A curriculum to help hematology/oncology fellows succeed in research

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OBJECTIVE

Design a curriculum for adult hematology/oncology fellows that will help them transition from clinical to research studies.

BACKGROUND

Training to be an adult medical oncologist or hematologist is a long, involved process beginning with four years of medical school, followed by three years of residency, then one to two years of clinical subspecialty training. At the end of subspecialty clinical training, the trainee is expected to pursue a research project for one or more years. During the initial 8-9 year educational period, there is virtually no research training resulting in most clinicians arriving to the research part of their careers with no background. Yet, for trainees to obtain value from their research experiences, and just as importantly, for the research to provide value to the medical community, these trainees need to rapidly acquire an understanding of the research structure within which they will need to work. A number of programs have been developed to solve this problem. For example, the Clinical Effectiveness course at Harvard Medical School is a summer long course that can be expanded into a degree program to teach clinical epidemiology and trial design[1]. Alternatively, the annual workshop by the AACR and ASCO at Vail is a week-long intense workshop for teaching clinical trial design[2]. While these courses are excellent, only a limited number of people can participate. My goal was to design a focused program that would give fellows the basic tools to identify a mentor, think about a research project and navigate through some of the logistics involved. Thus, I am designing a curriculum in which clinical hematology/oncology fellows begin planning projects during their clinical training year(s) so that they have a plan and a research mentor as soon as their major clinical responsibilities are done.

METHOD

1. Interviewed fellows: currently, there are 23 fellows in the Yale hematology/oncology program, of whom 15 have completed their first year of fellowship. I interviewed 11 of the 15 fellows individually over the last year.
2. Based on the interviews and my observations, I proposed a curriculum consisting of milestones for the fellows as well as a lecture series for them to view during the first year.
3. I had feedback sessions with 10 of the second and third year fellows together to find weaknesses in the plan and explore other strategies that the fellows thought would be most valuable. The fellows noted several key issues:
   a. There is a great need for more formal methods of transitioning fellows into the research years.
   b. Currently, there is no easily accessible repository of information for fellows. For example, there is no online vault of faculty interests or information about prior fellow projects.
   c. Although potential mentors can be identified, it is often difficult to get them to put in the time and effort to help move a project forward.
   d. More access to the second and third year fellows by the first year fellows would be invaluable in choosing projects, mentors, etc.

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THE PLAN

Based on the above methods I developed the following plan:

1. A set of short lectures on very basic topics that will show fellows how to begin asking research questions and how to discuss them with potential mentors.
2. A series of milestones starting early in the first year of fellowship culminating in a short research proposal near the end of the first year.
3. Creation of a shared data vault for the fellows.

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PRACTICAL MINI-LECTURES

Within the fellowship, a lecture series already exists that covers the design of clinical trials. However, the practical information a fellow needs to discuss a research project with a potential mentor is difficult to find. To this end, I proposed a curriculum of short lectures (10-15 minutes each) to help fellows find the resources they need rather than to teach them how to do something in particular. These will be Powerpoint presentations with recorded voice-overs and will be stored in a shared file I will create that can be accessed by the fellows at any time. Some of the topics in these presentations are general while others are unique to Yale (e.g. the particular process of navigating a trial through approval by a Yale Institutional Review Board). The topics and brief summaries are below. I asked the fellows about each of these topics and all agreed these would provide valuable information for them.

1. Picking and joining a laboratory: what should you consider before talking with a laboratory mentor and what homework do you need to do before speaking to one?
2. Translational science: what is it and how do you do it?
3. Chart review-based studies: how is a chart review done and what resources do you need to make it valid?
4. Tissue-based studies: how do you get access to tumor tissue? What sort of studies can you do? Retrospective vs prospective designs?
5. Quality studies: what do these entail and how can you implement quality improvement ideas?
6. Educational studies: what resources are available?
7. Talking with statisticians: what information do they want from us?
8. The IRB process: where can you find the resources to write protocols and how to navigate your application through the IRB.
9. Logistics: how long does it take to do different types of projects?
10. Picking a mentor: what factors should you look at in choosing your mentor?

