How to use Anki for pre-medical/medical students

RICHARD NGO [MED 2]

Disclaimer: I am not affiliated with Anki nor do I have an education degree, so I may not know what I am talking about.

Introduction:

As a pre-medical student, you may have heard of this program called Anki that many medical students use to study. During undergrad, I decided that if I got accepted into medical school it would make sense for me to learn how to use Anki before I was in medical school. As a result, I learned a lot of tips and tricks about how to use Anki effectively and developed a general strategy on how I use, both as a pre-medical student and as a medical student.

What is Anki?

Anki is a flashcard creation software. It was originally used forlearning languages but has application in many fields that require long term memorization such as medicine. As a result, many medical students have incorporated using Anki into studying strategies.

Why should you use Anki?

The main reason for using Anki is because it is effective in keeping information in your long-term memory. This is accomplished by two memory principles that Anki is based on: active recall and space repetition. In active recall, we are asked to use our brains and to 'actively' seek out the
information that was asked without hints. This can be done in the form of a question. A classical example of active recall is testing yourself with a front and back flashcard.
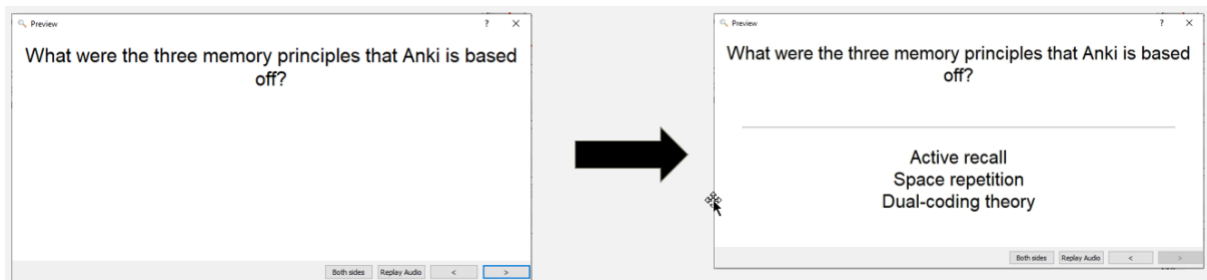
Spaced repetition involves the act of studying the material but spreading this studying throughout a time span. Many of you have heard of the forgetting curve that was established by Hermann Ebbinghaus. When you first learn the material, your brain can actively recall most or all of it easily, but as time progresses your retention of the material decreases (otherwise known as forgetting). Space repetition works against this decay by consistently looking at the material over and over. Over time, this results in less studying of the material and the spaced intervals become longer.

The Forgetting Curve
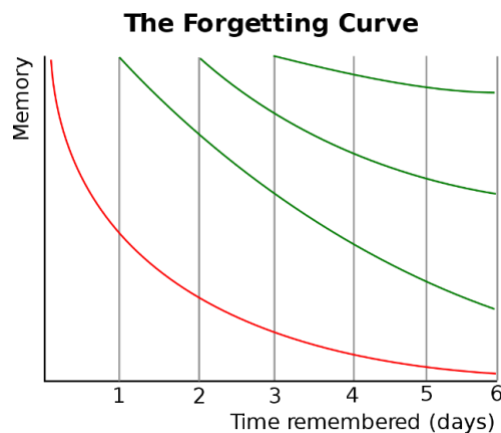
Anki uses active recall in the form of flashcards which allows you to test yourself and spaces out the cards based on how difficult you found retrieving the answer. In a 2015 study by Deng et al., they found that spaced retrieval practice using programs such as Anki correlated with higher USMLE scores. Overall, this makes Anki a very effective tool in long term memory consolidation and saves you time overall for studying. Asides from this, the other reasons for using Anki includes the app which means you can always study on the go and it is free.

Important Note:

An important thing to note when using Anki is that it should not be used for learning or for applying the material. You must learn the material first via lecture, textbook, video, etc. before you review the material using Anki. Once you have consolidated the material into your long-term memory using Anki, you should then use practice questions, exams, procedures, etc. in order to apply the material and create context. Anki is designed to conduct maintenance review efficiently and it should be part of your study tools instead of the only thing you use.

How do I use Anki?

The basics:
The general idea of Anki is that you are testing yourself with new flashcards that you or someone else has made (blue). Then the cards that you miss often will be shown to you in the form of review cards (green). The transitions from new to review card is known as learning the card which is denoted by red.


Suspending the card means you are taking this card out of the system described above. The suspended card will no longer appear in your deck as a new, learning, or review card, but it is still there and can be unsuspended in the future. Basically you are deleting the card temporarily when you suspend it.

