

# Attitudes and Experiences of Early and Midcareer Pediatricians With the Maintenance of Certification Process

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## ABSTRACT

**OBJECTIVE:** Maintenance of certification (MOC) value and relevance have been recent topics of controversy and discussion in medicine. Systematically assessing pediatrician's attitudes and experiences to encourage and inform future modifications is important.

**METHODS:** We surveyed 866 pediatricians in 2014 who graduated from residency 10 to 12 years ago and are part of a larger longitudinal study. Cross-sectional quantitative and qualitative data on understanding, attitudes, barriers, and needs specific to MOC part 2 (self-assessment/continued learning activities) and part 4 (quality improvement projects) were analyzed. McNemar tests compared responses on questions specific to part 2 with those specific to part 4. Multivariable logistic regression considered differences in participants who did and did not have positive part 4 attitudes.

**RESULTS:** A total of 77.8% completed the survey. Comparing part 4 to part 2, there was less understanding of requirements (59.9%, 72.9%,  $P < .001$ ), more agreement that relevant available activities is a barrier (67.6%, 44.0%,  $P < .001$ ), stronger

agreement that more choices would be helpful (72.8%, 53.8%,  $P < .001$ ), and less perceived impact on patient care or lifelong learning (12.5%, 47.2%,  $P < .001$ ). Participants reporting that part 4 improves care were less likely to agree that time to fulfill requirements (adjusted odds ratio = 0.30, 95% confidence interval 0.18–0.51) and relevant available activities (adjusted odds ratio = 0.22, 95% confidence interval 0.13–0.39) were barriers. Qualitative analysis revealed themes including time, cost, and relevance.

**CONCLUSIONS:** Pediatricians expressed significant frustration with the MOC process, poor understanding of requirements, and barriers with the process, especially for part 4. Increasing diplomate education on the process and increasing available and relevant activities may be important to optimize physician's continuous learning.

**KEYWORDS:** American Board of Pediatrics; early career pediatrician; maintenance of certification; midcareer pediatrician

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## WHAT'S NEW

Early to midcareer pediatricians express confusion about and barriers to maintenance of certification participation, particularly part 4. Improved education on the process and increasing availability and relevance of activities may be important to improve patient care, with considerations for pediatrician time and cost.

MAINTENANCE OF CERTIFICATION (MOC) is sponsored by the American Board of Medical Specialties (ABMS) and its 24 member boards, including the American Board of Pediatrics (ABP).<sup>1,2</sup> Board certification expanded from a one-time examination to time-limited certification with required retesting in 1988 to continuous professional development requirements in 2000. The current MOC process includes 4 parts,<sup>1,2</sup> which aim to

incorporate assessment of 6 core competencies.<sup>3</sup> The 4 elements are consistent across member boards, but specific activities used to measure these competencies vary by specialty.<sup>3</sup>

The current ABP MOC program includes 4 requirements: 1) maintain a valid, unrestricted medical license, 2) complete approved self-assessment and continued learning activities ( $\geq 40$  points), 3) pass a secure examination every 10 years, and 4) complete approved quality improvement (QI) activities ( $\geq 40$  points).<sup>4</sup> One hundred points total are required in parts 2 and 4 during every 5-year cycle, and the overall activity costs vary.<sup>5</sup> The ABP recognizes permanent certificates (those awarded before May 1, 1988). These certificate holders are encouraged to participate in MOC, and those who do not are listed on the ABP Web site as not meeting the current requirements.<sup>6</sup>

Recently MOC value and relevance have been topics of substantial controversy and discussion.<sup>7</sup> Individuals and research studies cite concern regarding unclear cost/benefit ratio,<sup>8</sup> potential for violation of antitrust laws,<sup>9</sup> and uncertain impact on patient outcomes.<sup>10</sup>

Information on physician perceptions, attitudes, and experiences with MOC is important to optimize the continuous learning of physicians, but few studies have been conducted to collect such information.<sup>11–15</sup> MOC barriers reported for pediatricians include cost, time to complete MOC, and lack of relevance to their practice.<sup>15</sup> A 2015 member survey of the Society for Pediatric Research and the American Pediatric Society found that 45% and 79% of respondents thought that MOC parts 2 and 4 were of little importance or unimportant in helping maintain clinical competency and providing excellent care.<sup>16</sup>

Internal medicine and family medicine physician focus groups reported that part 2 modules and part 4 projects were irrelevant to their work and inefficient in updating their knowledge and skills.<sup>13</sup> Given the variability in which MOC parts 2 and 4 can be implemented,<sup>3</sup> it is important to survey physicians by specialty. Especially important are perspectives of early and midcareer pediatricians who may be participating in MOC for many years and who are currently at or near deadlines for completion of several parts.

