

## Brief report

## Impact of individualized learning plans on United States senior medical students advanced clinical rotations

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**Abstract**

The individualized learning plan (ILP) is a tool that promotes self-directed learning. The aim of this pilot study was to look at the perception of the ILPs in United States senior medical school students as a way to improve their learning experience during their advanced practice clerkship. We conducted a survey of graduating medical students that contained both quantitative and open-ended questions regarding the students' experiences with the ILP during their advanced practice clerkship from July 2014 to March 2016. We systematically identified and compiled themes among the qualitative responses. Responses from 294 out of 460 subjects were included for analysis (63.9%). Ninety students (30.6%) reported that the ILP was definitely reviewed at the midpoint and 88 (29.9%) at the final evaluation. One hundred sixty one students (54.8%) felt the ILP provided a framework for learning. One hundred sixty one students (61.6%) felt it was a useful tool in helping open a discussion between the student and faculty. The qualitative data was grouped by areas most mentioned and these areas of concern centered on lack of faculty knowledge about ILP, time to complete ILP, and uncertainty of appropriate goal setting. The majority of students perceive the ILP to be helpful. Our results suggest that active intervention is needed by dedicated and trained faculty to improve ILP utilization. It is recommended that faculty gives students examples of learning goals to create their own learning framework and encourages them to discuss and review the ILP.

**Keywords:** Clinical clerkship; Goals; Learning; Rotations; United States

There has been an increasing shift away from didactic learning to more self-directed learning in medical education. Self-directed learning is associated with better lifelong learning skills. Goal setting is a bridge between self-assessment and action lifelong learning, which allows medical students and residents to continue to grow during school, training and practice [1]. An individualized learning plan (ILP) is a personal learning 'contract' that a learner develops based on their own reflection and self-assessment of the goals they want to attain over a certain period of time. The use of ILPs in medical student clinical rotations has not been studied extensively. Shepa-

rd et al. [2] described the implementation of ILPs among fourth-year acting interns in pediatrics and internal medicine clerkships and found that ILPs helped the students to accomplish rotation goals. These goals were reviewed on a weekly basis by dedicated faculty, which may be unrealistic for school wide implementation. Because ILPs have become a requirement in United States pediatric residencies [3] and other residency programs may match this educational requisite, it is important to examine the use of the tool in this population to see if it enhances the learning experience. It is important to know if the ILP helped inform the learning of the medical students and assist with process improvement. It aimed at observing the impact of the ILP in United States senior medical students during their advanced clinical month.

This was a cross-sectional survey study of an educational intervention. The study was conducted from July 2014 to March

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2016 in McGovern Medical School, the University of Texas Health Science Center at Houston, Houston, Texas, USA where students begin their clinical rotations during their third year and in their senior year completed a required 4th year advanced practice clerkship (APC) that can be done in either pediatrics, internal medicine, family medicine, obstetrics/gynecology, emergency medicine, general surgery, psychiatry, or a subspecialty surgical field. During the two-year study period, every student was required to complete an ILP prior to starting their APC month. A convenience sample of 460 fourth-year medical students was surveyed about their experience with the ILP. The ILP tool available from Supplement 1 was adapted from the original tool described by previous literature [4,5]. Use of tools was permitted by original author. The basic framework for this tool is stimulating self-reflection in the learner as a bridge to create individualized goals that will help in the development of self-directing learning. The students were instructed to reflect on their own strengths and weaknesses in several attributes such as initiative, response to feedback, communication skills, time management, and others. They were then asked to rate themselves, using the Dreyfus Model, in their competency in the areas of patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and system-based practice [6]. The last section of the ILP asks the students to identify at least 3 learning goals for their rotation, then reflect, describe strategies on how to accomplish these goals, and then identify measurable outcomes. Faculty members in each discipline were requested to review ILP at the midpoint and the final evaluation of the rotation.

At the end of the academic year, the students completed a survey that was developed by the researchers and was used to obtain students perceptions on the utility of the ILP. The survey tool contained both quantitative and open-ended questions regarding their experiences with the ILP during their APC rotation, to what degree they discussed the ILP with the faculty at mid-point and final evaluations, to what degree they felt the tool was helpful as a framework to guide their learning and to what degree they felt the ILP was a useful tool to open discussion with the faculty. Responses were recorded on a 3-point Likert Scale (3 = yes, 2 = sort of, and 1 = no). The students were asked to list two advantages and two problems encountered when creating their ILP and give feedback on their experience with an ILP. The surveys were compiled and tallied for each discrete question and frequency tables were generated. We performed all statistical analyses using STATA software ver. 11.0 (Stata Co., College Station, TX, USA). The qualitative data was analyzed for recurring themes using a thematic framework analysis [7]. The research team acted as analysts and a

