

# Identification and Validation of Entrustable Professional Activities in Indonesian Internal Medicine Residency Programs

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## ABSTRACT

**Background:** Entrustable professional activities (EPAs) are tasks entrusted to students who assist supervisors in determining their competencies. However, the competencies required and the end-educational stage in which each EPA item is assigned have yet to be determined by the stakeholders of internal medicine residency programs in Indonesia. This study aimed to identify and determine the activities in internal medicine residency programs which could be defined as EPAs in the competency-based curriculum of Indonesian internal medicine residency programs. **Methods:** A literature review was conducted to identify activities which could be examined as EPA items in Indonesian internal medicine residency programs, which were then validated by 10 educational experts. Two rounds of the Delphi method were conducted with participants consisting of the Indonesian Board of Internal Medicine professionals, residency program directors, internal medicine specialists, and internal medicine residents to evaluate the importance of the identified EPA items. The EPA items were rated on a Likert scale ranging from 1 to 5, and their variances were analyzed. The participants also rated the end-educational stage appropriate for each EPA item. The effect size was calculated between groups as (1) small, <0.3; (2) moderate, approximately 0.5; and (3) large, >0.8. **Results:** The literature review identified 29 modified items from the Royal College of Physicians and Surgeons (RCPS) and three items from other academically developed EPA designs. The expert discussion resulted in the validation of 28 EPA items (out of the 32 items in the initial EPA draft). All 28 items were accepted after two rounds of the Delphi method, and a decrease in their variances was found. **Conclusion:** This study formulated 28 EPA items for Indonesian internal medicine residency programs. Further collaboration between the Board of Internal Medicine and residency program directors will be needed for the application of these EPA items at each residency year.

**Keywords:** *entrustable professional activities; internal medicine; residency program.*

## INTRODUCTION

An entrustable professional activity (EPA) is defined as a clinical practice task which can be entrusted to medical residents in incremental stages.<sup>1-3</sup> These stages include the observational stage, the direct supervision stage, the indirect supervision stage, and the minimal supervision stage. Some medical residents will go further, achieving the capability of supervising other students when they have shown the ability to maintain the required competence.<sup>1-3</sup> Since competency assessments do not always predict performance, the assessment of students should focus on their abilities to perform professional tasks in the workplace. The assessment of medical residents using EPAs supports the goal of high-quality internal medicine medical education without supervision.

An ideal EPA, according to Cate et al., includes several attributes<sup>1</sup>: (1) It is required in professional clinical activities; (2) requires sufficient knowledge, abilities, and attitudes obtained through learning as a prerequisite of completion; (3) results in professional actions which are useful in daily practice; (4) indicates the quality of the professional when achieved; (5) can be implemented independently; (6) can be completed within a certain timeframe; (7) can be observed and rated; and (8) represents one or more competencies.<sup>3-6</sup> EPAs are essential in competency-based medical education curricula as they help supervisors determine student competencies and ensure that high-quality patient-centered care would be provided by the students.

The development of EPAs in internal medicine residency programs has already been carried out in several studies conducted by the Alliance for Academic Internal Medicine (AAIM), the European Board of Internal Medicine (EBIM), the Royal College of Physicians and Surgeons (RCPS), and the University of California, San Francisco (UCSF). However, there were differences in the total number and descriptions of the EPAs in each study.<sup>3-6</sup> Therefore, the identification and adoption of EPAs relevant to the Indonesian internal medicine curriculum and the importance of the established EPAs should be determined by stakeholders in internal medicine

residency programs in Indonesia. Hence, this study aimed to identify several activities as EPAs in the competency-based educational curriculum in Indonesian internal medicine residency programs.

## METHODS

We conducted a literature review to identify relevant clinical activities to be considered as EPAs for Indonesian internal medicine residency programs. The authors of this paper originally used the Indonesian language to identify and validate EPAs based on a questionnaire by Taylor and Hauer.<sup>3,5</sup> The translation of the chosen EPA texts into the Indonesian language was conducted by a certified and sworn translator, and the texts were then translated back into the English language by a postgraduate student in medical education with English language experience (**Supplementary Table S1**). The results of the translation into Indonesian and then back into English were revalidated by a panel of experts in medical education.

Additionally, a round of expert discussion was conducted to validate the EPAs according to the 10 attributes described by Cate et al. using the questionnaire developed by Taylor et al.<sup>1,3</sup> Finally, two rounds of an online Delphi method were conducted to evaluate the importance of each activity as an EPA and the end-educational stage at which each EPA could be issued.

### Literature Review

A comprehensive literature review was carried out by the authors on the EPA items designed by AAIM, EBIM, RCPS, and UCSF.<sup>3-6</sup> The EPA design from RCPS was established as the primary reference, as it included junior student supervision in various clinical units. Then, a search for duplications in the EPA items designed by AAIM, EBIM, and UCSF was carried out for each EPA item designed by RCPS. EPAs designed by AAIM, EBIM and UCSF which had not yet been included in EPA items designed by RCPS were added as new EPA items.

### Expert Discussion

Ten educational experts were recruited for this study to discuss the resultant EPA draft written by the authors. The selection of experts

was based on their professional backgrounds, which were internal medicine residency program coordinators, former internal medicine residency program coordinators, former managers of education, and former medical science Bachelor's program coordinators. The expert discussion was conducted online using 14 questions adapted from Taylor et al. to assess the relevance of selected EPA points with EPA attributes outlined by Cate et al.<sup>1,3</sup> The 14 questions were divided into three sections: EPAs as work units, EPAs as professional tasks, and EPAs as curriculum items. The experts were then asked to provide a score on a Likert scale ranging from 1 to 5, and they were also asked to provide comments on each EPA item.

The mean score for each EPA item was calculated by the sum of scores from each question divided by 14. EPA items that were accepted in the EPAs design were those with a mean score of 4.07 or more.<sup>3</sup> EPA items with mean scores less than 4.07 were excluded or revised. The consensus on EPA items was determined if 80% or more of the experts had accepted the EPA items and if less than 20% of the experts had suggested revisions. EPAs were excluded if 50% or more of the experts had rejected the EPA.

### **Delphi Method Round 1**

In this round, four groups of participants (i.e., Indonesian Board of Internal Medicine professionals, residency program directors, internal medicine specialists, and internal medicine residents) provided their evaluations on the degree of importance of each activity using a Likert scale ranging from 1 to 5 (1 = not at all important, 2 = very insignificant, 3 = rather important, 4 = important, and 5 = very important) and chose the educational stage at which an EPA item could be assigned. The results of Delphi round 1 were analyzed by calculating the content validity indices (CVIs), namely, the number of participants who gave a score of 4 or 5 on the questionnaire divided by the number of total participants.

### **Delphi Method Round 2**

In Delphi round 2, a reevaluation of the Likert scale ratings, the educational stages

for each EPA item, and CVI were carried out. Participants provided evaluations using the same questionnaire and received feedback and individual answers from the previous Delphi round. Activities designated as EPAs for an internal medicine residency program were activities with a CVI values of  $\geq 80\%$ . The results were then analyzed by calculating the CVI.