The purpose of this investigation was to explore early and midcareer pediatricians' understanding, attitudes, barriers, and needs relevant to MOC parts 2 and 4; to assess whether perceptions of MOC vary by work characteristics; and to collect experiences of pediatricians reporting higher satisfaction with part 4.

## METHODS

We analyzed cross-sectional data collected in 2014 from the American Academy of Pediatrics (AAP) Pediatrician Life and Career Experience Study (PLACES), a national longitudinal study that tracks job paths and lives of early and midcareer pediatricians.<sup>17</sup> PLACES participants are surveyed twice each year, with a longer survey covering several domains (eg, work characteristics, satisfaction, work–life balance, life experiences) and a shorter survey on topics of importance to participants (eg, MOC).

PLACES pediatricians were recruited using an AAP database that includes all pediatricians who completed US residency programs, both AAP members and nonmembers. A total of 41.2% of pediatricians randomly selected to participate in PLACES initially signed up for the study. Detail regarding PLACES methodology, including target population, sample size analysis, and nonresponse and poststratification weights, has been described previously.<sup>17</sup> For the current study, initial study weights were adjusted for gender, AAP membership status, and medical school location of participants who completed the 2014 survey and were applied to all analyses presented here.

We analyzed MOC survey data collected from 866 PLACES participants graduating residency between 2002 and

2004. The survey was sent up to 3 times from October to November 2014 via e-mail and mail, depending on participant preference. The AAP institutional review board approved the survey.

## SURVEY INSTRUMENT

The cross-sectional survey included several questions on MOC attitudes and experiences. Questions were primarily fixed response and were developed on the basis of literature review and input from AAP PLACES project advisory committee, AAP survey manager, and researchers (including authors BJB, MPF, AJS) and ABP staff.

Pediatricians answered questions on their understanding of ABP MOC program requirements on 4-point scales (1 = not well—I have a general concept, but don't know the details; 2 = slightly—I understand some of the requirements; 3 = moderately well—I understand most of the requirements; and 4 = very well—I understand all of the requirements), separately for part 2 (lifelong learning and self-assessment) and part 4 (performance in practice and QI) ([Online Appendix Table 1](#)). For perceived barriers to MOC participation, they provided their agreement (5-point scale: strongly disagree to strongly agree) on the following: availability of part 2 and part 4 MOC activities relevant to my practice/work (asked separately for each part); overall cost; and time required to fulfill MOC requirements. To assess needs, pediatricians answered on 4-point scales (1 = not at all, 2 = somewhat, 3 = moderately, and 4 = very helpful) how helpful the following would be in completing requirements: more choices to satisfy part 2, more choices to satisfy part 4, and part 4 credit for QI activities already being done at work. In assessing attitudes, they provided their agreement (5-point scale: strongly disagree to strongly agree) on whether MOC part 2 participation helps achieve lifelong learning goals and part 4 participation improves ability to care for patients. To assess MOC impact, they indicated whether changes implemented as a result of part 4 were maintained, responding “Yes,” “No,” “Unsure,” or “I have not yet completed any part 4 activities.” The survey concluded with one open-ended question, “What more should we know about your experiences with MOC?”

Data were incorporated on participants' work characteristics collected earlier in 2014 via the main PLACES survey,<sup>17</sup> including type of position, work setting, work hours, busyness of work setting,<sup>18</sup> support staff,<sup>19</sup> and colleagues being a source of professional stimulation<sup>20</sup> ([Online Appendix Table 1](#)).

## DATA ANALYSIS

### QUANTITATIVE DATA

To examine whether early and midcareer pediatricians' understanding, attitudes, barriers, and needs differ for parts 2 and 4, we used McNemar tests to compare responses on the MOC questions specific to part 2 with those specific to part 4 ([Online Appendix Table 1](#)). To assess whether

pediatricians' understanding, barriers, needs, and attitudes on MOC vary by work characteristics, we conducted chi-square tests and then separate logistic regression models for each outcome (including characteristics with  $P < .10$  in the bivariate analyses). Results from bivariate analyses are reported in Tables 1–4. Adjusted odds ratio (aOR) and 95% confidence intervals (CI) for the significant multivariable findings are reported. Characteristics included in the bivariate analyses were based on a priori hypotheses, accounting for prior reports identifying time as a barrier to MOC completion.<sup>15</sup> Busyness of work setting was thought to be related to having time to complete MOC. Similarly, sufficient support staff and colleagues as a source of professional stimulation were hypothesized to be important characteristics, given that QI projects are often team based and require support staff for execution.