**Table 1.** Students use and perception of individualized learning plans during advanced practice clerkship month from July 2014 to March 2016 in McGovern Medical School, the University of Texas as Health Science Center at Houston, Houston, TX, USA

| Subspecialty (no. of students) | Did you discuss your ILP with your attending at your midpoint evaluation (%) |                       |                  | Did you discuss your ILP with your attending at your final evaluation (%) |                       |                  | Was the ILP helpful in providing a framework for learning? (%) |                       |                  | Was the ILP a useful tool in helping to open a discussion between student and the attending about learning goals (%) |                       |                  |
|--------------------------------|--|-----------------------|------------------|---|-----------------------|------------------|--|-----------------------|------------------|--|-----------------------|------------------|
|                                | Yes <sup>a)</sup>  | Sort of <sup>b)</sup> | No <sup>c)</sup> | Yes <sup>a)</sup>   | Sort of <sup>b)</sup> | No <sup>c)</sup> | Yes <sup>a)</sup>  | Sort of <sup>b)</sup> | No <sup>c)</sup> | Yes <sup>a)</sup>  | Sort of <sup>b)</sup> | No <sup>c)</sup> |
| Family medicine (17)           | 5 (29.4)   | 8 (47.0)              | 4 (23.6)         | 5 (29.4)  | 7 (41.2)              | 5 (29.4)         | 3 (17.6)   | 7 (41.2)              | 7 (41.2)         | 1 (5.9)  | 7 (41.2)              | 9 (52.9)         |
| Internal medicine (100)        | 33 (33.0)  | 25 (25.0)             | 42 (42.0)        | 29 (29.0)   | 41 (41.0)             | 30 (30.0)        | 16 (16.0)  | 42 (42.0)             | 42 (42.0)        | 25 (25.0)  | 31 (31.0)             | 44 (44.0)        |
| Obstetrics/gynecology (20)     | 5 (25.0)   | 6 (30.0)              | 9 (45.0)         | 4 (20.0)  | 7 (35.0)              | 9 (45.0)         | 1 (5.0)  | 8 (40.0)              | 11 (55.0)        | 4 (20.0)   | 4 (20.0)              | 12 (60.0)        |
| Pediatrics (49)                | 18 (36.7)  | 14 (28.6)             | 17 (34.7)        | 17 (34.7)   | 15 (32.7)             | 16 (32.7)        | 16 (32.7)  | 20 (40.8)             | 13 (26.5)        | 21 (42.9)  | 9 (18.4)              | 19 (38.8)        |
| Psychiatry (28)                | 15 (53.6)  | 4 (14.3)              | 9 (32.1)         | 15 (53.6)   | 4 (14.3)              | 9 (32.1)         | 8 (28.6)   | 10 (35.7)             | 10 (35.7)        | 10 (35.7)  | 5 (17.9)              | 13 (46.4)        |
| Emergency medicine (12)        | 2 (16.7)   | 3 (25.0)              | 7 (58.3)         | 2 (16.7)  | 1 (8.3)               | 9 (75.0)         | 2 (16.7)   | 3 (25.0)              | 7 (58.3)         | 2 (16.7)   | 3 (25)                | 7 (58.3)         |
| Subspecialty surgery (43)      | 8 (18.6)   | 15 (34.9)             | 20 (46.5)        | 13 (30.2)   | 12 (27.9)             | 18 (41.9)        | 8 (18.6)   | 12 (27.9)             | 23 (53.5)        | 9 (20.9)   | 11 (25.6)             | 23 (53.5)        |
| General surgery (25)           | 4 (16.0)   | 9 (36.0)              | 12 (48.0)        | 3 (12.0)  | 6 (24.0)              | 16 (64.0)        | 2 (8.0)  | 3 (12.0)              | 20 (80.0)        | 2 (8.0)  | 7 (28.0)              | 16 (64.0)        |
| Total (294)                    | 90 (30.6)  | 84 (28.6)             | 120 (40.8)       | 88 (29.9)   | 93 (32.0)             | 112 (38.1)       | 56 (19.0)  | 105 (35.7)            | 133 (45.2)       | 74 (25.2)  | 77 (26.2)             | 143 (48.6)       |

Values are presented as number (%).

ILP, individualized learning plan.

<sup>a)</sup>Reviewed the goals and discussed my progress; <sup>b)</sup>Reviewed but did not discuss in depth; <sup>c)</sup>Did not review.

coding framework was devised as a result of deliberations. This construction of thematic categories was done by the researchers working independently, and deliberating together on interpretations until agreement was reached.