### **Statistical Analysis**

The difference in the mean ranks/scores of the two rounds was analyzed using a *t*-test, while the mean differences of more than two groups were analyzed using a one-way ANOVA test. The effect size (size/size of effect) between the two groups was calculated by dividing the difference in the mean rank/score of the two groups (i.e., pooled standard deviation divided by two). The effect size criteria included: (a) small,  $<0.3$ ; (b) moderate, approximately 0.5; and (c) large, approximal and  $>0.8$ . The effect size between the three groups was evaluated by the partial eta-squared generated in the one-way ANOVA analysis. The difference in variance between Delphi rounds 1 and 2 was analyzed by a *t*-test to evaluate the statistical significance of the difference in the means of the two variances in one paired group.

### **Ethics**

The Faculty of Medicine, Universitas Indonesia Institutional Review Board approved the study with approval number: KET.203/UN2.F1/ETIK/PPM.00.02/2020.

## **RESULTS**

### **Literature Review**

The literature review identified 29 EPA items from RCPS, 30 EPA items from UCSF, 16 EPA items from AAIM, and 40 EPA items from EBIM.<sup>3-6</sup> The EPA items from RCPS were selected for the aforementioned reasons. Next, modification of the EPAs designed by RCPS was carried out based on the similarity in content and meaning of the EPA items from UCSF, AAIM, and EBIM. For example, EPA 1 from RCPS was similar to EPA 5 from UCSF, as they were both concerned with taking patient histories and physical examinations.

The EPA modification process resulted in 29 EPA items modified from RCPS which had been reworded according to the relevant literature, and we added three EPA items from other EPA designs which had not yet been included in the EPA design from RCPS. The total number of EPA items identified at this stage was 32 (**Figure 1**). A list of the EPA items can be seen in the Supplementary Materials.

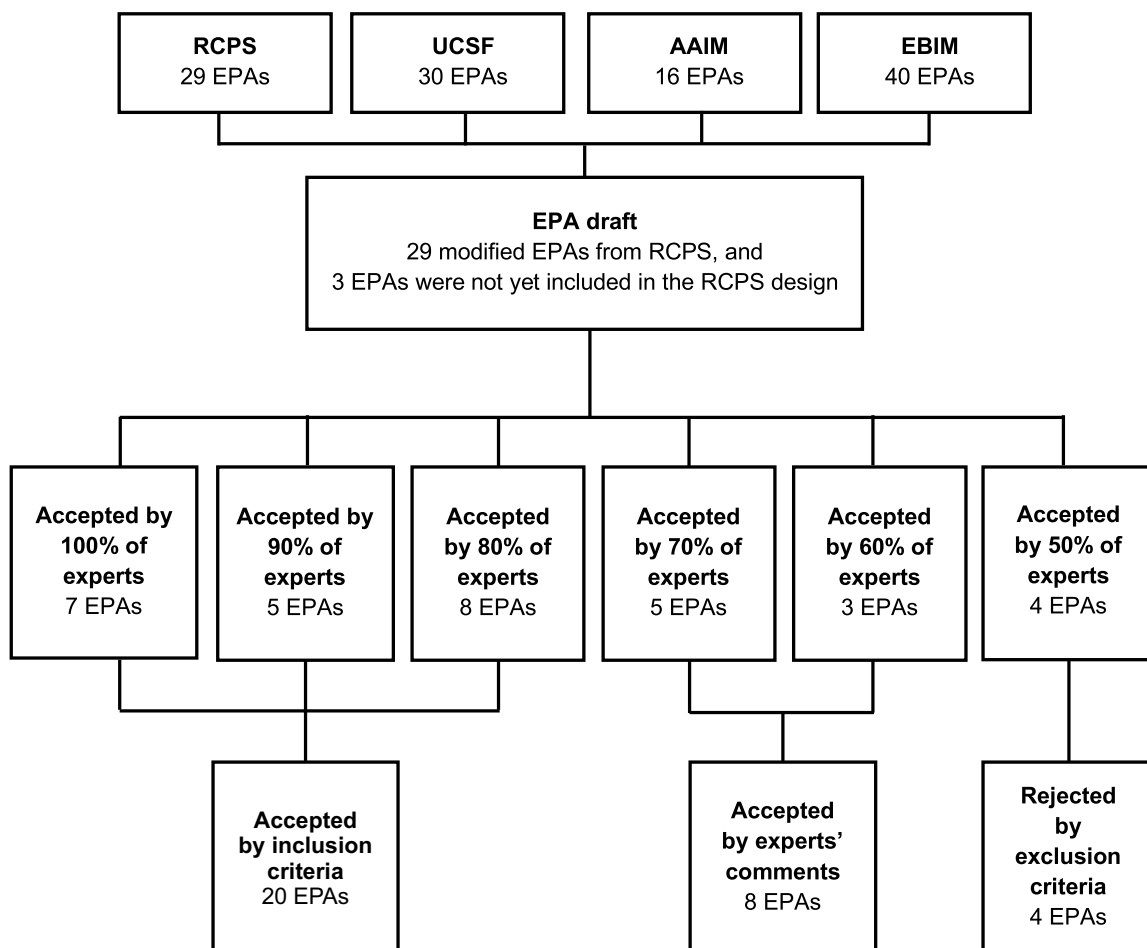
### Expert Discussion

After the literature review had been completed, the resultant EPA draft was further verified through an expert discussion process. Seven EPA items from the EPA draft were 100% accepted by experts. Meanwhile, five EPA items were accepted by 90% of the experts, and eight EPA items were accepted by 80% of the experts (**Supplementary Table S2**), resulting in 20 EPA items accepted by 80% or more of the experts

and 12 EPA items accepted by less than 80% of the experts. Finally, we decided to include EPA items which were accepted by 70% and 60% of the experts in the EPA design, as some of the experts had commented that the EPA was eligible to be accepted (**Supplementary Tables 3 and 4**). Meanwhile, the EPA items accepted by 50% of the experts were excluded, and none of the experts' comments for these EPAs indicated them eligible to be accepted. Thus, the expert discussion process was able to validate 28 EPAs (**Figure 1**).

### Delphi Method Round 1

The Delphi round 1 participants included 11 out of the 13 invited Indonesian Board of Internal Medicine professionals, 16 out of the 29 residency program directors, 14 out of the 26 internal medicine specialists, and 13 out of the 14 residents in internal medicine residency education programs.



**Figure 1.** Results obtained from the literature review and expert discussion method.

Twenty-six EPA items were acceptable to the experts (CVI  $\geq 80\%$ ). Only two EPA items received received CVIs of  $<80\%$  from all of the participants, namely, EPA 26 (CVI 72.4%) and EPA 27 (70.4%). None of the EPA items received a 100% CVI. EPA items which received the highest CVI (98.2%) were EPA items 1, 3, 4, 5, 12, 13,14, and 24.

