How to prepare for a research viva

Introduction

Competition in medical training is on the increase. Many junior doctors undertake an additional research degree ranging from BSc to MD and PhD (Higginson and Corner, 1996; Durai and Venkatraman, 2005). There is no clear concise guide on how to prepare for a research viva, which is also known as defending your thesis. Inadequate preparation may lead to you not passing the viva (Shinton, 1978; Jack, 2002). At times it may be difficult to get advice: supervisors are often too busy and may not have enough time to teach every student about the viva. Passing the research viva may help you progress in your career (Farndon, 1991). This article is based upon the author's own experience in preparing for the research viva.

General advice and viva scenario

First of all spend enough time writing a good thesis (Hardy and Ramjeet, 2005). If your thesis is good, this will possibly make the examination easier.

The purpose of the viva is to assess three things: whether the candidate performed the research him-/herself; to make sure the candidate understands the research and to establish the candidate's background knowledge.

The viva can last from 30 minutes to 2 hours. There are two kinds of examiners. Laboratory-based examiners and biomedical scientists often read every page of your thesis and may ask a lot of questions. On the other hand, a busy clinician may not have time to read your entire thesis and therefore may be more likely to ask questions about the general area of your research which may not include areas specifically mentioned in your thesis.

You must read your entire thesis before the viva so that you can explain every word and figure in it.

It may be useful to prepare a summary of the important points of each chapterof your thesis, possibly as Powerpoint slides, as it will be easy to read these just before the viva.

You can ask your colleagues to read the thesis and ask them their views. If they understand your thesis, then the examiners should also understand it.

Each examiner will have one copy of your thesis. You need to take an extra copy of your thesis for the examination for yourself to use. The viva is an open book exam where your examiners go through page by page and ask questions. You will be allowed to open and read your thesis in the viva.

Ask your supervisor to organize a mock viva for you as this will provide useful practice.

Use post-its if necessary throughout the thesis to remind you of any key explanations for difficult sentences. They will help you revise before the viva.

You may be asked to bring your project and personal licences and ethical approval for studies which have used animal models for verification.

Some common viva questions are now summarized. The answers are examples only. You should prepare your own answers.

Commonly asked questions

Why did you do this research?

Research provides an opportunity to understand various laboratory methods and statistics better. After doing research, one can understand other research papers better. You will be working within a set time frame, so your time management skills will improve (Durai and Venkatraman, 2005). You can also present and publish work from your thesis which is important for your career progression and will differentiate you from others.

Why did you choose this topic?

Never say you chose the topic just because it was readily available, even if this is the truth! Say you did a literature search and you found the title very interesting. So you asked your colleagues and postgraduate scientists and chose this topic as it interested you.

Explain what you have done in your own words

You should explain the essence of the thesis in simple plain English. Use short sentences in a well-organized, constructed manner.

Explain the graphs

Check with a statistician before your viva that you can explain any graphs and statistics that are incorporated in your thesis. Some examiners may have a preference for certain types of graphs or charts over others, so be prepared to explain why you chose the graphs you used.

Why did you choose the particular statistics?

If you have a sound statistical knowledge you can explain. Otherwise you can simply say that you consulted a statistician who suggested this test to be the best one. You should read about various statistical tests and their advantages. You should be able to answer simple questions relating to concepts such as the null hypothesis, *P* value and confidence intervals.

Explain the histology

Make sure you discuss any slides and figures with a clinical pathologist and that you understand the various cells and areas which are covered, otherwise it will be difficult to explain them in your viva. You should check the magnification of any photographs as examiners can easily find fault with them by comparing the adjacent figures.

What does your result show?

Your hypothesis may be true but you may not get the expected result. Research involves testing your hypothesis, and you should be able to explain your result. Even if you have all negative results, you can still pass if you understand them and explain them to the examiner. Very often the result won't be as expected because of the influence of yet unknown factors.

If you had another chance, what would you do differently?

Attending conferences and knowing what your colleagues and peers have done in

Mr Rajaraman Durai *is Specialist Registrar in General Surgery, Queen Mary's Hospital, Sidcup, Kent DA14 6LT*

their research may help to answer this question. You should say something meaningful. Often students will get an idea about how to do research only when they finish their thesis. You could explore the mechanisms and outcomes a bit more by using a few more tests. You could use an animal model if your experiment was an in vitro one. If your experiment was an animal model with a positive result, you could pilot it in a human model.

