

**APPENDIX I:**

Factor Loading from Principal Axis Analysis with Promax Rotation, Cronbach alphas, and Fit Statistics for Four Factor Model (N=214)

<b>Item Number</b>	<b>Leadership and Health System Messaging</b>	<b>Data Transparency and Access</b>	<b>Comfort with Cost Conversations</b>	<b>Blame-free Environment</b>
1	<b>0.86</b>	-0.14	0.04	-0.11
2	<b>0.85</b>	-0.45	-0.00	-0.10
3	<b>0.83</b>	-0.03	-0.09	0.08
4	<b>0.80</b>	-0.01	-0.03	0.08
5	<b>0.78</b>	0.12	0.07	-0.00
6	<b>0.77</b>	-0.18	0.17	-0.15
7	<b>0.73</b>	0.19	0.04	-0.02
8	<b>0.72</b>	0.05	0.002	0.04
9	<b>0.70</b>	0.19	-0.09	0.18
10	<b>0.68</b>	0.10	-0.03	0.01
11	<b>0.67</b>	0.12	-0.02	0.09
12	<b>0.66</b>	0.21	-0.06	0.13
13	<b>0.64</b>	0.28	-0.09	0.04
14	<b>0.62</b>	0.16	-0.00	-0.02
15	<b>0.61</b>	0.27	-0.06	-0.11
16	<b>0.61</b>	0.18	0.12	-0.01
17	<b>0.39</b>	0.19	0.06	0.02
18	0.08	<b>0.84</b>	0.01	-0.05
19	0.05	<b>0.84</b>	0.05	-0.10
20	-0.01	0.16	<b>0.87</b>	-0.00
21	-0.09	-0.04	<b>0.65</b>	-0.00
22	0.19	-0.04	<b>0.58</b>	0.16
23	-0.11	-0.05	0.00	<b>0.93</b>
24	0.13	-0.14	0.11	<b>0.68</b>
<b>Cronbach alpha</b>	<b>0.94</b>	<b>0.80</b>	<b>0.70</b>	<b>0.70</b>

Ψ Fit indices of four factor model: GFI 0.980, NFI 0.975, and RMSR 0.058.

**APPENDIX II:**

**High Value Care Culture Survey (HVCCS)<sup>TM</sup>**

**Instructions to Completed Survey:**

The High-Value Care Culture Survey (HVCCS) is designed for use by healthcare leaders and training programs. The results of the HVCCS capture specific areas for targeted value-improvement interventions and provide a pathway for health system managers to address the underlying culture within hospital divisions, practices, and training programs.

How much do you disagree or agree with the following statements. **(Please check one box for each item.)**

Remember, **“group”** is meant to represent the clinicians within your specialty that you work with most closely on a regular basis. For residents, please define your group as the residents in your training program.

For the purpose of this survey, please use the following definitions adapted from the Institute of Medicine. **High value care** is care that tries to maximize quality while minimizing costs. **Quality** is defined as the degree to which health services increase the likelihood of desired health outcomes that are safe, effective, patient-centered, timely, and equitable and are consistent with current professional knowledge. **Cost** is defined as the negative financial, physical, and emotional effects to patients and the health system.

**Leadership and Health System Messaging**

<b>Statement</b>	<b><u>Strongly disagree</u></b>	<b><u>Disagree</u></b>	<b><u>Neutral</u></b>	<b><u>Agree</u></b>	<b><u>Strongly Agree</u></b>
1. The leadership of our group provides a work climate that promotes the delivery of quality care at lower cost .....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>
2. The actions of the leadership of our group show that delivering quality care at lower cost is a top priority .....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>
3. The leadership in our group value efforts to deliver quality care at lower cost.....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>
4. Leadership provides support for system changes to improve delivery of quality care at lower cost .....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>
5. My group encourages pointing out unnecessary practices.....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>
6. My supervisor seriously considers our suggestions to improve quality care at lower cost.....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>

<b>Statement</b>	<b><u>Strongly disagree</u></b>	<b><u>Disagree</u></b>	<b><u>Neutral</u></b>	<b><u>Agree</u></b>	<b><u>Strongly Agree</u></b>
7. My group openly discusses ways to deliver quality care at lower cost within my group .....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>
8. The majority of clinicians in my group consistently role model providing quality care at lower cost.....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>
9. Clinicians in my group weigh costs in their clinical decision-making ..	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>
10. My group encourages the consideration of cost in clinical decision-making.....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>
11. My group encourages frontline clinicians to pursue quality improvement projects .....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>
12. Clinicians in my group take pride in being able to reduce costs for patients .....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>
13. My group is actively implementing projects that address costs of care.....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>
14. Clinicians in my group are willing to work with administrators, staff, and other colleagues to identify opportunities and make changes that minimize inappropriate care .....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>
15. Previous efforts to promote quality care at lower cost in my group have been met with success .....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>
16. Core educational opportunities (Grand Rounds, continuing medical education) in my group regularly address issues related to appropriate use, overuse, or healthcare costs .....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>
17. Clinicians in my group have access to information about the quality of care the group provides.....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>