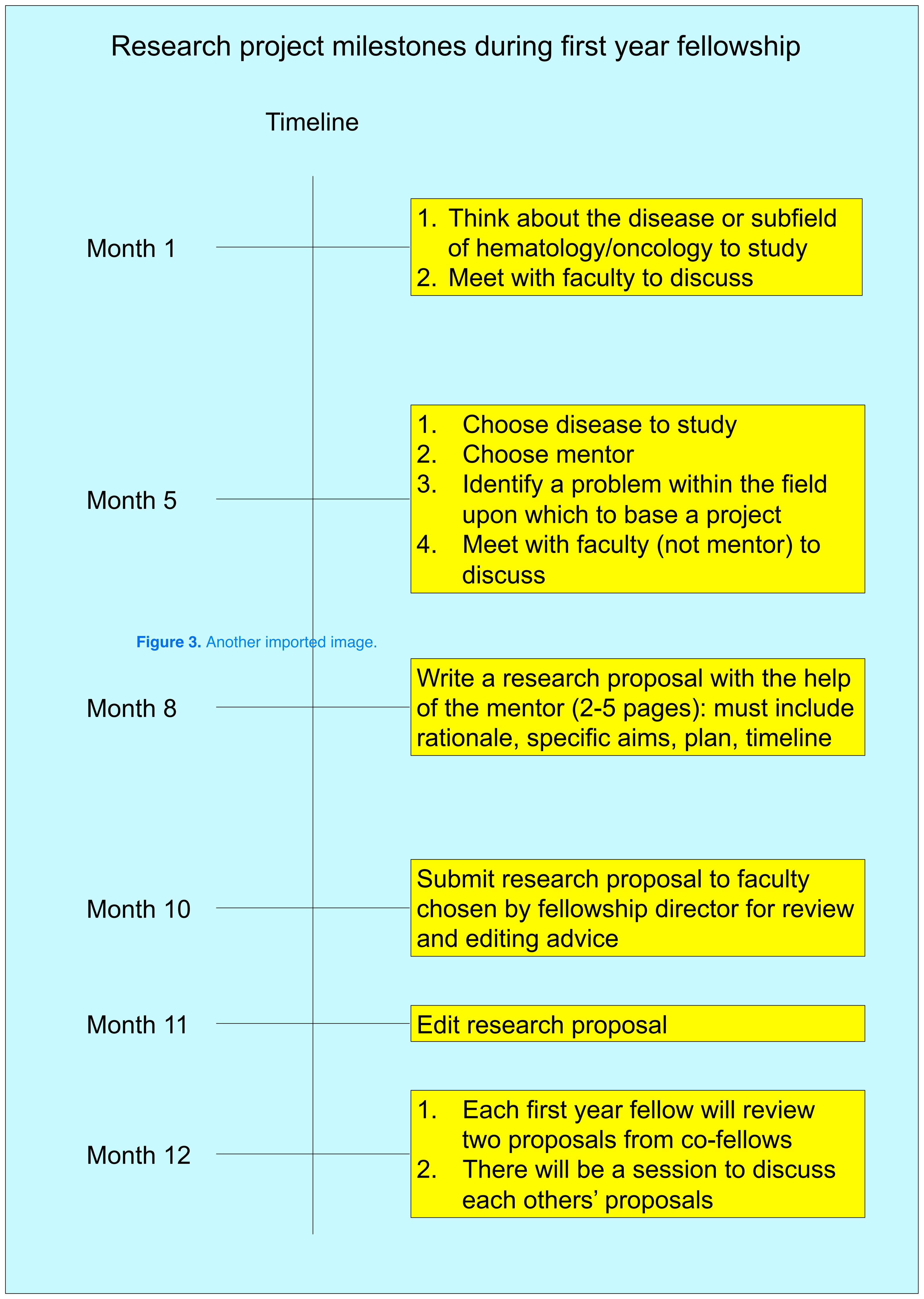

Figure 3. Another imported image.

HOW THE APPROACH WILL WORK

The goal of this project is to solve some of the problems that the fellows and I identified in making the transition from being pure clinicians to clinical, translational or basic researchers. In collaboration with the current second and third year hematology/oncology fellows, I have created the three-pronged approach described here. My intention for how this will work is as follows:

1. A formal set of milestones: having a formal set of milestones the fellows must complete at specific times during the first year will promote two separate goals. First, it will force fellows to have a plan when the time comes to pursue a research project. Second, it will allow fellows to discuss with mentors the progress they need to make. Furthermore, it will make it easier for the fellowship director to approach a mentor to discuss a fellow's progress.
2. Mini-lectures: ideally, these short lectures, which will be on the shared data vault will provide the fellows with enough basic information to acquire the resources they need to discuss projects with mentors and other scientists.
3. Shared data vault: within the shared data vault there will be a list of projects being done by current second and third year fellows accessible to the first year fellows. This will facilitate communication among the fellows and allow the first year fellows to get advice more easily from those closest to their experience.

OUTCOME MEASURES

The outcomes below will be measured both pre and post-implementation of the curriculum:

1. Percentage of fellows with a defined project at the start of second year fellowship.
2. Percentage of fellows who do not change mentors after first year fellowship.
3. Number of fellows' publications.
4. Number and type of fellows' grant funding.
5. Types of careers fellows pursue after fellowship (e.g. academic vs private practice, research track vs clinical educator track)
6. Though qualitative, I will discuss with future fellows their views of the mentorship and research process.

CONCLUSIONS

There is a clear need for better methods of transitioning clinicians in subspecialty training into researchers. In piloting this curriculum for the Yale hematology/oncology fellows, I hope to ease the transition both to improve the fellowship experience and to foster more researchers in the field.

REFERENCES

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