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Assessment of Pediatricians by a Regulatory Authority

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ABSTRACT

OBJECTIVE. To determine whether it is possible to develop feasible, valid, and reliable multisource feedback data for pediatricians.

METHODS. Surveys with 40, 22, 38, and 37 items were developed for assessment of pediatricians by patients, co-workers, medical colleagues, and themselves, respectively, using 5-point scales with an “unable to assess” category. Items addressed key competencies related to communication skills, professionalism, collegiality, continuing professional development, and collaboration. Each pediatrician was assessed by 25 patients, 8 medical colleagues, and 8 co-workers. Feasibility was assessed with response rates for each instrument. Validity was assessed with rating profiles, the percentage of participants unable to assess the physician for each item, and exploratory factor analyses to determine which items grouped together into scales. Cronbach’s α and generalizability coefficient analyses assessed reliability.

RESULTS. One hundred pediatricians participated. The mean number of respondents per physician was 23.4 (93.6%) for patients, 7.6 (94.8%) for co-workers, and 7.6 (95.5%) for medical colleagues. The mean ratings ranged from 4 to 5 for each item on each scale. Few items had high percentages of “unable to assess” responses. The factor analyses revealed a 4-factor solution for the patient survey, a 3-factor solution for the co-worker survey, and a 4-factor solution for the medical colleague survey, accounting for at least 64% of the variance. All instruments had high internal consistency. The generalizability coefficients were .85 for patients, .87 for co-workers, and .78 for medical colleagues.

CONCLUSION. Surveys can be developed to provide feedback data on key competencies.

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Key Words

pediatricians, assessment

Abbreviations

PAR—Physician Achievement Review

CIS—Customer Information Services

MSF—multisource feedback

CPSA—College of Physicians and Surgeons of Alberta

Ep²—generalizability coefficient

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APPROACHES TO MAINTAINING competence and certification for physicians have received worldwide attention. In the United States, the Accreditation Council for Graduate Medical Education and the American Board of Medical Specialties have identified the core competencies for US physicians,¹ as has the Royal College of Physicians and Surgeons of Canada for Canadian physicians.² The focus of these essential competencies involves delivering quality care that extends beyond medical knowledge and clinical expertise. These competencies, which include communication skills, collaboration, and professionalism, need to be maintained throughout physicians' careers.¹⁻⁴ Pediatric residency programs can set up structures to assess and to provide feedback on these competencies with strategies such as direct observation and feedback, preceptor evaluations, and objective structured clinical evaluations. It is more challenging to enhance these competencies for practicing pediatricians.

In many disciplines of medicine, multisource feedback (MSF) or 360° evaluation is being used to assess and to provide feedback to physicians about a broad range of competencies,^{5,6} by licensing authorities,⁷⁻⁹ professional organizations,¹⁰ and health care facilities.^{11,12} The purpose of MSF is to guide self-development by identifying behaviors that can be addressed. MSF relies on questionnaires completed by patients, medical colleagues (eg, peers and referral physicians), and co-workers (eg, pharmacists and nurses) to provide feedback to physicians about their communication skills, interpersonal skills, collegiality, medical expertise, and ability to learn and to improve practice patterns continually.⁵⁻¹² The American Board of Internal Medicine¹⁰ has developed a patient and peer MSF system as a component of its program for maintenance of competence. The American Board of Pediatrics has indicated that patient and peer surveys will be one of the ways in which pediatricians will provide evidence of satisfactory performance.^{3,4} Early work in the United Kingdom with pediatric middle-grade and senior house officers showed that this is a feasible, reliable, and practical approach to assessment.¹³

Studies of MSF show that reliable valid instruments (questionnaires) can be developed.⁵⁻¹³ It seems feasible to develop quality improvement programs in which most of the physicians in the discipline can be assessed by 8 to 10 co-workers, 8 to 10 medical colleagues, and 25 patients.⁶⁻¹² This number of raters produces an acceptable reliability for both the overall instrument and the physician being assessed.^{7,9,10} Furthermore, with the intent of MSF being to guide professional development, studies have shown that participating physicians use their feedback data to guide the changes they make.^{6,8,10} Studies show that physicians increase their explanations to patients, improve the printed material in their offices, change their strategies for communication with their