The types of cards:

There are three Anki card types that I recommend getting familiar with. This includes basic front and back, cloze deletion, and imagine occlusion (requires an add-on which is explained further down). Learn how to make these flashcard types as they will be 90% of your card types you will encounter when using Anki decks from other people.

1. Front and back: Your classic flash card where there is a question in the front and an answer in the back. You need to answer the back correctly to get the card right.
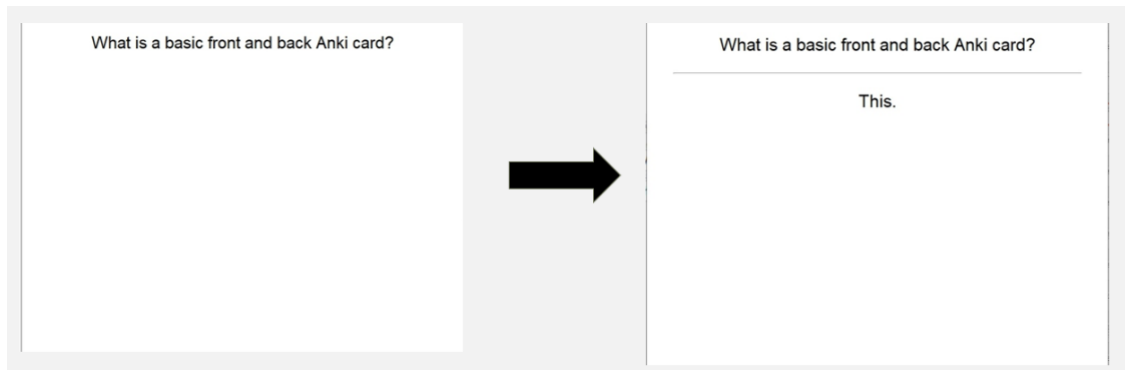
2. Cloze deletion: A sentence is shown to you, but it is missing the key word and you need to answer this word in order to get the card right.
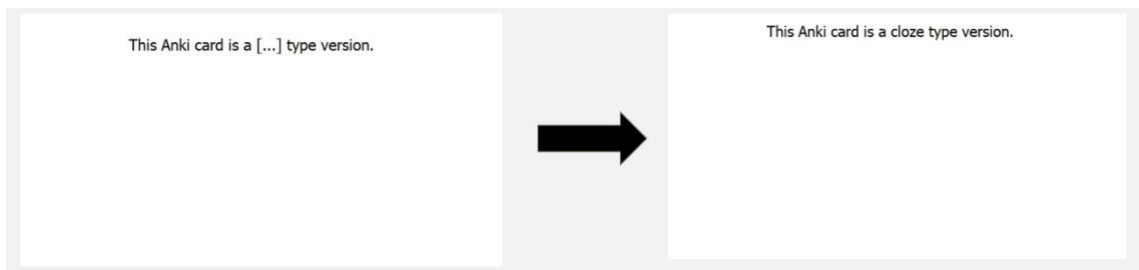
3. Image occlusion: An image or text is covered by a red box and you need to answer what is underneath this red box in order to get the card right.
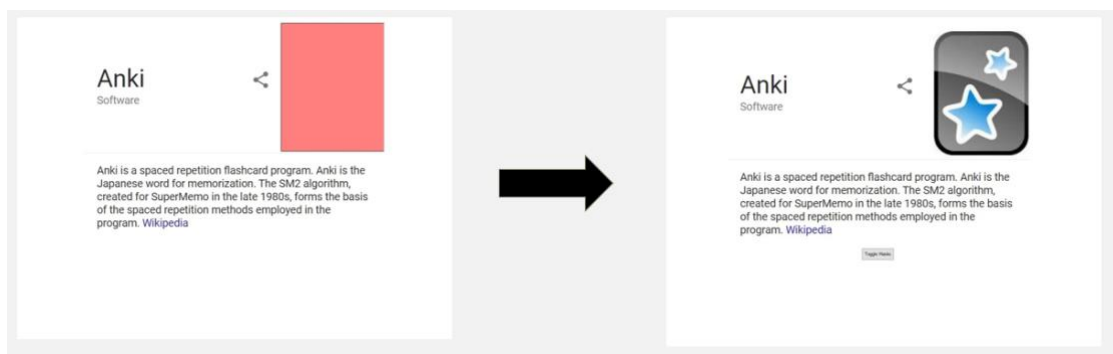
How do I make good flashcards?