## Data Transparency and Access

<b>Statement</b>	<b><u>Strongly disagree</u></b>	<b><u>Disagree</u></b>	<b><u>Neutral</u></b>	<b><u>Agree</u></b>	<b><u>Strongly Agree</u></b>
18. When clinicians in my group have questions about costs, they know where to go to find answers .....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>
19. Clinicians in my group have access to information about the costs of tests and procedures they order or provide.....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>

## Comfort with Cost Conversations

<b>Statement</b>	<b><u>Strongly disagree</u></b>	<b><u>Disagree</u></b>	<b><u>Neutral</u></b>	<b><u>Agree</u></b>	<b><u>Strongly Agree</u></b>
20. Clinicians in my group are uncomfortable discussing costs of tests or treatments with patients.....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>
21. Patients that I see are uncomfortable discussing costs of tests or treatments .....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>
22. Clinicians in my group feel that it is not the role of physicians to discuss costs of tests or treatments with patients .....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>

## Blame-free Environment

<b>Statement</b>	<b><u>Strongly disagree</u></b>	<b><u>Disagree</u></b>	<b><u>Neutral</u></b>	<b><u>Agree</u></b>	<b><u>Strongly Agree</u></b>
23. In my group, clinicians' fear of legal repercussions affects how often they order unneeded tests or procedures .....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>
24. Individual clinicians get blamed for medical or surgical complications .....	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>25</sub>	<input type="checkbox"/> <sub>50</sub>	<input type="checkbox"/> <sub>75</sub>	<input type="checkbox"/> <sub>100</sub>

## **How to Score the High Value Care Culture Survey:**

The High-Value Care Culture Survey (HVCCS) is designed for use by healthcare leaders and training programs to target future improvements in delivering value-based care. The HVCCS is a 24-item survey covering four specific subscales of high value care culture: leadership and health system messaging, data transparency and access, comfort with cost conversations, blame-free environment. The response option to each item is on a 5-point Likert scale where 0=strongly disagree and 4=strong agree. Scores are standardized to a 0 – 100 point scale. The HVCCS can be administered online or on paper. Target audience for the HVCCS are healthcare providers (physicians, nurses, medical trainees). Responses can be scored to calculate subscale specific high-value care culture and/or an overall high-value care culture score.

1. The survey consists of four separate subscales and an overall high-value care culture score. A higher score for an individual scale or for the overall high-value care culture score indicates more support.
2. To obtain a score for each subscale, calculate the average of the scores for each item in the subscale. Refer to the points allotted in the subscript for each item response.
3. To obtain an overall high-value care culture score, calculate the average of each of the four subscale scores.

### Appendix III:

Initial domains and subdomains of High Value Care Culture conceptual model

Domain	Subdomain
Data transparency and access	<b>Access to cost and quality information and resources*</b>
Health system messaging	<b>Leadership*</b> <b>Role-modeling*</b> Beliefs of allied health professionals Clinical protocols Discrepancies between group and the larger facility
Health system promotion of improvement	<b>Commitment to value improvement*</b> Frontline engagement* <b>Oversight or audit-feedback*</b> <b>Evaluation of changes*</b>
Open communication about quality and cost	<b>Open discussion with healthcare team*</b> Ideas considered and validated* <b>Fear of repercussion*</b> Collaboration within and between groups in the facility
Formal training	<b>Formal training and education*</b>
Provider understanding of organizational structure	Decision-support* Payment system incentives*
Clinicians' attitudes related to high-value care	<b>Clinician buy-in to importance of incorporating quality and cost into decision-making*</b> Clinician discomfort with diagnostic uncertainty
Patient-provider interaction	Perceived harms to patients (time, cost, side effects, delayed care)* <b>Concern for patient's discomfort discussing costs*</b> <b>Provider discomfort discussing costs*</b> Provider beliefs of patient wishes*

\* Sub-domains retained after modified Delphi process and evaluated in psychometric analysis.

Sub-domains in bold were retained in final instrument after modified Delphi process and psychometric evaluation.

Note domain titles underwent a naming process after psychometric evaluation so domain titles are different in the final survey.