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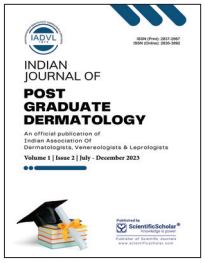

Review Article

Faculty Forum: Dermatology Residency and an Approach to the MD Examination: A Primer for Postgraduate Students

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ABSTRACT

In this review, we will discuss the approach to dermatology residency year-wise and detail the books and resources that would be useful for the student. For each major domain, we carried out a Google Book search using the terms, 'Dermatology,' 'Sexually transmitted disease,' 'Leprosy' and books and then based on our own experience of the books that were thrown up in the search, we arrived at the ideal book set for MD training.

Keywords: Residency, Examination, Books, Guidelines, Approach, Dermatology, Post-graduation

INTRODUCTION

Dermatology remains a sought-after speciality due to the fact that it offers a perfect balance of clinical medicine and surgical procedures with minimal emergencies and with the option of dabbling in 'cosmetology,' a pseudo-science with its many practitioners. It remains the ideal branch that covers medicine, surgery with ample scope for research.

Here, it is important to emphasise that 'cosmetology' does not figure in the National Medical Commission (NMC) guidelines; and anyone is free to practise it; thus, it would be prudent to not keep all 'eggs in the cosmetology basket.'

IDEAL TRAINING ENVIRONMENT AND THE ROLE OF ARTIFICIAL INTELLIGENCE (AI)

We will address a rarely discussed aspect of the faculty behind a post-graduate (PG) programme. The level of training that is needed to impart appropriate PG training, includes clinical work in the outpatient department (OPD) and inpatient department, special clinics, dermatosurgery, lasers, journal clubs, seminar, projects and also the thesis. In some centres, publications are also mandatory. Thus, an ideal training institute is one that has full-time faculty and a good patient load. Colleges where private practice is allowed are not ideal as there is then an obvious lack of attention on academic training. Often, medical colleges with top rankings for undergraduate courses may not have the same quality of MD programmes and is an erroneous method of choosing a college for an MD course.

Furthermore, webinars are being increasingly used in dermatology training. However, such webinar-based online training is of little use as communication with patients is crucial

in dermatology, as with any other medical branch. Compassion, empathy and diagnostic skills are not learnt online and thus there is no replacement for the human connection. In addition, AI-based learning is not ideal for dermatology, especially in India, where the skin colour and complicated presentations would baffle any AI software and, I daresay, many clinicians. It is pertinent to examine the existent role of AI in dermatology. A review has opined that there are large discrepancies in the existing AI models developed in populations with the skin of colour (particularly Fitzpatrick type IV–VI) and those with largely European ancestry.[1] Another study that used the AI model amongst general practitioners (GPs) and dermatologists found that the overall diagnostic accuracy of the model under real-life conditions was lower than that of GPs and dermatologists.[2] While models and tools have been developed for skin cancers[3] and leprosy,[4] these may be best used as a referral tool by GPs for dermatologists and are useful in countries with low penetration of dermatologists. AI software suffers from the 'GIGO' or 'garbage in-garbage out' paradigm as there are inadequate data sets of images in the skin of colour and thus what is revealed is also a misdirected diagnosis. In addition, in many skin disorders, palpation of the lesions is crucial apart from inspection. A simple condition that is part of the dermatology degree, leprosy, is often misdiagnosed,[5] another example of why AI software are irrelevant in dermatology in tropical countries. It is said that the 'eye will not see what the mind does not know' hence learning dermatology requires training in a good institute, a sizeable patient load and full-time faculty!

WHAT TO READ AND THE SOURCES OF INFORMATION!

In most colleges, the sources of initial 'guidance' are seniors who are either PGs or senior residents followed by peers in other colleges and, of course, varied YouTube videos and Google searches. Unless there is a good mentorship programme by the faculty, the PG student is lost for correct choices. We will divide the training and learning methods depending on the year of residency as that is a more practical approach.