peers, and improve their psychosocial skills after feedback.^{10,14}

The College of Physicians and Surgeons of Alberta (CPSA) Physician Achievement Review (PAR) began developing MSF instruments in 1996.¹⁵ The program requires that every physician participate in a 5-year cycle. The original goal of the program was to provide feedback to physicians about 6 broad categories of performance, namely, medical knowledge and skills, attitudes and behavior, professional responsibilities, practice improvement activities, administrative skills, and personal health.⁷ Instruments have been developed and tested for family physicians⁷ and surgeons.⁸ As part of this work, one set of instruments was developed to be used for the combined medical specialties of pediatrics, internal medicine, and psychiatry.⁹ The instruments were developed by a working group that included pediatricians. Every pediatrician in the province had an opportunity to review all of the items on all instruments and to provide feedback, which was incorporated into the final set of instruments. Our earlier examination of the medical colleague instrument component demonstrated that it was reliable and appropriate for use for all 3 disciplines.⁹

The main purpose of the present study was to extend the examination of the pediatrician data, specifically examining the co-worker assessment, patient assessment, and self-assessment data to assess the feasibility, validity, and reliability of a MSF system for pediatric practice, in conjunction with the previously reported data from the medical colleague assessment.⁹ Several questions were of interest. (1) What is the feasibility of an assessment system for practicing pediatricians that provides feedback from patients, co-workers, medical colleagues, and self? (2) What questions about a pediatrician's practice can patients, co-workers, and medical colleagues answer? (3) What are the score profiles (ie, mean and SD) for each of the items in the surveys? (4) Do the items in a survey group together into meaningful scales to guide performance improvement? (5) Are the instruments reliable for both the practice of pediatrics and the individual pediatrician?

METHODS

The pediatricians were recruited by Customer Information Services (CIS), a private company that handles the PAR work. With direction from the CPSA, CIS recruited a combination of generalists and subspecialty pediatricians who were licensed to practice and had been in practice for 5 years. They used the CPSA list of licensed pediatricians and drew a random sample from that list. In Canada, most pediatricians work as consultant pediatricians, rather than functioning as primary care pediatricians. The CPSA database does not separate those with subspecialty practices from other pediatricians.

The final instrument for patients consisted of 40 items (Table 1). Raters were asked to use a 5-point rating scale

TABLE 1 Descriptive Statistics and Item Analyses of the Pediatricians' Patient Survey