### Delphi Method Round 2

The Delphi round 2 participants included eight out of the 11 invited Indonesian Board of

Internal Medicine professionals, eight out of the 16 residency program directors, nine out of the 14 internal medicine specialists, and nine out of the 13 residents in internal medicine residency education programs. In this round, 28 EPA items were accepted by all participants (CVI  $\geq 80\%$ ). There was an increase in the CVI of EPA item 26 (72.2% to 97.1%) and 27 (70.4% to 100%). Twelve EPA items were accepted with CVIs of 100%, namely, EPA items 1, 2, 3, 4, 8, 11, 13, 14, 22, 23, 27, and 28. The two EPA items with the lowest CVIs (94.1%) were EPA items 9 and 24 (**Table 1**).

**Table 1.** Validity results and effect sizes for each EPA item in Delphi round 2.

Entrustable Professional Activities (EPA) Item	Content Validity Indices %	Effect Size					
		(A) vs. (B)	(A) vs. (C)	(A) vs. (D)	(B) vs. (C)	(B) vs. (D)	(C) vs. (D)
<b>EPA 1:</b> Performing histories and physical examinations and documenting and presenting findings across clinical settings for initial and subsequent care	100%	0.71	1.33	1.01	0.49	0.24	0.24
<b>EPA 2:</b> Identifying and assessing unstable patients, providing initial management, and obtaining assistance	100%	0.71	1.33	0.67	0.49	0.04	0.53
<b>EPA 3:</b> Performing the basic procedures of internal medicine	100%	0.25	0.17	0.35	0.08	0.62	0.53
<b>EPA 4:</b> Assessing the degree of severity, diagnosing, and providing initial management for patients with common acute medical presentations in acute care settings	100%	0.31	0.06	0.35	0.22	0.04	0.29
<b>EPA 5:</b> Managing patients admitted to acute care settings with common medical problems and advancing their care plans	97.1%	0.25	0.13	0.07	0.39	0.14	0.18
<b>EPA 6:</b> Consulting with specialists and other health professionals, synthesizing recommendations, integrating these into the care plan, and referring when appropriate to other specialty care	97.1%	0.48	0.35	0.29	0.13	0.11	0.00
<b>EPA 7:</b> Formulating, communicating, and implementing discharge plans for patients with common medical conditions from acute care settings	97.1%	0.76	0.13	0.29	0.62	0.33	0.18
<b>EPA 8:</b> Assessing unstable patients and providing targeted treatments and consulting, as needed; providing emergency multidisciplinary care to medical inpatients	100%	0.00	0.13	0.62	0.13	0.62	0.77
<b>EPA 9:</b> Discussing and establishing patient goals of care with family and other health providers	94.1%	0.48	0.07	0.48	0.48	0.07	0.47
<b>EPA 10:</b> Identifying personal learning needs while caring for patient needs and accessing medical information to provide evidence-based care to address those needs in developing the practice of life-long learning	97.1%	0.25	0.62	0.14	0.35	0.07	0.36

<b>EPA 11:</b> Assessing, diagnosing, and managing patients with complex or atypical acute medical presentations, with complex medical conditions and/or with comorbidities	100%	0.00	0.08	0.57	0.08	0.57	0.67
<b>EPA 12:</b> Assessing and managing patients with complex chronic conditions that require other specialists or subspecialty care	97.1%	0.48	0.57	0.29	0.08	0.11	0.18
<b>EPA 13:</b> Providing internal medicine consultations to other clinical and perioperative services	100%	1.08	0.39	0.62	0.62	0.39	0.21
<b>EPA 14:</b> Assessing emergency and participating or leading in resuscitating and managing unstable and critically ill patients	100%	0.50	0.57	0.57	0.06	0.06	0.00
<b>EPA 15:</b> Performing the procedures of internal medicine	97.1%	0.61	0.08	0.32	0.69	0.92	0.24
<b>EPA 16:</b> Identifying and addressing any need for quality improvement to increase capacity in decision making in any clinical setting	97.1%	0.24	0.35	0.29	0.10	0.09	0.00
<b>EPA 17:</b> Discussing serious and/or complex aspects of care with patients, families, and caregivers, as well as with members of the interdisciplinary team	97.1%	0.76	0.62	0.71	0.13	0.07	0.18
<b>EPA 18:</b> Providing palliative care when needed and caring for patients at the end of their life	97.1%	0.76	0.39	0.51	0.35	0.11	0.18
<b>EPA 19:</b> Implementing health promotion strategies in patients with or at risk for disease and performing behavioral counseling with patients	97.1%	0.76	0.06	0.51	0.84	0.11	0.57
<b>EPA 20:</b> Supervising junior learners in the clinical setting	97.1%	0.50	0.46	0.32	0.93	0.17	0.76
<b>EPA 21:</b> Managing an inpatient medical service as a team member or multidisciplinary team leader	97.1%	0.48	0.84	0.48	0.32	0.07	0.19
<b>EPA 22:</b> Providing continuity of care under any clinical condition	100%	0.24	0.57	0.35	0.32	0.10	0.22
<b>EPA 23:</b> Assessing and managing patients with uncertain diagnoses and/or treatments	100%	0.48	0.35	0.57	0.13	0.08	0.22
<b>EPA 24:</b> Providing consultations to off-site healthcare providers	94.1%	0.71	0.54	0.84	0.07	0.13	0.18
<b>EPA 25:</b> Initiating and facilitating transfers of care according to healthcare system protocols	97.1%	0.64	0.37	0.74	0.32	0.10	0.43
<b>EPA 26:</b> Working with other physicians and healthcare professionals to develop collaborative patient care plans	97.1%	0.61	1.23	0.92	0.62	0.32	0.29
<b>EPA 27:</b> Identifying learning needs in clinical practice and addressing them with a personal learning plan	100%	0.76	0.62	0.62	0.13	0.13	0.00
<b>EPA 28:</b> Developing and implementing a management plan based on a review of outcome data for ambulatory patient population	100%	0.76	0.39	0.62	0.35	0.13	0.21

\* A = Indonesian Board of Internal Medicine professionals

B = Residency program directors

C = Internal medicine specialists

D = Internal medicine residents

**Table 2.** Average variance and trend for each group of participants.

Participant Groups	Variance	
	Delphi 1	Delphi 2
Indonesian Board of Internal Medicine professionals	0.334	0.247
Residency program directors	0.355	0.253
Internal medicine specialists	0.264	0.274
Internal medicine residents	0.469	0.332

The effect sizes were analyzed to identify differences in opinion between two groups (**Table 1**). Between the Indonesian Board of Internal Medicine professionals and residency program directors, one EPA item had a large effect size (i.e., EPA item 13). The residency program directors and internal medicine specialists also only had one EPA item with a large effect size (i.e., EPA item 19) among them, while four EPA items (i.e., 1, 2, 21, and 26) had a large effect size between the Indonesian Board of Internal Medicine professionals and the internal medicine specialists. The residency program directors and internal medicine residents had one EPA item with a large effect size (i.e., EPA item 15), while the internal medicine specialists and residents had no large effect sizes among

them. Some EPA items had small effect sizes across participant groups, which mainly involved acute or emergency settings and basic internal medicine procedures (i.e., EPA items 3, 4, 5, 8, and 11). The residency program directors and residents had similar opinions, as was indicated by the small effect sizes in 21 out of the 28 EPA items between these groups. The residency program directors, internal medicine specialists, and internal medicine residents agreed on items regarding basic clinical skills (i.e., EPA items 1–5), acute care settings and learning needs and improvement (i.e., EPA items 16 and 27), and, interestingly, complex case management, multidisciplinary services, and patient referral management.