First-year residency

The 1st year PG is usually posted in the ward and minor operating theatre (OT)/procedure room [Figure 1]. While most 1st year students are lost in the busy schedules presuming there are adequate patients, they also have the privilege of seeing the maximum number of spotters (both typical and rare cases) in the minor OT, and long cases and dermatological emergencies in the wards! Thus, they have the opportunity to apprise themselves of the spotters and long cases and emergencies in their 1st year itself! If there is time and interest they can even learn the most common referral cases.

Figure 1: Post graduate doing procedure in skin operation theatre. (RML skin minor OT complex).

A simple approach would be to choose either Rooks Dermatology.[6] or Bolognia *et al*.[7] and read just the 'in-patient' cases from these two books. While Rooks is due for its 10th edition this year, most prefer Bolognia as it is more compact and diagram rich, though we feel that it is getting thicker and unwieldy with progressive editions-the 5th edition is due this year.

There are some excellent books on emergencies[8,9] in dermatology, and any one of them must be read by 1st year PGs. We find the book Life-threatening rashes by Emily Rose ideal and appropriate for dermatologists at any level, even though a book by Indian dermatologists is also available.[10] A ward PG should also have a comprehensive understanding of managing an inpatient with impaired thermoregulation, fluid and protein imbalance and sepsis. In addition, a basic book on dermatosurgery and lasers[11,12] is useful in the 1st year. The ACSI textbook[13] is a good focussed book but a bit extensive and probably not a book that 1st years need to read. There are other books by Bennet[14] and by Nouri and Leal-Khouri.[15] which may also be referred to. During Minor OT posting, surgical skills and techniques can be refined, and having a strong grasp of anatomy, suturing and biopsy techniques, the proper plane for injections, instruments and cautery (electrocautery/radiofrequency) will be immensely beneficial. As far as spotters are concerned, Andrews' diseases[16] of the skin is a decent book to read for most of the common and rare cases, though the editions come out every 2 years (even though most of the basic text is the same in most editions!)

Of course, if there is time, a list of commonly 'biopsied' cases can be read from any of the major textbooks. Again, minor OT is where the majority of interesting cases come, and

1st years have the opportunity to go through the differential diagnosis suggested by seniors. By actively reading about these cases and their various differentials, one can gain extensive knowledge across a wide range of topics throughout their minor OT posting. Moreover, this experience also serves to improve clinical skills, specifically in formulating provisional diagnoses, that can later be applied during OPD postings.

We would recommend picking up the Arndt and Hsu Manual of Dermatologic Therapeutics[17] as a handy read for 1st years as it tends to cover most topics. During ward postings, it makes sense to buy a drug book and while Wolverton and Wu Comprehensive Dermatologic Drug Therapy is a decent book,[18] the book - Systemic Drugs in Dermatology[19] has an easier layout and approach with an outline of the sub-topics, images of pathways and actions of the drug, drug overview and useful sub-topics with clinical cases in skin of colour. The tables are useful both in the MD examinations and in practices and encompass uses, side effects and monitoring. Wolverton does not have a clinical connection and often has more pharmacology than applied text. There are some other books on drugs,[20] of which the handbook by Wakelin *et al*.[21] is a compact read. It is also essential for a 1st year PG to possess a basic understanding of commonly given drugs in ward, especially immunosuppressants and biologicals, and their monitoring, including knowledge of potential side effects. Since the 1st year PG is responsible for round-the-clock care in the ward, they will be the initial point of contact for addressing any patient complaints or abnormalities in laboratory monitoring. Therefore, having a thorough knowledge of the medications and their potential effects is crucial to provide appropriate and timely interventions.

The 1st year PG is also expected to manage sexually transmitted diseases (STD)/Suraksha Clinic and Leprosy Clinic. Leprosy is a 'must know' area, and while there are some excellent books,[22,23] we would recommend the compact and updated Jopling Handbook of Leprosy 7th edition.[24] For those who are keen to work on leprosy, the IAL textbook[25] is an intensive and extensive read but may be in need of 'tight editing' to harmonise the varied thoughts of its contributors. There is another book that is written by a Brazilian group[26] and our view is that it is extensive and is not ideal for an MD student. It has been our experience that the student always prefers a compact updated book in leprosy which was the concept behind the updated Jopling's Handbook of Leprosy.