Item	N	Score		UA, %	Factors		
		Mean	SD		Patient Care	Technical Communication	Staff and Office Function
1. Explained my illness or concern to me clearly	2240	4.72	0.582	4.3	.731		
2. Explained my treatment choices or options	2196	4.69	0.611	6.2	.661		
3. Explained my follow-up plan to me	2195	4.67	0.636	6.2	.702	.411	
4. Told me how and when to take my medicine	1776	4.71	0.615	24.1	.660	.477	
5. Told me of side effects of the medicine, if medicine was prescribed	1682	4.43	0.870	28.2	.560	.543	
6. Spends enough time with me	2322	4.70	0.642	0.8	.732		
7. Shows interest in my problems	2321	4.76	0.574	0.9	.802		
8. Asks details about my personal life when appropriate	2200	4.56	0.717	6.0	.586	.430	
9. Answers my questions well	2304	4.73	0.584	1.6	.758		
10. Examines me appropriately for my problems	2279	4.76	0.557	2.6	.749		
11. Treats me with respect	2318	4.81	0.529	1.0	.787		
12. Helps me with my fears and worries	2252	4.67	0.653	3.8	.743		
13. Is easy to get into (eg, wheelchair accessible, parking)	2236	4.31	0.938	4.5			.739
14. Has appropriate waiting areas	2309	4.57	0.709	1.4			.740
15. Examining rooms are adequately sized and have adequate equipment	2303	4.63	0.642	1.6			.708
16. Is clean and in good repair	2310	4.66	0.614	1.3	.448		.699
17. Provides adequate privacy	2306	4.68	0.602	1.5	.458		.669
18. I can reach the office by telephone during the day	2207	4.57	0.689	5.7	.555		.473
19. I receive an appropriate explanation if my appointment is delayed	1780	4.40	0.848	24.0	.618		.432
20. My messages are returned	1867	4.59	0.679	20.2	.552		.589
21. Staff are helpful and pleasant	2314	4.67	0.642	1.2			.795
22. Staff are respectful of patients	2304	4.69	0.612	1.6			.807
23. Staff behave in a professional manner	2301	4.70	0.597	1.7			.777
24. Staff work well with the doctor	2157	4.70	0.582	7.9	.445	.404	.638
25. Staff prevent patients from hearing confidential information	2077	4.64	0.634	11.3	.426		.559
26. In an emergency situation, this doctor's office provides me with clear instructions of what I am to do	1577	4.58	0.705	32.6	.604		.434
27. This doctor provides reports to my family doctor	1374	4.50	0.757	41.3	.671		
28. Provides insurance and medicolegal reports in a timely manner	993	4.49	0.754	57.6	.805		
29. Provides reports, files, or copies of letters in a timely manner	1360	4.57	0.704	41.9	.794		
30. Arranges appointments with other specialists when necessary	1740	4.70	0.590	25.7	.407	.682	
31. Follows up on serious problems	1806	4.70	0.603	22.9	.436	.608	.412
32. I am told what to do if my problems do not get better	2053	4.68	0.619	12.3	.516		
33. I am asked about prescription and nonprescription medicine I may be taking	1973	4.60	0.695	15.7	.492		
34. This doctor talks to me about preventative care	1398	4.52	0.760	40.3			
35. This doctor has good written health information	1819	4.53	0.743	22.3	.497		
36. This doctor refers me to appropriate educational resources	1627	4.35	0.895	30.5			
37. I would go back to this doctor	2301	4.82	0.514	1.7	.716	.443	.443
38. I would send a friend to this doctor	2286	4.80	0.549	2.3	.729	.430	.430
39. This doctor presents himself/herself in a professional manner	2302	4.84	0.481	1.7	.728		.413
40. I was helped by this doctor	2277	4.83	0.500	2.7	.738		

Factors were as follows: patient care (percentage of variance: 65.6%), technical communication (percentage of variance: 4.9%), staff (percentage of variance: 3.8%), and office function (percentage of variance: 3.3%). UA indicates unable to assess.

(from 1 = strongly disagree to 5 = strongly agree). The instruments for co-workers (Table 2) and medical colleagues (Table 3) consisted of 22 and 38 items, respectively, with a 5-point rating scale (from 1 = among the worst to 5 = among the best). The self-assessment in-

strument (Table 3) was identical to the medical colleague instrument except that all items were written in the first person and the last item on the colleague questionnaire ("If a member of my family needed care, I would rate this physician") was omitted. All questionnaires pro-

TABLE 2 Descriptive Statistics and Item Analyses of the Pediatricians' Co-worker Assessment Questionnaire

Item	N	Score		UA, %	Factors		
		Mean	SD		Humanistic and Psychosocial	Co-worker Collegiality	Written Communication
1. Communicates effectively with patients	726	4.50	0.674	4.2	.664		
2. Verbally communicates effectively with other health care professionals	750	4.46	0.680	1.1	.474		
3. Communicates effectively in writing with other health care professionals	719	4.42	0.705	5.1			.694
4. Writes legibly	735	4.00	0.981	3.0			.814
5. Is courteous to co-workers	752	4.52	0.746	.8		.829	
6. Demonstrates appropriate concern for worker safety	656	4.48	0.705	13.5		.740	
7. Respects the professional knowledge and skills of co-workers	749	4.51	0.716	1.2		.827	
8. Collaborates well with co-workers	751	4.42	0.747	0.9			
9. Shows compassion to patients and their families	735	4.66	0.591	3.0	.719		
10. Separates personal values from the management of patients	654	4.49	0.621	13.7	.663		
11. Is courteous to patients and their families	732	4.65	0.592	3.4	.699	.448	
12. Respects the rights of patients to make informed decisions	688	4.57	0.599	9.2	.655	.410	
13. Accepts responsibility for patient care	740	4.64	0.589	2.4	.718		
14. Is reasonably accessible to patients	723	4.33	0.748	4.6	.601		
15. Maintains confidentiality of patients	719	4.68	0.529	5.1	.721		
16. Is accessible for appropriate communication to patients	737	4.41	0.743	2.8	.549		
17. Communicates effectively with families	720	4.52	0.673	5.0	.690	.435	
18. Accepts responsibility for professional actions	694	4.57	0.658	8.4	.654	.451	
19. Responds appropriately in emergency situations	584	4.65	0.580	23.0	.705		
20. Participates effectively as a member of the health care team	748	4.52	0.669	1.3	.466	.570	
21. Facilitates the learning of co-workers	689	4.41	0.747	9.1	.586		
22. This doctor presents himself/herself in a professional manner	757	4.64	0.622	0.1	.413	.550	