The analysis of variance between Delphi rounds 1 and 2 showed a decreased variance in almost all of the participant groups except for the internal medicine specialists (**Table 2**). The internal medicine residents group showed the largest decrease in variance compared to the other groups. The end-educational stage competencies for individual EPA items are listed below (**Table 3**), with some EPA items showing

**Table 3.** End-educational stage for each EPA item.

Entrustable Professional Activities (EPA) Item	End-Educational Stage			
	Indonesian Board of Internal Medicine professionals	Residency program directors	Internal medicine specialists	Internal medicine residents
<b>EPA 1:</b> Performing histories and physical examinations and documenting and presenting findings across clinical settings for initial and subsequent care	1	1	1	1
<b>EPA 2:</b> Identifying and assessing unstable patients, providing initial management, and obtaining assistance	1	1	1, 2	1
<b>EPA 3:</b> Performing the basic procedures of internal medicine	1, 2	1, 2	2	1
<b>EPA 4:</b> Assessing the degree of severity, diagnosing, and providing initial management for patients with common acute medical presentations in acute care settings	1	1	1	2
<b>EPA 5:</b> Managing patients admitted to acute care settings with common medical problems and advancing their care plans	1	1, 2	1, 2	2
<b>EPA 6:</b> Consulting with specialists and other health professionals, synthesizing recommendations, integrating these into the care plan, and referring, when appropriate, to other specialty care	2	2, 3	2	2, 3

<b>EPA 7:</b> Formulating, communicating, and implementing discharge plans for patients with common medical conditions from acute care settings	1	2	1, 2	2, 3
<b>EPA 8:</b> Assessing unstable patients and providing targeted treatments and consulting as needed; providing emergency multidisciplinary care to medical inpatients	2	3	2,3	2
<b>EPA 9:</b> Discussing and establishing patient goals of care with family and other health providers	1	2, 3	2, 3	1, 3
<b>EPA 10:</b> Identifying personal learning needs while caring for patient needs and accessing medical information to provide evidence-based care to address those needs in developing the practice of life-long learning	1	1, 2	1, 3	1
<b>EPA 11:</b> Assessing, diagnosing, and managing patients with complex or atypical acute medical presentations, with complex medical conditions and/or comorbidities	2	3	2	2, 3
<b>EPA 12:</b> Assessing and managing patients with complex chronic conditions that require other specialists or subspecialty care	2	3	3	3
<b>EPA 13:</b> Providing internal medicine consultations to other clinical and perioperative services	2	2, 3	3	2, 3
<b>EPA 14:</b> Assessing emergencies and participating or leading in resuscitating and managing unstable and critically ill patients	3	3	3	2, 3
<b>EPA 15:</b> Performing the procedures of internal medicine	2	2	2	2
<b>EPA 16:</b> Identifying and addressing any need for quality improvement to increase capacity in decision making in any clinical setting	2, 3	2, 3	2, 3	2, 3
<b>EPA 17:</b> Discussing serious and/or complex aspects of care with patients, families, and caregivers, as well as with members of the interdisciplinary team	2	2, 3	3	2, 3
<b>EPA 18:</b> Providing palliative care when needed and caring for patients at the end of their life	3	2	3	2, 3
<b>EPA 19:</b> Implementing health promotion strategies in patients with or at risk for disease and performing behavioral counseling with patients	2, 3	1, 2	2	2
<b>EPA 20:</b> Supervising junior learners in clinical settings	3	3	3	3
<b>EPA 21:</b> Managing an inpatient medical service as a team member or multidisciplinary team leader	3	3	3	3
<b>EPA 22:</b> Providing continuity of care under any clinical condition	2	3	3	2, 3
<b>EPA 23:</b> Assessing and managing patients with uncertain diagnoses and/or treatments	1	1	1, 2	1,2
<b>EPA 24:</b> Providing consultations to off-site healthcare providers	3	3	3	2, 3
<b>EPA 25:</b> Initiating and facilitating transfers of care according to healthcare system protocols	2	3	2, 3	2, 3
<b>EPA 26:</b> Working with other physicians and healthcare professionals to develop collaborative patient care plans	3	3	3	3
<b>EPA 27:</b> Identifying learning needs in clinical practice and addressing them with a personal learning plan	1, 2	1	1, 3	1
<b>EPA 28:</b> Developing and implementing a management plan based on review of outcome data for ambulatory patient population	2	2, 3	2, 3	2



different results between participant groups. EPA items 4 and 5 were rated for end-stage 1 by all groups except for the internal medicine residents who rated it as stage 2. The residency program directors rated EPA items 8 and 18 as appropriate for end-stage 3, while the others rated it for end-stage 2. EPA item 9 was rated for end-stage 1 by the Indonesian Board of Internal Medicine professionals, while the others rated it for end-stage 2 or 3. The other EPA items showed similar end-educational stage results across groups.

## DISCUSSION

This is the first study in Indonesia to identify and analyze internal medicine resident activities as EPAs. The stakeholders of internal medicine residency programs from various universities and provinces in Indonesia identified activities as EPAs which had been adjusted to the existing curriculum in Indonesia. A literature review was conducted to identify the clinical activities of residents in internal medicine programs which could be included as EPAs. Several medical organizations have also conducted literature reviews to identify activities which could be implemented into the EPAs. For example, RCPS collected EPA items through a literature review and group review in the early stages of their research.<sup>3</sup> UCSF also conducted a literature review to obtain 30 EPA items which were then further processed using the Delphi method.<sup>5</sup> Finally, AAIM performed a similar method for identifying EPAs in the early stages by conducting a literature review.<sup>4</sup>

Based on these examples, a thorough literature review appears to be a typical practice when developing criteria for EPAs, as well as obtaining expert opinions from educational professionals and clinical practitioners regarding essential activities as an internist.<sup>5,7</sup> A literature review is typically conducted by more than one researcher. RCPS conducted a peer-reviewed literature review, while UCSF appointed three clinical education and educational researchers to conduct a literature review.<sup>3,5</sup> The literature review in this study was carried out by the authors, who were either non-internal medicine education experts or internal medicine practitioners. Therefore, the literature review conducted in this study was similar to previous studies which had

successfully established criterion for their EPAs. However, their EPAs had been previously tested via valid research methods, where ours had not yet been validated.

In addition to the elimination of duplicates, the literature review also excluded EPA items which were considered incompatible with EPA attributes specified by Cate et al.<sup>1</sup> EPA items mentioning “professional behavior” and “participation in an academic project” (e.g., research, quality improvement, and education) were not included in our EPA design due to them not being specific enough on the actual professional activities involved. In addition, “demonstrating professional behavior” did not meet the ideal EPA 5 attribute (i.e., can be implemented independently) and also in contrast to the study by Taylor et al. (i.e., describes the task and avoids adjectives or adverbs that refer to proficiency).<sup>3</sup> “Participating in an academic project” did not meet the ideal EPA 7 attribute (i.e., can be observed and rated).