### Ethical approval

The study was given exempt status by the institutional review board of the University of Texas Health Science Center at Houston, Houston, Texas, USA on December 1, 2015 (HSC-MS-15-0023).

Two-hundred and ninety-four surveys were completed out of 460 students (63.9%). The 90 students (30.6%) reported that the ILP was definitely reviewed at the midpoint and 88 (29.9%) at the final evaluation. One hundred sixty one students (54.8%) felt that the ILP did provide or 'sort of' provided a framework for learning throughout the month to varying degrees. One hundred sixty one students (61.6%) felt it was a useful tool in helping open a discussion between the student and faculty about learning goals. The APC that students report having definitely reviewed the ILP the most was psychiatry: 15 students out of 28 (53.6%) both at midpoint and final evaluation. It was reviewed the least on general surgery: 4 out of 25 (16.0%) at the midpoint and 3 out of 25 (12.0%) at the final evaluation (Table 1). Themes of the qualitative data centered on lack of faculty knowledge about ILP, time to complete ILP, and uncertainty of appropriate goal setting (Table 2). Data file is available from Supplement 2.

The results suggest that the ILP has the potential to help facilitate learning in the senior year clerkship rotations. More than half of all students felt the ILP was helpful or 'sort of' helpful in providing a framework for learning. There were a large number of responses across all specialties that fell into the 'sort of' category, which may indicate the potential of the ILP to improve learner perception. Qualitative themes suggest that the students needed more direction on appropriate goal setting and enough time to discuss the ILP with the faculty. These

results indicate the importance of faculty mentorship related to goal setting and some accountability to review the ILP. Since ILPs are a rather new educational tool, not all the faculty may be familiar with it and therefore not comfortable facilitating goal setting with the senior year medical students. Li et al. [4] have identified the need for robust faculty development for successful use of the ILP tool and the importance in faculty mentorship on how to achieve the learning goals [8]. Evaluating faculty knowledge and comfort with the ILP would be an important next step.

The time constraints that students reported could be addressed by the faculty blocking time at the beginning of the rotation to discuss the ILP. In the study by Shepard et al. [2], faculty mentors met weekly with the students and the frequency was cited as an important factor for helping the students accomplish more on the clinical rotation. Weekly student meetings would be logistically impossible at many large institutions. However, medical student engagement with their ILP could be increased by discussions at the midpoint evaluation with the attending and be used as an indicator of the student's progress towards attaining their learning goals by the end of the month. The ILP can be used as a part of their final evaluation as an assessment tool of the student's accomplishments. Additionally, modification of the ILP goal setting may need to occur for particular subspecialties. Our results suggest that the rotations that are traditionally more procedure based reviewed the ILP the least, i.e., subspecialty surgery, general surgery, and emergency medicine.

Because this is a retrospective survey, there is potential for recall bias from the medical students about the events that happened during their APC month. Our findings have numerous implications for future educational research specifically looking at faculty development in the use of ILP and its subsequent impact on learner perceptions.

In conclusion, it demonstrated that the ILP has the potential to be used with a large number of students in a variety of clinical settings to help shape learning. The ILP provides stu-

**Table 2.** Qualitative themes of individualized learning plans use during advanced practice clerkship month from July 2014 to March 2016 in McGovern Medical School, the University of Texas Health Science Center at Houston, Houston, TX, USA

| Themes  |  | Representative quotes                                     |  |
|---|--|---|--|
| Lack of faculty knowledge about ILP             | The faculty weren't very proactive about discussing them.<br>Didn't feel like a super useful use of time | Faculty don't care  | Attending never brought it up or wanted it         |
| Lake of time to complete ILP                    | Lack of time<br>Inability to complete some goals due to lack of opportunity                              | Little guidance<br>No formal discussion plan/time         | There is not much time to discuss ILPs each shift. |
| Learner uncertainty of appropriate goal setting | Not many guidelines on how to write one<br>Unclear how they would be used in our evaluation              | Unsure of areas to improve, done without prior experience | I had no idea what to put down.                    |

ILP, individualized learning plan.

dents with a tool for identifying and prioritizing lifelong learning skills necessary for success in their career. In order to improve engagement with the tool, faculty development needs to occur with all the APC clerkship directors about the ILP. Discussion needs to include the definition of an ILP, the importance of an ILP, and how to facilitate attainable goal setting for their students. Moreover, faculty needs dedicated time for discussion and review of this educational tool.

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### Conflict of interest

No potential conflict of interest relevant to this article was reported.

### Supplementary materials

Audio recording of the abstract.

Supplement 1. Individualized learning plans tool used in this study.

Supplement 2. Data files are available from: <https://doi.org/10.7910/DVN/EEYIAD>.

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