Factors were as follows: humanistic and psychosocial (percentage of variance: 52.5%), co-worker collegiality (percentage of variance: 6.4%), and written communication (percentage of variance: 5.0%). UA indicates unable to assess.

vided respondents with the option of being able to indicate they were unable to assess the physician on the item.

Each participating pediatrician was responsible for completing a self-assessment and identifying the 8 medical colleagues and 8 co-workers who could answer the questions on the survey. Previous work established that raters chosen by the people being assessed do not provide significantly different evaluations than do those selected by a third party.¹¹ Furthermore, studies examining how well the assessor and the assessed physician knew each another showed that familiarity contributed very little to the variance in ratings.^{7,10} Each pediatrician was provided with 25 copies of the patient survey, because previous studies^{6,7} showed that surveys from 25 patients would be required to produce a generalizability coefficient (E_p^2) of $\geq .70$. The physicians were provided with sealable envelopes so that the patients could complete the questionnaires anonymously in the physician's office and the physician's staff could send all of the forms to CIS for processing. CIS provided co-workers and medical colleagues with copies of the questionnaire, and responses were returned directly to CIS.

A number of statistical analyses were undertaken to address the research questions posed. Response rates were used to determine feasibility for each of the respondent groups (question 1). For each item on each survey, the percentage of "unable to assess" responses and the mean and SD were computed to determine the viability of items and the score profiles (questions 2 and 3, respectively). When the percentage of unable to assess responses exceeds 20% on a survey, it suggests a need to examine the item for revision or deletion. We used exploratory factor analysis to determine which items on the patient and co-worker surveys belonged together (ie, became a factor or scale) (question 4). This analysis allowed us to identify the factors and numbers of factors for each instrument and to describe the relative variance accounted for by each factor and the coherence. These factors or scales could then be used to establish the key domains (eg, communication) for improvement, whereas the items within each factor could provide more precise information about behaviors (eg, is courteous to co-workers). The factor analysis for the medical colleague instrument was reported previously.⁹ The factors for the self-assessment are not reported in this study

TABLE 3 Descriptive Statistics and Item Analyses for Pediatricians' Medical Colleague Assessment and Self-Assessment Questionnaires

