure comparisons did the discipline-specific elements generate a significant improvement in the ability to predict. Put positively, it seems clear that the extensive work that was done at the front-end produced a truly multi-discipline instrument for the VA setting.

These results, coupled with the fact that using discipline specific forms will make it impossible to make cross discipline comparisons, seems to doom future efforts in this area. However, final judgment should be reserved until the registration and response rates have been improved.

Second, the most interesting finding is the fact that the 10% item non-response exclusion rule does not improve the ability of the model to predict. In this data set, and perhaps in others, it is more beneficial to include additional variable than additional cases.

In the short term, an effort is continuing to reduce the size of the questionnaire. Effort has shifted from developing discipline-specific to reducing redundancies within the domains system-wide. While the performance measure is more important than any of the domain satisfaction score, users of the reports generated from the LPS have gotten so used to the domains that it will be impossible to eliminate them.

Work is also proceeding in developing a different approach to disciplines. Discipline-specific domains are being developed to capture facets of training that are of importance to individual disciplines.

The purpose of the LPS is to measure the satisfaction of clinical trainees and to improve the training so that VA will be the training site of choice for all healthcare professionals. To that end, work is beginning on programs that will help individual facilities improve the training experience. While these efforts may have to be tailored to a facility's needs, it is hoped that the LPS can be used to pinpoint those areas where improvement efforts should be focused.

After six years, the LPS is being recognized both within VHA as well as VA's upper management as the best measurement and diagnostic tool available for VA's education mission. Work will continue to improve the instrument as well as improve the way the results can be brought to bare to improve clinical training through the Department of Veterans Affairs.

### Appendix – List of Elements by Domain

Clinical faculty/preceptors	Ancillary/support staff
Clinical skills	Call schedule
Teaching ability	Computerized Patient Record System
Interest in teaching	Orientation program
Research mentoring	Library services
Accessibility/Availability	Computer access
Approachability/Openness	Internet access
Timeliness of feedback	Workspace
Fairness in evaluation	
Being role models	Physical Environment
Metering by faculty	Convenience of facility location
Patient-Oriented	Parking
Quality of faculty	Personal safety
Evidence-based clinical practice	Availability of phones
	Availability of needed equipment
Learning Environment	Maintenance of equipment
Time working with patients	Facility maintenance/upkeep
Degree of supervision	Lighting
Degree of autonomy	Heating and air conditioning
Amount of non-educational (“scut”) work	Facility cleanliness/housekeeping
Interdisciplinary approach	Call rooms
Preparation for clinical practice	Availability of food at the medical center when on call
Preparation for future training	
Preparation for business aspects of clinical practice	Personal Experience
Time for learning	Personal support from colleagues
Access to specialty expertise	Personal reward from work
Teaching conferences	Relationship with patients
Quality of care	Appreciation of your work by faculty
Culture of patient safety	Appreciation of your work by patients
Spectrum of patient problems	Balance of personal and professional life
Diversity of patients	Dealing with terminally ill patients
	Enjoyment of your work
Working environment	Level of job stress
Faculty/preceptor morale	Continuity of relationships with patients
Ancillary/support staff morale	Quality of care your patients receive
Peer Group morale	Enhancement of your clinical knowledge and skills
Laboratory services	
Radiology services	