As some of the textbooks change editions, one can wait before buying a new edition. However, if one is bought in the 1st year itself, it is best to keep that till the end of 3rd year. MD exams are not a test of 'what you don't know but what you know', and hence most editions are good enough for the MD examinations. A basic knowledge of journals and searching for articles using PubMed is a must for a 1st year resident.[27] A list of the must-read book sets in the 1st year is given in Box 1.

Box 1: Ideal book sets for a 1st year PG in dermatology.

A standard textbook of dermatology
A book on emergencies
A book on drugs
A basic book on dermatosurgery
A book on leprosy
A book on STD

STD: Sexually transmitted diseases, PG: Post-graduate

Second-year residency

The 2nd year residency is generally considered to be the 'relaxed' period as 'except for the thesis there is nothing else to be done!' This is an erroneous belief and every year of MD training is invaluable, as what one sees in clinical practice outside of an institute is <10% of dermatology. Hence, residency years are the years to learn clinical dermatology.

This is the year wherein the residents should divide their time between focussed reading of histopathology, OPD cases and basics of dermatology, the last of which is a tedious but important aspect of dermatology. We would particularly advise students to read immunology which forms the basis of biological drugs and Janus kinase (JAK) inhibitors. Most speakers who are backed by the industry have little knowledge of this and that reflects in the quality of their discourses, and we feel this is one field where active research is essential. This is also a good time to revise leprosy and STDs. By the end of the 2nd year of residency, it is important to master a comprehensive and systematic approach to the examination of leprosy/STD cases. This includes proficiency in bedside tests and performing smear examinations. Importantly, the faculty often tend to focus less on the 2nd years and one can carry out learning at a relatively relaxed pace!

Dermatopathology is a weak point in many institutes and an ideal learning method is to procure slides from the pathology department and see them under the supervision of a tutor. From the MD examination point of view, a handful of slides are supposed to be mastered, but dermatopathology is a useful tool as it can support the diagnosis and can help in allaying the fears of patients and the dermatologist. Amongst the varied books, Patterson and Weedon's skin pathology is the most compact and would suffice for most MD students.[28] It is important to know the basic terms of dermatopathology and the important tissue reaction patterns. For those who have time for a more exhaustive read, Lazar *et al*. Pathology of the Skin covers pathogenesis in brief with treatment, all in one book.[29]

For STDs, while most would refer to Holmes[30] or even the STD book by Sharma,[31] we feel a combination of King and Nicol[32] and the latest Centers for Disease Control and

Prevention (CDC) guidelines would suffice.[33] Of course, history and examination have to be learnt on the 'job' while being trained by the institute and thus 'on-site' training is important as is choosing the right college where such cases are encountered!

The 2nd year is the year to see and read OPD cases, most of which are never exam cases but constitute a major chunk of dermatology practice, such as melasma, acne, telogen effluvium, exanthems, urticaria, bacterial, fungal and viral infections. It is these common non-exam cases that are the 'bread and butter' of practice and are usually missed out during training which is mostly focussed on examination-based cases. Furthermore, rare cases such as orofacial granulomatosis, sarcoidosis or pyoderma gangrenosum are also not exam cases. We feel that Andrews is still a very useful book for most such cases, and this can be buffeted by standard textbooks. In addition, this is a year to inculcate the habit of searching PubMed for focussed articles on such topics and keeping them for reference. It is highly recommended to follow a single standard textbook and focus on studying from that particular book. This approach aids in effective memorisation and facilitates the conversion of short-term memory into long-term memory. Reading from multiple books can lead to information overload and confusion, making it difficult to retain everything. Of course, the important updates and summary of topics gained through seminars (which provide comprehensive data from different books and articles) and case discussions can serve as valuable additions to one's knowledge base.