After the literature review, we facilitated an expert discussion, considered as a group consensus method. Another name for this expert discussion is the nominal group technique (NGT).<sup>7</sup> Traditionally, NGT has stages such as silent generation, “round-robin,” clarification, ranking, discussion, and re-ranking. In practice, herein, silent generation and “round-robin” were replaced by the literature review to generate ideas. The results of the expert discussion in this study were not re-ranked, but were directly presented to the educational experts to obtain their responses, similar to the RCPS study.<sup>3</sup> We recruited 10 experts, which met the recommended number of participants outlined by Humphrey et al. of 5–12 experts.<sup>7,8</sup> The experts who participated in this discussion had prior knowledge of EPAs and internal medicine residency programs. Therefore, the consensus of these experts confirmed the content validity of the proposed EPAs.

All EPA items which were accepted by 100% of the experts, including EPAs 1, 2, 3, 4, 13, 14, and 15 (**Supplementary Table S2**), were obtained from previous studies conducted by RCPS. These EPA items were considered important by the experts because most of

them are basic skills which each resident must master, such as patient history taking, physical examination, and managing emergencies. The EPA items which were accepted by 90% and 80% of the experts, including EPAs 5, 6, 7, 8, 9, 10, 11, 12, 19, 20, 22, 23, and 27 (**Supplementary Table S2**), are indeed found in daily clinical practice, such as consulting specialists and other health professionals, synthesizing recommendations, integrating these into a care plan, and referring, when appropriate, to other specialty care (i.e., EPA 6).

EPAs 16, 17, 24, 25, and 28 (**Supplementary Table S2**) were accepted by only 70% of the experts but were recommended to be accepted in the expert qualitative comments. These EPA items are rarely undertaken by residents in day-to-day clinical practice. However, these activities were accepted as EPA items as they could be carried out by residents of internal medicine specialist education programs based on the experts' positive comments; in addition, they were considered eligible according to the ideal EPA attributes of Cate et al. EPAs 21, 26, and 32 (**Supplementary Table S2**) were accepted by only 60% of the experts, although these EPAs were accepted in the final EPA design. "Supervising junior students in the clinical unit" (i.e., EPA 21) was accepted by only 60% of the expert discussion members due to a shift in supervision from being carried out by senior students to doctors in charge or supervisor since the era of Joint Committee International (JCI) accreditation. However, in the comments, some of the experts stated that these items were eligible to be accepted as EPAs. EPAs 26 and 32 were only accepted by 60% of the experts (**Supplementary Table S2**). In contrast to EPA 21, these activities were considered non-eligible as EPAs by qualitative comments, because "initiating and facilitating transfers of care according to healthcare system protocols" and "developing and implementing management plans based on the review of data for the outpatient population" are not typically undertaken by residents of internal medicine programs in day-to-day clinical practice, but rather by the nurses and hospital management. However, as EPA 21 had been accepted through

qualitative comments, all clinical activities agreed upon by 60% of the experts were accepted.

EPAs 18, 29, 30, and 31 were accepted by only 50% of the experts. EPA 18 was suggested for exclusion, as it had already been addressed by another EPA item. EPAs 29, 30, and 31 were related to the role of a doctor (versus a resident), according to the Danish Health and Medicines Authority 2013, namely, as a medical expert, communicator, collaborator, manager, health advocate, scholar, and professional.<sup>14</sup> EPA 29 was included in the manager role, and EPA 30 reflected the roles of communicator, collaborator, and manager, whereas EPA 31 expressed the role of communicator. Furthermore, the three activities are not routinely performed as part of daily clinical practice. For example, it is rare for a doctor in Indonesia to provide telephone services to outpatients on an emergency basis, to serve non-native-speaking patients, or to manage resources at the system level.

#### **Delphi Method**

Rowe et al. provided the criteria for participants in the Delphi method, in which they must have appropriate knowledge, be heterogeneous, and within 5 to 20 people, which was implemented when choosing the participants in this study.<sup>9</sup> Our study extracted the activities from established EPAs in other countries, validated by expert discussion and determined by the stakeholders in Indonesia. In the second round, 26 EPA items evaluated by Delphi round 1 participants were adjusted to 28 EPA items. Two EPA items which previously received a CVI of <80% increased to 97.1% for EPA 26 and 100% for EPA 27. This change may have occurred after participants considered the results of Delphi round 1 which had already been released, as similar shown in the research by Taylor et al. showed similar changes.<sup>3</sup>

Although all of the EPA items were finally approved, this research provided some interesting insights. In this study, a high CVI (100%) was predominantly found in EPA items containing elements of acute, serious, and unstable medical conditions, as well as perioperative consultation. This was in contrast to the results of the study by Hauer et al., which identified a low CVI for perioperative consultations and resuscitation

(64.3% and 60.7%, respectively).<sup>5</sup> This suggests that the contextual differences between countries may produce differences in the EPAs approved due to culturally different expectations in clinical practices and competency standards. Therefore, it is best for the residency programs in each country to determine their own EPAs. Most of the participants considered clinical activities as more important in acute, chronic, and complex medical conditions, emergency departments, and internal medicine procedures (CVI 98.2%) than those related to outpatient care (85.2%). This may be due to the first group of activities requiring more complex skills, full concentration, and a rapid response; they are often quite challenging in daily case management.

Several EPA items had a small effect size across groups (some were 0), which were EPA items 3, 4, 5, 8, and 11 (**Table 1**). These items were related to acute setting management, suggesting agreement in the importance of acute care setting competency as components of EPAs, as this competency would be important under any circumstances, from an acting medical doctor to an internal medicine resident. Interestingly, the residency program directors and the residents agreed on most of the EPA items, where 21 out of the 28 EPA items had a small effect size. This shows agreement on which competencies were important for daily clinical practice from those directly involved in the residency programs. The residency program directors, the internal medicine specialists, and the residents had similar evaluations regarding basic clinical skills (i.e., EPA items 1–5) and learning improvements, as these components are at the core of the foundations of study. These population groups had similar results on items regarding complex case management, multidisciplinary management, and patient referral. These similarities may be related to the program location, as well as the referral procedure in our country, as the main academic hospitals for residencies in Indonesia are generally tertiary hospitals, and even a national referral hospital.

Between the Board of Internal Medicine professionals and the residency program directors, only one EPA item showed a large effect

size (i.e., EPA item 13), regarding consultation with other clinical services and perioperative consultations, on which the residency program directors placed more importance. The differing opinions may be related to the different settings in which these two groups practice. For example, hospitals that received higher referrals may require more clinical service collaboration and consultation, so those familiar with this environment would rate this activity as more important. However, the Indonesian Board of Internal Medicine professionals and the internal medicine specialists had four EPA items which showed large effect size, categorized as basic clinical skills (i.e., EPA items 1 and 2) and multidisciplinary approaches (i.e., EPA items 21 and 26). The difference in opinion regarding the multidisciplinary approach may be related to the different backgrounds of a subspecialist and a specialist, in which clinical practitioners who are mostly internal medicine specialists may require more knowledge and skills in managing patients with complex chronic conditions and conditions requiring combined care, compared to the Board of Internal Medicine professionals who typically have subspecialty backgrounds. This might also explain the large effect size for EPA item 19. The differences in opinion regarding basic clinical skills may be related to the participants' current professional work. An internal medicine specialist, being a full-time clinician, handles a wide variety of cases and gains clinical knowledge daily; therefore, he may rate these EPA items as important, but not as important as an Indonesian Board of Internal Medicine professional, who addresses the academic curriculum directly as part of their current professional responsibilities.