Learning how to make good flash cards is something that will pay off for you and other people who use your cards. A couple key principles to note:

1. One or two sentences at the most. Large blocks of text will not be easy to remember in comparison to discrete facts. This also makes it easier to judge the Anki card e.g. you miss 2 out of the 6 points on your flashcard, do you hit easy or good for the Anki card? Missing one fact makes it easy to hit good or again for the card.

2. Try to include an image (evokes dual process encoding). This also helps explain abstract concepts more easily and makes your card look pretty.
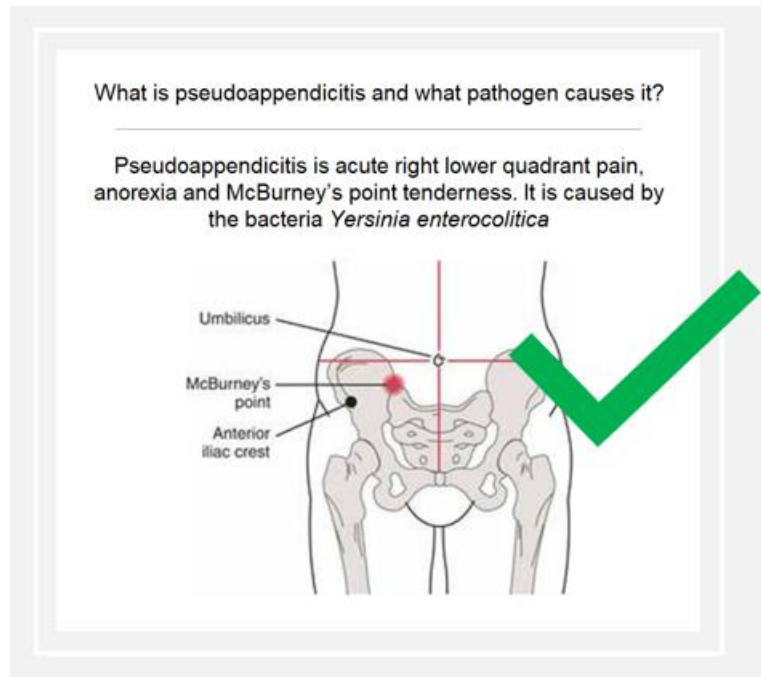
3. Try to include a mnemonic/acronym. But try not to use too many acronyms or mnemonics, only save them for the difficult stuff. You will want to use space repetition and active recall as the main method of remembering your information.

What is an Anki add on?

An Anki add-on can be thought of as an app that allows you to do extra features on Anki such as having more control over scheduling, better keyboard layout, new card types, etc.
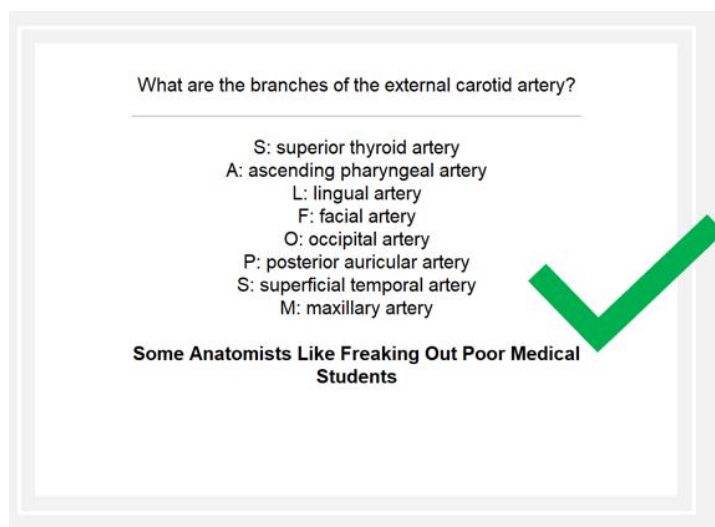
Some add-ons I recommend:

Image occlusion: allows you to make multiple cards quickly from an image. This is very useful for diagrams such as anatomy classes.

Frozen field: a snowflake icon will appear in the front and back fields. Clicking on this snowflake will make the text in that box stay the same as you make a new card. This saves time if you need to make repetitive cards with the same question or answer stem.

Speed focus mode: this add-on speeds up the process of learning and reviewing your Anki cards by automatically displaying the answer if you do not hit the spacebar button within the set time of 1 minute.

Awesome TTS (text to speech): If you run across a word that you cannot pronounce; you can highlight the world and Awesome TTS will use Google translate to pronounce it for you.

Remove line breaks: When copying from pdf to the Anki text box, often times the paragraphs can have line breaks which are a hassle to deal with it. This extension can take care of the line breaks using a command key.