Items	Medical Colleague				Self			
	N	Score		UA, %	N	Score		UA, %
		Mean	SD			Mean	SD	
1. Communicates effectively with patients	735	4.50	0.606	3.8	97	4.27	0.621	3.0
2. Verbally communicates effectively with other health care professionals	742	4.52	0.596	2.9	100	4.30	0.611	0.0
3. Communicates effectively with other health care professionals	759	4.50	0.627	0.7	99	4.04	0.653	1.0
4. Writes legibly	703	4.48	0.598	8.0	100	4.06	0.664	0.0
5. Within the range of services provided by this physician, he/she performs technical procedures skillfully	526	4.49	0.613	31.2	87	3.80	0.775	13.0
6. Selects diagnostic tests appropriately	735	4.41	0.616	3.8	100	3.91	0.683	0.0
7. Critically assesses diagnostic information	740	4.50	0.578	3.1	99	3.99	0.678	1.0
8. Makes the correct diagnosis after consultation	746	4.52	0.577	2.4	100	4.01	0.674	0.0
9. Selects appropriate treatments	753	4.51	0.581	1.4	99	3.93	0.674	1.0
10. Maintains quality records	614	4.32	0.718	19.6	100	3.72	0.817	0.0
11. Handles transfer of care appropriately	699	4.43	0.642	8.5	100	3.69	0.734	0.0
12. Provides a clear understanding about who is responsible for the continuing care of patients	731	4.44	0.668	4.3	99	3.82	0.734	1.0
13. Recognizes psychosocial aspects of illness	718	4.48	0.617	6.0	100	4.03	0.758	0.0
14. Maintains confidentiality of patients and their families	690	4.52	0.590	9.7	100	4.07	0.700	0.0
15. Coordinates care effectively for patients with other health care professionals and physicians	752	4.51	0.611	1.6	100	3.95	0.744	0.0
16. Manages patients with complex problems	740	4.48	0.614	3.1	99	4.02	0.728	1.0
17. Respects the rights of patients	725	4.51	0.601	5.1	99	4.13	0.709	1.0
18. Shows compassion for patients and their families	748	4.56	0.586	2.1	100	4.23	0.694	0.0
19. Collaborates with physician colleagues	753	4.49	0.642	1.4	100	3.89	0.723	0.0
20. Is involved with professional development	578	4.38	0.673	24.3	99	3.74	0.750	1.0
21. Accepts responsibility for his/her own professional actions	710	4.46	0.627	7.1	100	4.01	0.789	0.0
22. Manages health care resources efficiently	630	4.29	0.659	17.5	96	3.75	0.711	4.0
23. Makes appropriate use of community resources for psychosocial issues	599	4.39	0.640	21.6	96	3.77	0.801	4.0
24. Gives priority to urgent requests	716	4.55	0.590	6.3	99	4.14	0.741	1.0
25. Handles emergency situations effectively	610	4.50	0.602	20.2	94	3.86	0.727	6.0
26. Manages own stress effectively	566	4.17	0.757	25.9	100	3.47	0.846	0.0
27. Participates in a system of call to provide care for his/her own patients when unavailable	652	4.37	0.702	14.7	94	4.11	0.836	6.0
28. Recognizes his/her limitations	710	4.35	0.684	7.1	100	3.82	0.770	0.0
29. Handles requests for consultation in a timely manner	708	4.45	0.644	7.3	98	3.95	0.842	2.0
30. Advises referring physician if referral request is outside the scope of his/her practice	559	4.44	0.631	26.8	95	3.80	0.766	5.0
31. Assumes appropriate responsibility for patients	754	4.51	0.617	1.3	99	4.00	0.685	1.0
32. Provides timely information to referring physicians about patients	698	4.44	0.650	8.6	100	3.70	0.772	0.0
33. Critically evaluates the medical literature to optimize clinical decision-making	575	4.34	0.667	24.7	100	3.64	0.823	0.0
34. Facilitates the learning of medical colleagues and co-workers	659	4.37	0.692	13.7	98	3.70	0.815	2.0
35. Contributes to quality improvement programs and practice	472	4.33	0.739	38.2	87	3.40	1.02	13.0
36. Participates effectively as a member of the health care team	749	4.46	0.670	2.0	100	3.86	0.697	0.0
37. Exhibits professional and ethical behavior toward physicians	760	4.56	0.622	0.5	100	3.96	0.764	0.0
38. If a member of my own family needed care, I would rate this physician	761	4.61	0.595	0.4	Not in the self-assessment			

Factors were as follows: patient management (percentage of variance: 56.0%), clinical performance (percentage of variance: 4.3%), professional development (percentage of variance: 3.8%), and communication (percentage of variance: 3.5%). UA indicates unable to assess.

because they were identical to the medical colleague factors. Finally, reliability was assessed (question 5). Internal consistency reliability was examined by using Cronbach's α coefficient for each of the rater groups and for each of the scales/factors for each rater group. This enables an assessment of overall instrument stability. This analysis was followed by a generalizability analysis to determine Ep^2 , to

ensure that there were sufficient numbers of items and raters to provide stable data for each individual pediatrician on each instrument. Normally, an Ep^2 value of $\geq .70$ suggests that data are stable.^{6,7,10,11} If the Ep^2 is low, then it suggests that more raters or more items are required to enhance stability. The study received approval from the Calgary Health Research Ethics Board.