There are various subspecialities with a plethora of books on each topic but a good book on dermoscopy is always useful and we would recommend the excellent book by an Indian group of editors.[34] Of the sub-speciality reading, Springer has books on almost every small and minor sub-topic.[35] Hence, if a resident has an interest in any esoteric topic, this publisher has a book on it, though with so many books on varied topics we have noted erratic content of these books.

The 2nd year ends with the thesis and a good 2nd year resident should have covered the basics of dermatology, common OPD cases, leprosy and STD in addition to a revision of the cases in the wards (usually the long cases in the examinations) by the end of the year.

Since 2nd year residents have more time on their hands, they can utilise it to attend good quality continuing medical educations (CMEs) and conferences. However, there is a plethora of conferences and CMEs being held on various topics all-round the year which may end up being repetitive if the residents do not choose wisely. It is also smart to work up and present posters or case series at one of these conferences to gain experience. In addition, for those who are interested in publications, this period provides an opportunity to delve deeper into unique and noteworthy cases and develop a manuscript for potential publication. Collaborating with a senior faculty member can offer guidance, support and valuable insights throughout the process, enhancing the quality and impact of the research work.

Third-year residency

The 3rd year revolves around the examinations and unfortunately most waits till this year to study, which is a mistake, as training is a continuous and evolving process. Except for the COVID-19 period, where various online learning methods were used, we abhor their use as the art of dermatology is not taught on the net! We have tested students who were trained during the COVID-19 time and their practical knowledge leaves much to be desired, despite the various publications that extolled the virtues of this training modality.[36-38] The examinations have a theory and practical aspect, and if the student has studied in his 2nd year, almost all topics that are required for a MD theory examinations would have been covered. We would recommend that good seminars should be retained as they can be excellent and concise sources of information. The one aspect that would need learning in this year is the 'What's new?' aspect, which is a process that is learnt in well-directed journal clubs and of course, visits to the library [Figure 2]! As 3rd year is a crucial year, it would make sense to draw up a list of long and short cases and study and present them to the faculty throughout the year.

PRACTICAL EXAMINATION

The practical examinations are based on certain sub-sections which may vary across universities and the basic framework is given in Box 2.

Figure 2: A well-stocked library with physical journals is an ideal way to learn updates in dermatology (RML Library).