To examine experiences of pediatricians reporting higher rates of satisfaction with part 4, logistic regression analyses considered differences in participants who did and did not have positive attitudes (defined as participants agreeing with “participating in MOC part 4 activities improves my ability to care for patients” vs those disagreeing or who were neutral) for perceived barriers (time to complete, cost of MOC, and availability of part 4 activities relevant to practice/work) and impact of MOC, adjusting for the work characteristics described above.

The number of cases in the quantitative statistical analyses varied slightly because of missing values for specific questions.

#### QUALITATIVE DATA

Two authors reviewed all comments to the open-ended question, “What more should we know about your experiences with MOC?” and created a list of codes. Using a conventional content analysis approach, comments were tagged and assessed using these codes.<sup>21</sup> Codes were updated during iterative readings of the comments and coding process. One of us (HNA) coded all responses, and another (MPF) coded 10% of responses to compare results (91% agreement); discrepancies between the authors were resolved through discussion. Themes that emerged from the qualitative data and sample quotes are presented to help illustrate underlying issues.

## RESULTS

Of PLACES participants surveyed on MOC, 77.8% (674/866) completed the survey. Over half (53.2%) of the respondents provided comments to the open-ended question. Participants who responded to the survey on MOC and those who commented on the open-ended question reported career satisfaction similar to the nonrespondents and to participants who did not comment ( $P = .88$  and  $.64$ , respectively) (Online Appendix Table 2).

**Table 1.** Perceived Understanding of MOC

Characteristic	Understand Most or All of MOC Requirement				
	Part 2*		Part 4*		Comparison of Part 2 and Part 4 Responses
	%	$P$ †	%	$P$ †	
All respondents, n = 602	72.9		59.9		<.001
Primary position		.09		<.01	
General pediatrics, n = 289	77.9		67.0		<.001
Hospitalist, n = 36	69.4		66.7		.50
Subspecialty/other specialty, n = 210	68.6		51.4		<.001
Mix of general pediatric and subspecialty care, n = 25	60.0		56.0		1.00
Other (eg, training, nonclinical), n = 42	69.0		50.0		<.05
Part-time position		.05		<.05	
Yes, n = 155	79.4		68.4		<.001
No, n = 433	71.1		57.5		<.001
Work setting		<.01		<.01	
Solo or 2-physician practice, n = 49	55.1		40.8		.07
Group practice, n = 246	76.4		65.9		<.001
Medical school/hospital/clinic, n = 281	73.2		59.4		<.001
Busyness of work setting		.07		.06	
Calm/somewhat calm/busy but reasonable, n = 335	75.5		63.2		<.001
Somewhat hectic/hectic, chaotic, n = 257	68.9		55.6		<.001
Enough support staff		.47		.19	
Strongly agree or agree, n = 359	73.5		62.1		<.001
Strongly disagree, disagree, or neutral, n = 226	70.8		56.6		<.001
Colleagues are good source of professional stimulation		<.01		<.01	
Strongly agree or agree, n = 519	74.6		62.0		<.001
Strongly disagree, disagree, or neutral, n = 66	56.1		43.9		<.05

MOC indicates maintenance of certification.

\*Definitions provided to participants: part 2 = lifelong learning and self-assessment; part 4 = performance in practice and quality improvement.

†Chi-square  $P$  value for comparison of responses to question and work characteristics.

‡McNemar  $P$  value for comparison of responses to part 2 and part 4 for each group.

**QUANTITATIVE DATA**

Data from participants reporting that the ABP MOC process applied to them and who also answered questions about work characteristics ( $n = 602$ ) were analyzed, including general pediatricians (48.0%), subspecialists (35.0%), hospitalists (6.0%), primary and subspecialty care mix (4.2%), and other positions/not working (6.8%). Respondent demographics are presented in [Online Appendix Table 2](#).

**MOC: PERCEIVED UNDERSTANDING**

About three-quarters (72.9%) of study participants reported understanding most or all part 2 requirements; fewer (59.9%) reported such understanding for part 4,  $P < .001$  ([Table 1](#)). Nearly all subgroups compared reported better understanding of part 2 than part 4 requirements.