The residency program directors, the internal medicine specialists, and the residents typically had similar ratings for almost all EPA items, with the exception of EPA item 15 on internal medicine procedures, which could be related to the different experiences among the groups, where an internal medicine resident, who has far less experience and knowledge regarding procedures in internal medicine, may rate this aspect higher, while a residency program director with far more experience may be more familiar

with prioritizing important procedures in daily clinical practice. Surprisingly, the supervision of junior students in a clinical unit had a large size effect between the internal medicine specialists and the Board of Internal Medicine professionals (0.95; mean score, 4.93 vs. 4.55). This may have been due to changes in the education system after the Joint Commission International (JCI) accreditation period in most teaching hospitals in Indonesia, which supports the appointment of an academic medical staff member as supervisor in a clinical unit so that the supervision of each student is the responsibility of those staff members, not the senior students.<sup>9</sup>

This study also showed a decrease in variance in the second round of the Delphi procedure. This may be because in round 1, the informants were not familiar with the EPA items. In round 2, and after seeing the results of round 1, the participants may have been more convinced of the score they had initially given, so they may have increased it further, if possible. This was evidenced by the CVIs reaching 100% in EPA items 27 and 28. The significant decrease in mean variance between the study program directors and the study program participants indicated that these two groups agreed on the importance of the 28 EPA items. These two groups comprised those most likely to encounter daily EPA practices, as compared to the Board of Internal Medicine professionals and the internal medicine specialists. Similar findings were also found in the study of Hauer et al, who found a decrease in the variance from Delphi round 1 to round 2.<sup>5</sup> This decrease in variance indicates an increase in agreement due to the smaller variations in the rank scores given.

The end educational stage attributed to each EPA item could significantly determine the developmental progress of students. As Taylor et al. showed at RCPS, each EPA item was assigned to end-stages 1–4 so that the achievement of a student would be observed, estimated, evaluated, and monitored.<sup>3</sup> In this study, most of the EPA items were assigned to the end of educational stages 2 or 3. Differences in opinion among the groups were found in several EPA items. The internal medicine residents rated EPA items 4 and 5 as being in end-stage 2, while the

others conferred these activities in end-stage 1. EPA items 4 and 5 were related to diagnosis and initial management in acute care settings. The difference in experience levels may be attributed to this disagreement, as residents may think they need more time to prepare for these competencies, while others with specialty and subspecialty backgrounds may believe that acute care settings should be learned and entrusted as early as in end-stage 1.

The residency program directors had different opinions on EPA items 8 and 18. In terms of EPA item 8 on targeted therapy and the multidisciplinary approach in acute care settings, the residency program directors, as well as the internal medicine specialists, indicated they should be assigned in end-stage 3, while others suggested them to be put on end-stage 2. The residency program directors, who developed the curriculum for these students, may feel that end-stage 3, at which point residents have passed through most of their rotations, may be more suitable for a multidisciplinary approach, as residents' clinical skills and judgements would be more refined, especially regarding acute and unstable cases. The Indonesian Board of Internal Medicine professionals assigned EPA item 9 to end-stage 1, while the others assigned it to end-stage 2 or 3. The Board of Internal Medicine professionals may have believed that comprehensive multidisciplinary care with other disciplines and the patient's family should be initiated from the first end-stage. The Board of Internal Medicine professionals may view this competency as a basic competency for a medical doctor, while the others may feel that sufficient knowledge should first be met for appropriate comprehensive care.

Overall, the participants suggested that end-stage 1 residents should be entrusted and evaluated based on their basic clinical skills (e.g., history taking and physical examination) and basic internal medicine procedures, management in acute care settings, and identifying their learning needs for future improvements. During end-stage 2, they should be allowed to consult with specialists and synthesize recommendations, formulate discharge plans based on obtained data, manage the transfer of care between healthcare

systems, and complete health promotion and behavioral consultations with patients. During the final end-stage, residents should be entrusted to manage complex and atypical cases, both in acute and unstable settings and under chronic conditions, manage palliative care, entrusted in multidisciplinary care and becoming a leader in inpatient care, planning the continuity of care for patients, supervising junior residents, and identifying quality improvements in overall service and learning. These results are similar with those of RPCS, and in implementing these EPAs, it appeared that Indonesia could adopt the RCPS EPA design with some modifications.<sup>3</sup>

However, compared to the suggestions of Taylor et al., some items in our study were entrusted in earlier stages. Items entrusted in end-stage 2, such as specialist and other professional consultations, formulation of a discharge plan, and establishing patient goals of care, were entrusted during the foundation of the discipline stage. Items entrusted in stage 3, such as the management of complex chronic conditions, palliative care, and junior resident supervision, were entrusted during the core of the discipline stage. These differences reflect that the study participants and curriculum providers in Indonesia were more cautious in several competencies and may view these strong foundations as required competencies in end-stage 3 prior to being entrusted with such responsibilities as multidisciplinary care, junior resident supervision, and others.

### **Study Limitations**

The main limitation in this study is the Indonesian language and terminology used in the EPA items were sometimes difficult to understand by the experts and required further explanation from the authors. This may explain the reasons why some experts gave a low rating/score on an EPA item but made comments indicating acceptability for the same EPA item.

### **CONCLUSION**

Twenty-eight clinical activities were validated through a literature review, expert discussion, and two Delphi rounds as EPAs for internal medicine residency programs in

Indonesia. Implementation of these EPA items will require further discussion with the relevant stakeholders to determine appropriate year of training and expected competencies required for each EPA item.

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### CONFLICT OF INTEREST

The authors declare no conflicts of interest in this study.