Pop-up dictionary: When you a highlight a word, all the cards within the deck containing this word will show in the form of a pop-up dictionary. This helps create context when learning your Anki cards.

You can install these add-ons by:

4. Search up the name of the add-on + Anki on google.com e.g. "Speed Focus Mode Anki"
5. Scroll down to the bottom of the specific add-on page and copy the Download code.
6. Open Anki and click on Tools and then Add-ons
7. Click on 'Get add-on' and a pop-up will appear.
8. Paste the add-on number code into this box and click OK

How can I make flashcards faster?

9. Use hotkeys can speed up the process tremendously. Useful ones to know include Ctrl + N (make new card), Ctrl + Shift + C (cloze deletion), B (browse), etc.
10. Use cloze deletions and image occlusion for most of the cards you create. You can easily copy and paste a sentence and cloze delete a word or phrase or create multiple cards from an image much faster than typing an entire question and answer for a front and back.
11. Download a snippet tool that copies your screen captures onto your clipboard. You can then just hit Ctrl + V into Anki's field and the image will appear. I recommend Lightscreen.

12. Use remove line breaks add-on to quickly shift paragraphs. Sometimes when copying text from a pdf file there will often be line breaks in the Anki field when you paste it. This takes an annoying amount of time to deal with by yourself but using the remove line breaks add-on can instantly take care of it with a command key.
13. See if there is a deck already out there by Googling it or searching Ankiweb. Another good option is that if you use Quizlet, you can convert the cards into Anki cards.
14. Split the creation of cards between your classmates. This saves a ton of time, but the drawbacks are that not everyone makes good cards and you will have to trust them to be comprehensive with their cards.

Troubleshooting and maintenance

Occasionally, (approximately 2 months), you will need to go into the Tools option and click these three buttons in order to optimize the Anki program:

15. Check Database – reoptimizes the database and fixes most errors
16. Check Media – removes images, audio, text, etc that you do not use
17. Empty Cards – removes any cards that have no text or media in them

What is the recommended set up?

How to set up the deck:

There is not much a difference in the set up if you are making new cards or using a pre-made deck. I recommend for undergrads to create their own cards or use a pre-made deck as the volume of material is manageable. However, I recommend using a pre-made card whenever you can. It is a common myth however, that making your own cards facilitates your learning process. While it may seem like you are learning the material well, the trade off in time makes making the cards a worse deal than using a pre-made one and actively testing yourself with them. Once in a medical school, I recommend only using pre-made decks from the upper years or splitting the creation of cards between classmates, as the volume of material can become overwhelming.

18. Create new cards or important a pre-made deck and change the lapses to the recommended settings (more info further below).
19. Suspend all new cards within a deck.
20. Unsuspend the cards as you cover the material that was learnt.
21. Convert the new cards into review cards. I recommend looking at new cards roughly 10 to 24 hours after you have learnt the material in order for your mind to forget it slightly, but you can still actively test yourself.
22. Follow through on the amount of review cards Anki sets every single day. This is the most important step and you will have to do this every day for the space repetition effect to occur.

Changing the learning intervals:

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23. To the right of your deck, there will be a gear icon. Clicking on this will open up the menu; click on options. A pop-up will show, and you should get something like this:

24. In the New Cards tab, change the Steps (in minutes) from 1 10 to 15 1440 8640. In addition, change the New cards/day from 20 to 9999.