Understanding of part 2 and part 4 requirements varied by some work characteristics examined in bivariate analysis ([Table 1](#)). In multivariable analysis, pediatricians in group practices and in medical schools, hospitals, and clinics were more likely than pediatricians in solo or 2-physician practices to report understanding most or all of the part 2 (aOR = 3.24, 95% CI 1.62–6.46; and aOR = 3.88, 95%

CI 1.75–8.57, respectively) and part 4 (aOR = 3.13, 95% CI 1.61–6.09; and aOR = 3.42, 95% CI 1.62–7.24, respectively) requirements. General pediatricians were more likely than subspecialists to report understanding all or most of both parts 2 and 4 (aOR = 2.56, 95% CI 1.46–4.49; and aOR = 2.62, 95% CI 1.59–4.32, respectively), and pediatricians with colleagues who are good sources of professional stimulation were more likely than those without such colleagues to report understanding for both parts (aOR = 2.39, 95% CI 1.33–4.30; and aOR = 2.19, 95% CI 1.24–3.87, respectively).

**MOC: PERCEIVED BARRIERS TO PARTICIPATION**

While 44.0% of participants agreed that “availability of part 2 MOC activities that are relevant to my practice/work” is a barrier to participation, more (67.6%) agreed that availability for part 4 activities was a barrier ( $P < .001$ ) ([Table 2](#)). Few significant differences were found among pediatricians with different work characteristics in the bivariate analysis ([Table 2](#)), and no differences were found in multivariable analysis. Time needed to complete requirements (73.1%) and overall cost of MOC (55.5%) were also barriers to participation (data not shown).

**Table 2.** Perceived Barriers to Participation in MOC

Characteristic	Strongly Agree or Agree That Availability of MOC Activities Relevant to Practice/Work Are Barriers				
	Part 2*		Part 4*		Comparison of Part 2 and Part 4 Responses
	%	$P$ †	%	$P$ †	
All respondents, $n = 598$	44.0		67.6		<.001
Primary position		.05		<.01	
General pediatrics, $n = 287$	38.0		64.0		<.001
Hospitalist, $n = 36$	44.4		78.4		<.01
Subspecialty/other specialty, $n = 208$	51.4		74.0		<.001
Mix of general pediatric and subspecialty care, $n = 25$	40.0		44.0		1.00
Other (eg, training, nonclinical), $n = 42$	47.6		64.3		.09
Part-time position		.05		.26	
Yes, $n = 155$	37.3		71.6		<.001
No, $n = 431$	46.4		66.7		<.001
Work setting		.05		<.05	
Solo or 2-physician practice, $n = 49$	30.6		55.1		<.01
Group practice, $n = 246$	43.1		65.7		<.001
Medical school/hospital/clinic, $n = 277$	48.7		73.6		<.001
Busyness of work setting		.15		.39	
Calm/somewhat calm/busy but reasonable, $n = 334$	41.7		66.8		<.001
Somewhat hectic/hectic, chaotic, $n = 254$	47.6		70.1		<.001
Enough support staff		.25		.13	
Strongly agree or agree, $n = 359$	42.5		66.0		<.001
Strongly disagree, disagree, or neutral, $n = 222$	47.3		72.1		<.001
Colleagues are good source of professional stimulation		.16		.57	
Strongly agree or agree, $n = 516$	43.2		68.6		<.001
Strongly disagree, disagree, or neutral, $n = 67$	52.2		65.2		.08

MOC indicates maintenance of certification.

\*Definitions provided to participants: part 2 = lifelong learning and self-assessment; part 4 = performance in practice and quality improvement.

†Chi-square  $P$  value for comparison of responses to question and work characteristics.

‡McNemar  $P$  value for comparison of responses to part 2 and part 4 for each group.

**MOC: PERCEIVED NEEDS**

Over half of participants reported that more choices to satisfy part 2 (53.8%) and part 4 (72.8%) requirements would be very or moderately helpful. All subgroups were more likely to want more choices for part 4 than part 2 ( $P < .05$ ) (Table 3). Few differences were found among pediatricians with different work characteristics in the bivariate analysis (Table 3). In multivariable analysis, part-time pediatricians were more likely to report that more choices to satisfy part 4 would be very or moderately helpful (aOR = 1.95; 95% CI 1.21–3.15).

Eighty-one percent of participants reported that receiving part 4 credit for QI activities they are already doing at work would be very or moderately helpful in completing MOC requirements (data not shown).

**MOC: PERCEIVED ATTITUDES**

Less than half (47.2%) of participants agreed that participating in part 2 activities helps achieve lifelong learning goals. Fewer (12.5%) agreed that participating in part 4 activities improves ability to care for patients ( $P < .001$ ) (Table 4). All subgroups compared reported lower agreement with the part 4 than the part 2 goal.