RESULTS

A total of 100 pediatricians participated in the study. These physicians provided a total of 2341 patient surveys (mean: 23.41 surveys; range: 20–25 surveys). A total of 758 co-worker surveys were provided (mean: 7.58 surveys; range: 6–8 surveys). There were 764 medical colleague surveys (mean: 7.64 surveys; range: 5–8 surveys).⁹ All of the 100 pediatricians returned self-assessment forms. The mean response rates were 94.8% for co-worker assessments, 93.6% for patient assessments, and 100.0% for self-assessments. The response rate for medical colleague assessments, as reported earlier, was 95.5%.⁹

The majority of items on the questionnaires could be answered by respondents. As presented in Tables 1 to 3, the assessment of unable to assess items showed that 13 of 40 items on the patient survey, 1 of 22 items on the co-worker survey, and 8 of 38 items on the medical colleague survey had unable to assess rates of >20%. The mean ratings for all items on the patient, medical colleague, and peer surveys were between 4 and 5.

The factor analysis identified 4 factors on the patient survey that accounted for 77.6% of the variance, ie, patient care, technical communication, staff, and office function. The factor analysis identified 3 factors on the co-worker instrument that accounted for 63.8% of the variance, ie, humanistic and psychosocial skills, collegiality, and written communication. As noted elsewhere, the medical colleague assessment identified 4 factors that accounted for 67.6% of the variance, ie, patient management, clinical assessment, professional development, and communication skills.⁹

Cronbach's α was calculated to determine the internal reliability of the instruments. Patient surveys had an α value of .99, co-worker surveys a value of .95, medical colleague surveys a value of .98,⁹ and self-assessments a value of .98. The Ep^2 values were .85 and .87 for the patient and co-worker surveys, respectively. The medical colleague questionnaire had an Ep^2 value of .78.⁹

DISCUSSION

This study evaluated the use of questionnaire-based assessments of pediatrician practice. We think these data show that it is feasible to design a MSF program for pediatric practice that includes medical colleague, co-worker, patient, and self components. The PAR program is mandatory, and the response rates were high. These rates are consistent with the response rates for other groups of physicians that we studied^{7–9} and higher than those achieved in studies in the United States and United Kingdom.^{10–13}

The majority of the items could be answered by the pediatricians' assessors. There were some items that proved difficult for respondents to assess. For the medical colleagues, the most difficult items were those related to professional development and practice-based

improvement, as well as some items that might have been difficult to assess for some types of pediatricians (eg, "contributes to quality improvement programs" and "handles emergency situations effectively"). For the patient questionnaires, the items that proved most challenging were related to the aspects of care that patients might not have experienced (eg, "provides, reports, files, or copies of letters in a timely manner" and "refers me to appropriate educational resources"). These items were ones for which the CPSA, as a regulatory authority, receives many complaints. However, given the span of pediatric practice from generalist to subspecialist referral practice, these may need to be reassessed, because not all participants could observe them.

The range and mean ratings were similar to those of other groups, with most physicians receiving all of their ratings between 4 and 5.^{7–9} Although these scores are high, they are consistent with the range of scores found in most assessments of residents and medical students. Similarly, the self-assessment ratings were lower than those provided by medical colleagues, a finding that is consistent with other studies of this nature.^{7,8} The factor analysis identified that each questionnaire had several items that grouped together as factors. These factors were consistent with the intent of the PAR program. They provided the general direction for the physicians, because each physician received descriptive data (means and SDs) on the scales and individual items for himself or herself and the group as a whole.

The reliability analyses indicated that overall the instruments and scales were reliable, as indicated by Cronbach's α . Furthermore, the Ep^2 values indicated that the data provided to each physician were also stable. These data were similar to those found in our previous work⁷ and better than those achieved in the American Board of Internal Medicine work, which used shorter instruments.^{10,11} These data suggest that the mixtures of items and raters on the surveys are appropriate.

Overall, we think it is possible to develop high-quality MSF instruments for pediatric practice. Our instrument was developed by a regulatory authority as a quality improvement program. The items on our instruments are focused on broadly based licensure issues. Furthermore, the relatively small total population of physicians in the province (~5500 licensed physicians) meant that instruments specific to the practice of pediatrics were not feasible. Nonetheless, we think that this work demonstrates that reliable, valid, feasible surveys can be developed for pediatricians, including assessments by patients, co-workers, medical colleagues, and the pediatrician. Our instruments may provide a basic set of items with which to assess communication skills, practice-based improvement, professionalism, and patient care, the domains identified by the Accreditation Council for Graduate Medical Education and American Board of Medical

Specialties as key to pediatrician and physician performance.¹⁻⁴

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