25. In the Lapses tab, change the Steps (in minutes) from 10 to 20. In addition, change the New interval from 0% to 70%, the Minimum interval from 1 to 2 days, and the Leech action from Suspend Card to Tag Only.
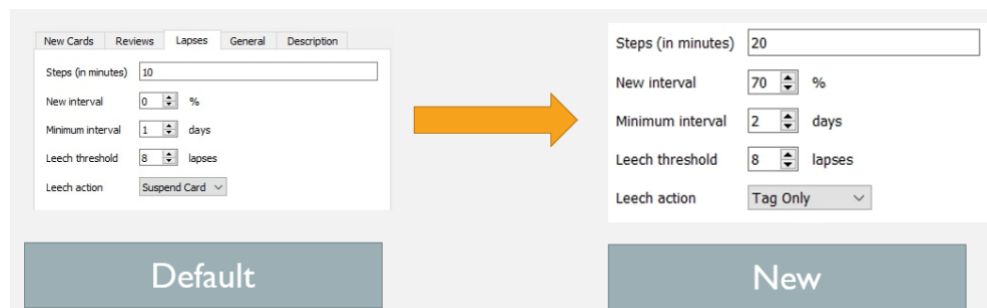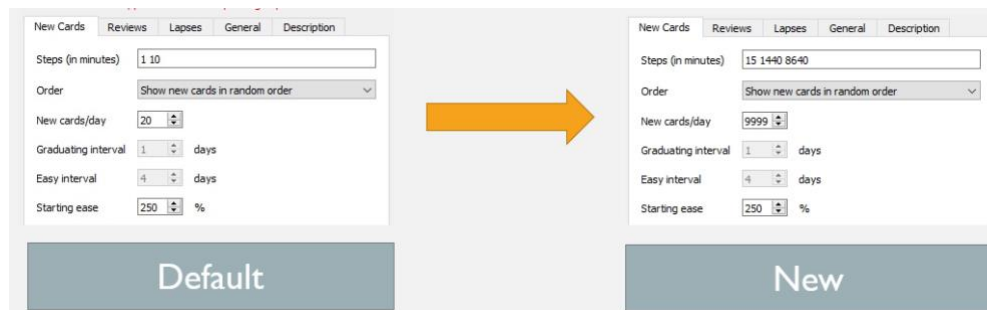
o   Rationale for learning interval changes:

The main issue I found with Anki's default settings was that the amount of review cards being given per day can be excessive which can deter many people from using Anki once they get started. These changes help to reduce the amount of review cards, but not lose the efficiency of learning the material by extending the learning interval.

Studies have shown overall that larger learning intervals (more time in between studying) are more efficient than short learning intervals. In a 1993 study by Bahrick et al. the researchers found that by giving longer space intervals for subjects to learn a set of 50 words, a higher retention rate was observed. Similarly, in a 2007 study by Pashler et al., higher rates of retention of names of objects, facts, and Swahili-English vocabulary was achieved when using longer intervals in comparison to shorter intervals.

In the New Cards setting, the default Steps (in minutes) of 1 10 means that during the learning stage if you hit 'Again' on a card, you will see that card again in 1 minute, but if you get the card right you will see it again in 10 min, and if you get this right the card will have graduated from new to review. Changing the Steps (in minutes) to 15 1440 8640 means that once you get the card wrong, you will see it again in 15 minutes. If you get it right, you will see it in 1440 minutes (1 day), and if you get it right again you will see it in 8640 minutes (6 days) and if you hit right again, it will have become a review card. This helps extend the learning phase of the card and increases its learning interval which allows for better retention of the material. I changed the 1 min to 15 min because I feel that 1 min is too short, and your short-term memory will be in play rather than your long-term memory when trying to remember the card. Also, the change from 20 to 9999 New Cards per day is done in order to not limit yourself to only 20 new cards, because often times when you make cards for a lecture they will be more than twenty cards.

The Lapses setting, refers to settings for the review cards. The change in Steps (in minutes) from 10 to 20 means you that if you get a review card wrong, you will see it again in 20 minutes rather than 10 minutes. Again, this increase in time evokes the use of long-term instead of short-term memory when answering the card.

The New interval change to 70% means that for the number of days that the card is currently set at (e.g. 10-day review card), if you get the card wrong it will multiply by the New interval percentage. For example, if you get a 10-day review card wrong, it will multiple by 70% and turn into a 7-day review card. The default setting of 0% was too harsh, because if you fail a review card you will have to learn it from the beginning at 1 day again. The Minimum interval is changing the failing of a card to be shown from 1 day to 2 days instead.

Finally, the leech action is what happens if you fail a review card by the number of leech thresholds. For example, with the leech threshold at 8 lapses, if you get a review card wrong 8 times, the leech action will commence, and it will tag the card instead of suspending it. This allows you to see which review cards you get wrong often instead of never seeing them again.

Recommended resources:
- o MedicalSchoolAnki subreddit - subreddit to find pre-made decks for medical students but mostly geared towards US standardized tests (e.g. USMLE)
- o Super Memo twenty rules - twenty rules about organizing information for spaced repetition learning.
- o Guide to Anki intervals and learning steps – this video provides an explanation about Anki intervals and learning steps and the reasons for the recommended settings.
- o AnKing youtube channel - Great videos explaining the basics to advanced topics and troubleshooting of Anki.
- o https://eshapard.github.io/ - this blog contains posts that can help you improve your Anki game.

Conclusion:
With advances in technology, how we learn has changed tremendously over the years. Anki has allowed me to commit to more extra-curricular activities by being able to study more efficiently. The initial learning curve was steep, but I hope that by writing this article I can make it less difficult for people who want to incorporate Anki into their studying routine.