Few differences in these attitudes were found for work characteristics examined in bivariate analysis (Table 4). In multivariable analysis, generalists, hospitalists, and pediatricians with other positions were more likely than subspecialists to agree that participation in part 2 helps achieve lifelong learning goals (aOR = 2.07, 95% CI 1.39–3.10; aOR = 2.98, 95% CI 1.43–6.21; and aOR = 3.34, 95% CI 1.35–8.24, respectively). Pediatricians with colleagues who are good sources of professional stimulation were more likely than those without such colleagues to report that part 2 helps achieve goals (aOR = 1.75, 95% CI 1.01–3.05). Those having enough support staff were more likely to agree that part 4 improves their ability to care for patients (aOR = 2.33; 95% CI 1.31–4.13).

**POSITIVE MOC PART 4 ATTITUDES**

Only 12.5% ( $n = 75$ ) agreed that participating in MOC part 4 activities improves their ability to care for patients (positive part 4 attitude). Pediatricians who report positive attitudes were less likely to agree that time was a barrier (aOR = 0.30, 95% CI 0.18–0.51) and that availability of part 4 activities relevant to practice/work was a barrier (aOR = .22, 95% CI 0.13–0.39). Among participants

**Table 3.** Perceived Needs for MOC Participation

Characteristic	More Choices to Satisfy Requirement Would Be Very or Moderately Helpful				
	Part 2*		Part 4*		Comparison of Part 2 and Part 4 Responses
	%	$P^{\dagger}$	%	$P^{\dagger}$	
All respondents, $n = 598$	53.8		72.8		<.001
Primary position		<.05		<.05	
General pediatrics, $n = 286$	47.2		67.0		<.001
Hospitalist, $n = 36$	58.3		80.0		<.05
Subspecialty/other specialty, $n = 211$	62.2		78.2		<.001
Mix of general pediatric and subspecialty care, $n = 25$	44.0		68.0		<.05
Other (eg, training, nonclinical), $n = 41$	58.5		81.0		<.05
Part-time position		.29		.08	
Yes, $n = 155$	50.0		78.1		<.001
No, $n = 429$	55.0		70.9		<.001
Work setting		<.01		<.01	
Solo or 2-physician practice, $n = 50$	52.0		67.3		<.05
Group practice, $n = 244$	46.3		67.2		<.001
Medical school/hospital/clinic, $n = 279$	59.9		78.8		<.001
Busyness of work setting		.32		.91	
Calm/somewhat calm/busy but reasonable, $n = 333$	52.1		73.0		<.001
Somewhat hectic/hectic, chaotic, $n = 256$	56.3		72.5		<.001
Enough support staff		.72		.85	
Strongly agree or agree, $n = 357$	52.9		73.0		<.001
Strongly disagree, disagree, or neutral, $n = 224$	54.5		72.3		<.001
Colleagues are good source of professional stimulation		.20		.28	
Strongly agree or agree, $n = 516$	54.6		73.4		<.001
Strongly disagree, disagree, or neutral, $n = 67$	46.3		67.2		<.01

MOC indicates maintenance of certification.

\*Definitions provided to participants: part 2 = lifelong learning and self-assessment; part 4 = performance in practice and quality improvement.

$\dagger$ Chi-square  $P$  value for comparison of responses to question and work characteristics.

$\ddagger$ McNemar  $P$  value for comparison of responses to part 2 and part 4 for each group.

**Table 4.** Perceived Attitudes of MOC

Characteristic	Strongly Agree or Agree That Part 2 Participation Helps Achieve Lifelong Learning Goals*		Strongly Agree or Agree That Part 4 Participation Improves Ability to Care for Patients*		Comparison of Part 2 and Part 4 Responses
	%	<i>P</i> †	%	<i>P</i> †	
All respondents, n = 599	47.2		12.5		<.001
Primary position		<.001		.11	
General pediatrics, n = 286	54.2		13.4		<.001
Hospitalist, n = 36	61.1		13.9		<.001
Subspecialty/other specialty, n = 211	34.6		8.6		<.001
Mix of general pediatric and subspecialty care, n = 25	44.0		20.0		<.05
Other (eg, training, nonclinical), n = 41	53.7		21.4		<.01
Part-time position		<.01		.56	
Yes, n = 152	58.6		11.2		<.001
No, n = 432	43.5		13.0		<.001
Work setting		.93		.25	
Solo or 2-physician practice, n = 50	46.0		12.5		<.001
Group practice, n = 244	48.0		10.2		<.001
Medical school/hospital/clinic, n = 280	46.4		15.1		<.001
Busyness of work setting		<.05		.37	
Calm/somewhat calm/busy but reasonable, n = 334	51.2		13.5		<.001
Somewhat hectic/hectic, chaotic, n = 256	41.8		11.0		<.001
Enough support staff		.81		<.01	
Strongly agree or agree, n = 356	47.5		15.8		<.001
Strongly disagree, disagree, or neutral, n = 226	46.5		7.5		<.001
Colleagues are good source of professional stimulation		.07		.61	
Strongly agree or agree, n = 517	48.4		12.8		<.001
Strongly disagree, disagree, or neutral, n = 66	36.4		10.6		<.001

MOC indicates maintenance of certification.