What is special about your topic?

All research has some peculiarity, so try to think about one before your viva.

Tell me about the history of this topic

You should know the history of your particular topic. You may be asked about the inventors and Nobel laureates in your area.

What is the latest invention or discovery related to your research?

Between completing your experiment and your thesis examination, you may come across new papers and publications which relate to your experiments. At the very least, you should read the abstracts of these, but it is better to read the whole article.

How can you translate your experimental work into a clinical model?

If it is a cell culture work, one has to perform an animal model and then a pilot phase I trial. You can discuss the modifications that would be required to apply it to a human model.

Know your examiners background

You should read at least the latest papers published by the examiners before the viva, as this may help you assess their familiarity with different laboratory methods, for example (Jack, 2002).

General appearance

First impression often counts. Therefore spend sometime on your appearance. Smart attire such as a suit may help. Have a smile on your face. Don't cross your hands, and keep your hands open. Answer slowly and politely. Be proud of doing the research you have done and express this in your viva. Some examiners may try to teach you during the viva – show interest and listen to the examiners. Often the student knows more than the examiners in the research area. Do not argue unnecessarily and be calm (Fraser, 2005). Think and speak out clearly.

Taking antianxiety drugs such as diazepam (Allen et al, 1976) is not recommended by the author, as these can make you sleepy and may impair your performance. Instead, slow deep breathing (10 times) before the viva may relax you. Meditation or hypnotherapy can be used to calm you down.

Viva outcome

There are at least five different grades. They are:

1. Clear pass with no amendments to the thesis
2. Pass with minor amendments to the thesis
3. Major revision of the thesis with or without the need for another viva
4. Fail
5. MPhil award rather than PhD.

Most candidates fall within the first three categories. If you have published at least four peer reviewed papers (two reviews and two research papers), this may help to sway the balance towards you passing. If you prove that you have understood the concept behind the thesis and have a good overall knowledge of the relevant area, you are more likely to pass.

After the viva

If you pass the viva without needing any amendments to your thesis, then you have to submit two copies of your thesis (check with your university for the numbers and type of binding) to the university. If you pass with minor changes, then ask the examiners about the amendments soon after the viva so that you can add the corrections to the existing thesis. The revised thesis has to be approved by the examiners before you receive a degree.

If your thesis needs major revision, also ask for the examiners' recommendations (which will be provided in written form) so that you can start revising it soon. There will be a 3–6 month deadline for resubmission of your thesis. Rarely you may be asked to go back to the laboratory to do some more work.

Conclusions

A good basic knowledge, ability to interpret your findings, doing a mock viva, and knowing the advances and limitations of your experiment will all increase your chances of passing your viva. BJHM

The author is grateful to Mr Happy Hoque, Consultant Surgeon, Queen Mary's Hospital, Sidcup, for his suggestions for improving the article.
Conflict of interest: none.

Allen JA, Mewha IS, Roddie IC (1976) The effect of diazepam on performance and emotional response during viva examination [proceedings]. *J Physiol* **263:** 191P–192P
Durai R, Venkatraman R (2005) How to plan research? *BMJ Career Focus* **331:** 247–8
Farndon JR (1991) A two-year period of research leading to a degree by thesis is of enormous benefit in training a surgeon. *Ann R Coll Surg Engl* **73:** 5–6
Fraser I (2005) Surviving a viva. *J R Soc Med* **98:** 44
Hardy S, Ramjeet J (2005) Reflections on how to write and organise a research thesis. *Nurse Res* **13:** 27–39
Higginson I, Corner J (1996) Postgraduate research training: the PhD and MD thesis. *Palliat Med* **10:** 113–18
Jack B (2002) The final hurdle: preparation for the PhD viva examination. *Nurse Res* **10:** 66–76
Shinton NK (1978) How to do it. Take an examination viva. *Br Med J* **ii:** 1694–5

KEY POINTS

- Spend time writing a good thesis.
- Read the whole thesis and relevant recent publications before the viva.
- Try to publish and present before your viva.
- Have a mock viva with your supervisors.
- Dress smartly – first impressions count.