### REFERENCES

1. Cate OT. A primer on entrustable professional activities. *Korean J Med Educ*. 2018;30(1):1–10.
2. El-Haddad C, Damodaran A, McNeil HP, Hu W. The ABCs of entrustable professional activities: an overview of ‘entrustable professional activities’ in medical education. *Intern Med J*. 2016;46(9):1006–10.
3. Taylor DR, Park YS, Smith CA, Karpinski J, Coke W, Tekian A. Creating Entrustable Professional Activities to Assess Internal Medicine Residents in Training: A Mixed-Methods Approach. *Ann Intern Med*. 2018;168(10):724–9.
4. Caverzagie KJ, Cooney TG, Hemmer PA, Berkowitz L. The development of entrustable professional activities for internal medicine residency training: a report from the Education Redesign Committee of the Alliance for Academic Internal Medicine. *Acad Med J Assoc Am Med Coll*. 2015;90(4):479–84.
5. Hauer KE, Kohlwes J, Cornett P, et al. Identifying Entrustable Professional Activities in Internal Medicine Training. *J Grad Med Educ* [Internet]. 2013 Mar [cited 2021 Feb 20];5(1):54–9. Available from: [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3613318/efim\\_eu\\_curriculum\\_1.pdf](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3613318/efim_eu_curriculum_1.pdf) [Internet]. [cited 2021 Feb 20]. Available from: [https://efim.org/system/files/downloads/efim\\_eu\\_curriculum\\_1.pdf](https://efim.org/system/files/downloads/efim_eu_curriculum_1.pdf)
6. Humphrey-Murto S, Varpio L, Gonsalves C, Wood TJ. Using consensus group methods such as Delphi and Nominal Group in medical education research. *Med Teach*. 2017;39(1):14–9.
7. McMillan SS, King M, Tully MP. How to use the nominal group and Delphi techniques. *Int J Clin Pharm*. 2016;38(3):655–62.
8. Rowe G, Wright G. Expert Opinions in Forecasting: The Role of the Delphi Technique. In: Armstrong JS, editor. *Principles of Forecasting: A Handbook for Researchers and Practitioners* [Internet]. Boston, MA: Springer US; 2001 [cited 2021 Feb 20]. p. 125–44. (International Series in Operations Research & Management Science). Available from: [https://doi.org/10.1007/978-0-306-47630-3\\_7](https://doi.org/10.1007/978-0-306-47630-3_7)
9. JCI Accreditation Standards for Hospitals, 7th Edition [Internet]. Joint Commission International. [cited 2021 Feb 20]. Available from: <https://store.jointcommissioninternational.org/jci-accreditation-standards-for-hospitals-7th-edition/>

## SUPPLEMENTARY TABLES

Supplementary Table 1. The Translation of EPA by Hauer et al into Indonesian Language

Original EPA by Hauer et al	Translation into Indonesian Language	Re-translation into English Language
Evaluate and manage a new problem in a continuity ambulatory patient requiring coordination of care between providers and across settings	Mengevaluasi dan mengelola masalah baru secara berkesinambungan pada pasien rawat jalan yang membutuhkan koordinasi perawatan antara penyedia layanan perawatan dan berbagai unit keperawatan.	Evaluate and manage new medical condition in ambulatory patient and conduct care coordination with other health care provider across various unit care.
Admit and manage a medical inpatient with a new acute problem on a medical floor	Menerima dan mengelola pasien rawat inap medis dengan masalah akut baru di unit layanan perawatan medis	Admit and manage new acutely ill patient in service care unit.
Provide medical consultation for patients receiving nonmedical services	Menyediakan konsultasi medis bagi pasien-pasien yang menerima perawatan non-medis.	Provide medical consultation for patient receiving non-medical care
Admit and manage a medical inpatient with an acute exacerbation of a chronic problem on a medical floor	Menerima dan mengelola pasien rawat inap medis dengan eksaserbasi akut dari masalah kronik di unit layanan perawatan medis / lantai medis	Admit and manage inpatient with acute exacerbation from chronic medical condition at medical service care unit/ medical floor
Discuss serious news with a patient and/or family (bad news, end-of-life care planning)	Memimpin pertemuan keluarga untuk membahas berita serius atau sensitif dengan pasien dan/atau keluarga dan penyedia layanan kesehatan lainnya	Lead family meeting to discuss serious or sensitive news with patient and/or patients' family and other health care provider
Lead a family meeting to discuss serious or sensitive news with patient and/or family and other health providers	Membina pengertian dengan para pasien, keluarganya dan anggota-anggota tim multidisiplin ilmu.	Develop understanding with patients, family, and multidiscipline team members
Perform initial H&P, develop problem list, and plan for new ambulatory patient in continuity practice	Melakukan anamnesis dan pemeriksaan fisik awal, mengembangkan daftar masalah dan rencana untuk pasien rawat jalan baru dalam praktek yang berkesinambungan.	Conduct history taking and early physical examination, develop problem lists and plan for new ambulatory patient in continuity practice
Provide continuity care, conducting interval visits, for primary care patients with multiple chronic conditions	Menyediakan perawatan berkesinambungan, melakukan kunjungan berkala bagi pasien-pasien layanan kesehatan primer.	Provide continuity care and conduct periodic visit for primary health care patient
Develop and implement a safe discharge plan for a patient from the acute care setting	Merencanakan dan menerapkan rencana pemulangan pasien yang aman di unit perawatan akut	Plan and implement safety patient discharge plan in acute care unit
Triage medically ill patients to an appropriate level of care	Melakukan triase bagi pasien-pasien yang secara medis sakit dan merujuk mereka ke tingkat layanan perawatan yang sesuai.	Conduct patient triage for medically ill patients and refer them to appropriate level of care
Provide initial management and contribute to postoperative care for patients presenting with surgical problems	Menyediakan penanganan awal dan berkontribusi dalam perawatan pascaoperasi untuk pasien-pasien yang menunjukkan masalah bedah.	Provide early management and contribute in postoperative care for patients with surgical problem
Access medical information to provide evidence-based care for adult patients	Mengakses informasi medis untuk menyediakan perawatan berbasis bukti	Access medical information for evidence based practice
Identify and manage acute, emergent problems	Mengidentifikasi dan menangani masalah-masalah gawat	Identify and manage emergency problems
Provide urgent and emergent cross-coverage care to medicine inpatients	Menyediakan perawatan kegawatan multidisiplin ilmu bagi pasien rawat inap medis	Provide multidiscipline emergency care for medical inpatient
Lead a team in managing multiple inpatients	Lead a team in managing multiple inpatients	Lead team in managing multiple inpatients
Recognize and diagnose common non-internal medicine (surgical, neurological, dermatologic, etc) problems and appropriately refer to subspecialty care	Mengenali dan mendiagnosis masalah-masalah umum non-penyakit dalam (bedah, neurologis, dermatologis, dll) dan merujuk ke perawatan subspecialis secara tepat.	Recognize and diagnose general non-internal medicine problems (surgical, neurological, dermatological, etc) and refer to appropriate subspecialists)