\*Definitions provided to participants: part 2 = lifelong learning and self-assessment; part 4 = performance in practice and quality improvement.

†Chi-square *P* value for comparison of responses to question and work characteristics.

‡McNemar *P* value for comparison of responses to part 2 and part 4 for each group.

who completed part 4 activities (n = 502), those who reported positive attitudes were more likely to report maintaining changes implemented as a result of the activity (aOR = 6.41, 95% CI 3.51–11.70).

### QUALITATIVE DATA

Major themes and sample quotes supporting these themes are reported in Table 5. Predominant themes were relevance, time, and cost concerns. Other themes further supported the quantitative findings included confusion, lack of QI choices, credit for activities already doing at work, and value. Participants also commented on the part 3 examination, particularly around relevance, cost, and preparation time.

Participants described confusion over the MOC process as a whole, but most typically with part 4. Those maintaining certification in multiple areas found the logistics of the process daunting. Participants expressed frustration with lack of available MOC activities that will improve practice or patient care, particularly for part 4. They questioned the relevance of MOC to their day-to-day practice and overall value. Others remarked that part 4 not only had no benefit but was also perceived as busy work. Participants cited

young families, busy practices, and other work as consistently demanding, so the cost of giving up time with patients and families and the monetary cost of the examination were stressors.

Suggestions for how to improve MOC included specific, timely updates by the ABP on candidate's MOC progress; simplified instructions for completing each MOC part; more flexibility for inclusion of qualified activities for parts 2 and 4 such as QI projects that are initiated and monitored locally, through simulation participation, and attendance at professional meetings; a tiered MOC system where participants not currently employed maintain certification at lower costs; and elimination of part 4.

### DISCUSSION

There is much debate surrounding the current MOC process, as seen in medical journals, position statements, medical board blogs, and mainstream media.<sup>7,22–24</sup> ABP president and CEO Dr David G. Nichols, in an online address February 2015, stated that thoughtful input from diplomates is needed pertaining to the MOC process if we are to improve outcomes for children.<sup>25</sup> This study offers

**Table 5.** Themes Identified in Pediatricians' Open-Ended Responses and Illustrative Quotes

Theme	Illustrative Quotes
Relevance: MOC is not relevant to the day-to-day practice of pediatrics	<ul style="list-style-type: none"> <li>• The part 4 activities are the weakest part of the MOC process and should be reevaluated for relevancy.</li> <li>• There was no choice of QI project that had relevance to my practice. I chose one that appeared to be less time consuming in order to check the box and get back to patient care.</li> <li>• Part 4 especially, I don't understand the point at all. It just seemed like busy work. I gained nothing; my patients gained nothing.</li> <li>• My part 4 activity was a joke. I do a great deal of QI work as part of my job but since I would have had to pay a large fee to get the ABP to approve it I opted instead to complete modules that were available on the ABP website, including a hand washing module and a flu vaccination module.</li> </ul>
Time: MOC process is too time consuming, especially given the numerous requirements pediatricians have competing for their time	<ul style="list-style-type: none"> <li>• If I am seeing 26–30 patients a day, fighting with a slow EMR and answering my phone calls/paperwork, how am I supposed to have time doing ridiculous (and frankly useless) MOC activities AND have a life outside of work. It often seems you can be a physician or a person but not both.</li> <li>• As a dedicated pediatrician I am already doing self-study, practice improvement and ongoing inquiry to clinical challenges. Test my knowledge on a test but please stop wasting my time with the frivolous MOC Requirements. All my busy colleagues in the trenches (real world) feel the same way!!</li> <li>• The MOC was a real burden to my already extremely stretched schedule. Essentially it meant adding more sleep deprivation to my already existing sleep deficit, as I had to complete everything "after hours."... "After hours" means after work, after taking care of my family, and after logging on to finish my charting/responsibilities for the day.</li> </ul>
Cost of MOC is a substantial burden	<ul style="list-style-type: none"> <li>• The cost is excessive and this year was unexpected—I didn't budget for it. I completed the 100 points for this cycle but I can't afford the amount of money owed to the board, and I may just let my board certification lapse.</li> <li>• I am working part-time and up until this year had to pay out of my own pocket for all my MOC requirements. I am also still paying back my medical school loans.</li> <li>• I am an academic general pediatrician which is at the bottom of the salary ladder and last year we had to decide whether to pay for MOC or take a family vacation.</li> </ul>
Credit for QI activities already doing	<ul style="list-style-type: none"> <li>• If I have a QI article published in a peer-reviewed journal, or as a poster, abstract, etc, at a national or international meeting, it should count....Give credit for what we are already doing.</li> <li>• I think in general it is just a hoop to jump through....Our own system has its own quality improvement projects that are on a larger scale and more useful but I can't get credit for these.</li> </ul>
Confusion by the complicated MOC process	<ul style="list-style-type: none"> <li>• Feel that the MOC requirements are very complex and confusing....The MOC website is very difficult to navigate and trying to learn which requirements are due at what time is difficult.</li> <li>• The entire process is very confusing, especially for subspecialists who have to maintain both the Gen Peds MOC and the subspecialty MOC. It will be very helpful if the entire process can be simplified, or that the subspecialists are only required to take their subspecialty exam to maintain MOC.</li> <li>• Totally confusing process....People who have recently completed it have a hard time telling me about the process</li> <li>• The MOC seems like a black box to me....The whole thing is too complicated and thus easy to avoid.</li> </ul>
Value of MOC and proven benefits are limited	<ul style="list-style-type: none"> <li>• I (and most of my colleagues) feel that MOC is much more about generating revenue for the board than improving our practice. Show me evidence that MOC improves care in any way.</li> <li>• I would like to know if they have shown that it leads to better physicians or more accuracy about our skills—I doubt it. It is easy to require busy work. I think lifelong learning and self-assessment as a surrogate of a standardized test makes sense.</li> </ul>
Lack of QI choices that will improve practice or patient care	<ul style="list-style-type: none"> <li>• Part 4 activities are hard to find, stressful to complete, and can be burdensome to my team members.</li> <li>• The selection of topics are limited and I have found it difficult to pick one that would be meaningful in my particular practice.</li> <li>• Main helpful thing would be to have more choices available for part 2 and 4 and have the QI component more flexible.</li> </ul>
MOC part 3 comments	<ul style="list-style-type: none"> <li>• The secure exam topics are not necessarily relevant to day to day pediatrics practice.</li> <li>• I agree with a test (part 3), but the questions did not reflect my knowledge. The test should be open book, so I can learn as I go. Many of the questions I would have looked up/or called a specialist.</li> <li>• Studying for the exam is a huge burden on people who are already balancing work and family life. They should revert back to an open book format.</li> <li>• Exam... took so much time from family and practice. Decreased sleep → bad for patient care and family. In practice, we need to know when and how to look up information—not the details of every syndrome etc off the top of our heads. So frustrating and almost disrespectful to us as physicians w/growing practices and young families.</li> <li>• In practice, one has access to medical resources (books, internet, colleagues). Closed book time limited exam seems artificial in assessing practitioner knowledge for practicing medicine.</li> </ul>

(Continued)

Table 5. Continued

Theme	Illustrative Quotes
Suggested improvements to MOC process	<ul style="list-style-type: none"> <li>• It would be great if MOC was a way to keep pediatricians connected to the larger professional community. Perhaps MOC hours could be earned with public service hours.</li> <li>• It would be nice if we could just write up what we do. I do believe in the concept of continuous practice improvement very strongly, but our department always operates this way so this is just paperwork to me.</li> <li>• I actually think the question of the week series presented by the ABP is very useful, and makes me critically think about the way I practice medicine. I wish more of our education could be approached this way.</li> <li>• I find the part 4 requirements the most frustrating....I think simplifying some of these programs and offering more specific examples of how to incorporate meaningful processes into our practices would be better.</li> </ul>

MOC indicates maintenance of certification; QI, quality improvement; and ABP, American Board of Pediatrics.

such input from pediatricians concerned about current ABP MOC parts 2 and 4. To our knowledge, it is the first study describing the experiences with and attitudes toward ABP MOC in a large national cohort of early to midcareer pediatricians who are highly immersed in the MOC process.