**Supplementary Table 1. The Translation of EPA by Hauer et al into Indonesian Language**

Original EPA by Hauer et al	Translation into Indonesian Language	Re-translation into English Language
Diagnose conditions for and co-manage patients with complex problems needing subspecialty care (inpatient or outpatient) Manage information and knowledge for personal learning to improve care delivery and to educate others (journal club, etc)	Mendiagnosis dan menangani bersama pasien-pasien dengan kondisi kompleks yang memerlukan perawatan spesialis lainnya (rawat inap atau rawat jalan). Mengelola informasi dan pengetahuan untuk pembelajaran pribadi guna meningkatkan pemberian layanan perawatan dan melakukan edukasi bagi pihak lain (klub jurnal, dll).	Diagnose and co-manage patients with complex condition requiring other specialty care (inpatient or outpatient) Organize and maintain information and knowledge through medical practice to increase personal self-development when providing treatments and conducting education for others (club journal, etc)
Institute palliative care appropriately in collaboration with palliative care specialists Perform behavioral counseling with a patient Admit and manage a medical ICU patient Identify and address a quality improvement need in a clinical setting	Mendirikan layanan perawatan paliatif secara tepat bekerja sama dengan para spesialis perawatan paliatif. Melakukan konseling perilaku dengan pasien. Menerima dan mengelola pasien medis ICU. Mengidentifikasi dan mengatasi masalah perbaikan kualitas yang diperlukan pada suatu situasi klinis.	Establish palliative care appropriately and work together with palliative care specialist Conduct behavior counselling with patient Admit and manage medical ICU patient Identify and manage quality improvement problems required in a clinical situation.
Provide telephone management of an acute problem for an ambulatory patient Provide care to an inpatient or outpatient non-English-speaking patient, using appropriate translator services Develop and implement an action plan based on review of performance data for one's ambulatory patient panel	Menyediakan pengelolaan layanan telepon untuk masalah akut bagi pasien rawat jalan. Menyediakan perawatan bagi pasien rawat inap atau rawat jalan yang tidak berbahasa Inggris, menggunakan layanan penerjemah yang tepat. Mengembangkan dan menerapkan rencana kerja berdasarkan kajian atas data kinerja untuk panel pasien rawat jalan.	Provide telephone management care for ambulatory patient with acute problem Provide treatment for non-English speakers in inpatient or outpatient setting with appropriate translation services Develop and implement working plan according to performance data study for panel ambulatory patients
Provide inpatient and outpatient care for patients with challenges in access to care that appropriately address those challenges	Menyediakan layanan perawatan rawat inap dan rawat jalan bagi pasien-pasien yang mempunyai tantangan dalam hal akses perawatan serta mengatasi tantangan-tantangan tersebut dengan tepat.	Provide inpatient and ambulatory service for patients with access difficulty to obtain appropriate health care and solve the challenge appropriately
Participate in and lead an inpatient cardiopulmonary resuscitation	Berpartisipasi dan memimpin resusitasi jantung paru bagi pasien rawat inap.	Participate and lead cardiopulmonary resuscitation for inpatient
Perform common procedures in internal medicine (LP, thoracentesis, central line, arthrocentesis)	Melakukan prosedur umum dalam bidang ilmu penyakit dalam (pungsi lumbal (LP / lumbal puncture), torakosentesis, pemasangan kateter vena sentral, aspirasi sendi / artrosentesis.	Conduct general procedures in internal medicine (lumbal puncture, thoracocentesis, central vein catheterization, joint aspiration).
Conduct or participate in a scholarly project (research, QI, education, other)	Melakukan atau berpartisipasi dalam proyek akademik (riset, perbaikan kualitas (QI / quality improvement), edukasi, lainnya	Conduct or participate in academic project (i.e: degree or diploma, quality improvement, health promotion, etc)



**Supplementary Table 2. List of Accepted EPA from Experts' Discussion**

Entrustable Professional Activities (EPA) Item	% Mean score $\geq 4,07$	Commentary from Experts
<b>Accepted EPAs</b>		
<b>EPA 1:</b> Performing histories and physical examinations and documenting and presenting findings across clinical settings for initial and subsequent care	100%	Eligible
<b>EPA 2:</b> Identifying and assessing unstable patients, providing initial management, and obtaining assistance	100%	Eligible
<b>EPA 3:</b> Performing the basic procedures of internal medicine	100%	Eligible
<b>EPA 4:</b> Assessing the degree of severity, diagnosing, and providing initial management for patients with common acute medical presentations in acute care settings	100%	Eligible
<b>EPA 5:</b> Managing patients admitted to acute care settings with common medical problems and advancing their care plans	90%	Eligible
<b>EPA 6:</b> Consulting with specialists and other health professionals, synthesizing recommendations, integrating these into the care plan, and referring when appropriate to other specialty care	80%	Eligible
<b>EPA 7:</b> Formulating, communicating, and implementing discharge plans for patients with common medical conditions from acute care settings	80%	Eligible
<b>EPA 8:</b> Assessing unstable patients and providing targeted treatments and consulting, as needed; providing emergency multidisciplinary care to medical inpatients	80%	Eligible
<b>EPA 9:</b> Discussing and establishing patient goals of care with family and other health providers	80%	Eligible
<b>EPA 10:</b> Identifying personal learning needs while caring for patient needs and accessing medical information to provide evidence-based care to address those needs in developing the practice of life-long learning	90%	Eligible
<b>EPA 11:</b> Assessing, diagnosing, and managing patients with complex or atypical acute medical presentations, with complex medical conditions and/or with comorbidities	90%	Eligible
<b>EPA 12:</b> Assessing and managing patients with complex chronic conditions that require other specialists or subspecialty care	90%	Eligible
<b>EPA 13:</b> Providing internal medicine consultations to other clinical and perioperative services	100%	Eligible
<b>EPA 14:</b> Assessing emergency and participating or leading in resuscitating and managing unstable and critically ill patients	100%	Eligible
<b>EPA 15:</b> Performing the procedures of internal medicine	100%	Eligible
<b>EPA 16:</b> Identifying and addressing any need for quality improvement to increase capacity in decision making in any clinical setting	70%	Ineligible
<b>EPA 17:</b> Discussing serious and/or complex aspects of care with patients, families, and caregivers, as well as with members of the interdisciplinary team	70%	Eligible
<b>EPA 19:</b> Providing palliative care when needed and caring for patients at the end of their life	80%	Eligible
<b>EPA 20:</b> Implementing health promotion strategies in patients with or at risk for disease and performing behavioral counseling with patients	80%	Eligible
<b>EPA 21:</b> Supervising junior learners in the clinical setting	60%	Eligible
<b>EPA 22:</b> Managing an inpatient medical service as a team member or multidisciplinary team leader	90%	Eligible
<b>EPA 23:</b> Providing continuity of care under any clinical condition	80%	Eligible
<b>EPA 24:</b> Assessing and managing patients with uncertain diagnoses and/or treatments	70%	Ineligible
<b>EPA 25:</b> Providing consultations to off-site health care providers	70%	Eligible
<b>EPA 26:</b> Initiating and facilitating transfers of care according to healthcare system protocols	60%	Ineligible
<b>EPA 27:</b> Working with other physicians and healthcare professionals to develop collaborative patient care plans	80%	Eligible
<b>EPA 28:</b> Identifying learning needs in clinical practice and addressing them with a personal learning plan	70%	Eligible
<b>EPA 32:</b> Developing and implementing a management plan based on a review of outcome data for ambulatory patient population	60%	Ineligible
<b>Rejected EPA</b>		
<b>EPA 18:</b> Caring for patients who have experienced a patient safety incident (adverse event)	50%	Ineligible

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<b>EPA 29:</b> Identifying and analyzing system-level safety, quality, or resource stewardship concerns in health care delivery	50%	Ineligible
<b>EPA 30:</b> Provide telephone management for an ambulatory patient in an emergency.	50%	Ineligible
<b>EPA 31:</b> Providing care services for non-native speaker patients in inpatient or outpatient rooms using appropriate translation services.	50%	Ineligible

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