Pediatricians in this study expressed significant frustration with ABP MOC parts 2 and 4. Paramount to interpreting this frustration is first recognizing pediatricians' admitting poor understanding of MOC requirements, especially for part 4, which likely influences all other perceptions of the MOC process. Poor understanding could contribute to the perceived barriers reported, again more commonly expressed for part 4.

ABMS member boards have Web sites describing the purpose of MOC in their respective fields.<sup>2,3,26</sup> Most, including the ABP, maintain that MOC enhances patient care through continuing education.<sup>2,26</sup> However, less than half of our study participants agreed that participating in part 2 activities helps achieve lifelong learning goals; still less agreed that participating in part 4 activities improves their ability to care for patients. Only recently are data accumulating that demonstrate more correlation between MOC and improved patient outcomes.<sup>27,28</sup> Robust definitive evidence on the relationship between MOC and positive patient outcomes was more equivocal at the time of the survey, perhaps contributing to participants' perceptions.<sup>7,29,30</sup>

It is challenging to find QI projects fulfilling part 4 that are meaningful and easily integrated into physician practices.<sup>31</sup> Our study confirms that this holds true for pediatricians. Unfortunately, our study suggests that only pediatricians who complete relevant part 4 activities will continue to implement changes made as a result of the activity, defeating the goal of part 4. To address this, the ABP has been expanding options. Examples include the expansion of MOC part 4 activities from solely clinical practice improvement to educational practice improvement and the inclusion of qualifying QI posters and presentations at national pediatric meetings.<sup>32,33</sup>

Despite the need for physicians to comprehend many requirements to advance through higher education and training, many study participants described MOC requirements for part 2 and particularly part 4 as being difficult to understand and suggested simplifying the requirements. Pediatricians with colleagues who are good sources of professional support reported better understanding of the requirements. If feasible,

academic centers and pediatric practices could invest in selecting pediatricians or staff to receive more extensive training in MOC requirements, becoming local experts who then provide support and guidance to partners.

Subspecialists were less likely to report understanding requirements. With increasing numbers of residents interested in subspecialty training,<sup>34</sup> efforts to concisely convey MOC requirements, offer more relevant activities, and expand pathways to fulfilling requirements are particularly important if subspecialists are to maintain certification in general pediatrics.

Our quantitative and qualitative findings confirm that early and midcareer pediatricians report barriers similar to other physicians,<sup>13,15,31</sup> including cost and time. These are even more likely barriers for younger pediatricians, particularly those required or encouraged to maintain more than one certification, as with subspecialists or pediatricians with double (eg, medicine, pediatrics) or triple (eg, pediatrics, psychiatry, child psychiatry) board requirements. Educational debt continues to rise among pediatric residency graduates,<sup>34</sup> who will be paying off debt for many years.<sup>35</sup> A majority of early and midcareer pediatricians are women, married or partnered, who have children.<sup>17</sup> Time demands are tremendous with home and family while simultaneously building careers.

Limitations to the current study include that data are based on participant report; further, our sample is limited to early and midcareer pediatricians, which might also be perceived as a strength given that these pediatricians will likely be participating in MOC for many years. Although the participation rate among PLACES pediatricians who completed the MOC questions was high, the initial project sign-up rate was lower (41%), although it was similar to or higher than other longitudinal and panel studies.<sup>17</sup> Efforts were made to account for nonresponse bias using a data-weighting procedure.<sup>17</sup> The most important limitation may be that there is likely some initial participant bias inherent in the study, given that the PLACES participants themselves requested that they be queried on the topic of MOC. We attempted to minimize bias in the survey tool; however, the tool was also designed to elicit any possible barriers and potential improvements that might be suggested. The open-ended question allowed for both participant complaints regarding the process as well as compliments to the MOC program, although most respondents voiced concerns, often vehemently expressed.

Our findings suggest that clear communication and education aiding understanding of the MOC process followed by focus on time and monetary cost reductions as well as providing more relevant and flexible pathways to earn credit would address many concerns. Better understanding of positive MOC experiences through focus group research might provide more clarity to inform policy decisions regarding potential changes. Since data were collected for this study, the ABP has announced several changes to the process, such as new ways to earn part 4 credit<sup>25</sup> and piloting a different approach to part 3.<sup>36</sup>

## CONCLUSIONS

AAP PLACES offers a voice to pediatricians and emphasizes the need for the ABP to collaborate with early and midcareer pediatricians in finding relevant, low-cost avenues to fulfill MOC parts 2 and 4. Through collaboration, goals of the MOC process, including optimization of physician learning and improvement of professional practice and ultimately patient outcomes, can be realized.

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## SUPPLEMENTARY DATA

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.acap.2016.10.019>.

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