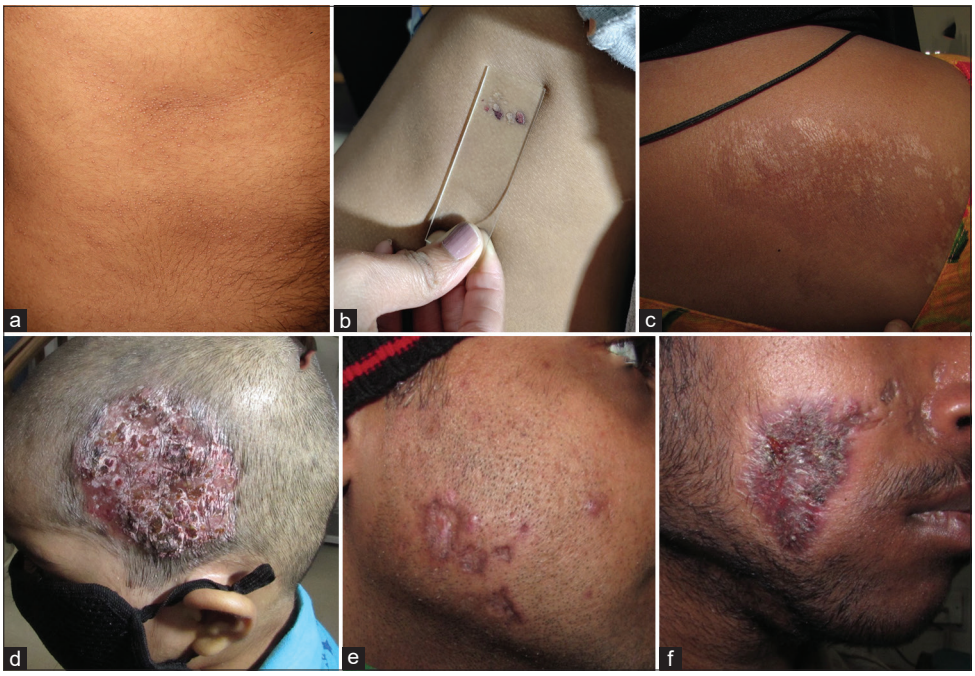

Figure 3: (a) The classic flat topped shiny papules of Lichen nitidus are often missed unless a magnifying tool is used by the examinee. (b) Lymphangioma circumscriptum is best diagnosed by demonstrating the diascopy test than a hands free distant diagnosis. (c) A careful examination would reveal the atrophic lesions of lichen sclerosus and genital examination is a useful adjunct. Another possibility is morphea. (d) While the obvious diagnosis here is kerion, an often missed aspect is examining the draining lymph nodes which would suggest a secondary bacterial infection. (e) While the diagnosis of discoid lupus erythematosus is obvious it would be an ideal practise to examine the scalp. (f) A case of lupus vulgaris wherein one should look for a BCG scar which alludes to the high immune nature of this form of tuberculosis.

Box 2: Basic framework of practical examinations.

- Long and semi-long cases
- Spotters
- Histopathology, drugs, instruments, X-rays
- Viva voce

Out of these, in most MD courses, the most crucial are spotters. They are usually chosen on the spot by the examiners and can assess basic training of examination skills, description and tests that ought to be performed by the student. A frequently observed mistake is the 'hands-free approach' where the student watches the patient from a distance and gives a diagnosis without even examining the patient. Also, giving an inappropriate diagnosis or not examining the lesion is a common mistake. This is specifically true in lichen nitidus [Figure 3a] where the morphology is obvious by using a magnifying tool. Examining girth and feeling for temperature and a bruit in a case of arteriovenous malformation, or examining the underlying lymph nodes in a case of scrofuloderma of the neck, are some of the many examples which the student should not miss in the examination of a case [Figure 3b-f]. This is learnt during the training programme and helps the MD student diagnose cases in their entirety. Remember that practicals are not about what you revised in the past 1 month; it's all about the knowledge and skills learned over 3 years. The nuances of cases of dermatology, leprosy and STD are learnt during training and thus frequent departmental presentations are a must for PG students. Of the 3 aspects of a spotter case (as below), note that examination directed books can only help in Step 3 - the rest has to be learned during training [Box 3].

TEXTBOOKS FOR MD EXAMINATION

There is a multitude of books available focussing on varied aspects of the subject; hence, a book that is able to concisely present data gleaned from basic and advanced textbooks, along with newer advances from journals, and list them in a concise text with diagrams and images, preferably all in a single volume is ideal for examinations. However, first, let us run through the textbooks that should have been read by a final-year resident:

Dermatology

A core textbook should be readable and replicable, which is a reason for the popularity of Bolognia, although some

Box 3: Steps in arriving at a diagnosis in spotters.

- Step 1-History and examination
- Step 2-A rational diagnosis or differential diagnosis
- Step 3-The viva
  - Why the diagnosis?
  - How will you manage the case?
  - Prognosis
  - How will you treat the case?
  - Basics about the case

Table 1: Types of examination-directed books.

Books with questions and answers based format	These are of limited use as questions of examiners are not fixed and depend on the cases and no two cases are the same!
Books with multiple volumes	Can be tedious to read during examinations, 'Brevity is the soul of wit' and the art is in making knowledge concise, not verbose!
Books with case scenarios	This is a popular concept but again suffers from a fixed set of questions and answers that may be of limited utility
Books for US board examinations	They may have a different format from dermatology examinations held in India

may feel overwhelmed by the sheer number of diagrams and tables, and find it difficult to grasp the essence from the text. However, it still is a popular book. Rook's textbook has become cumbersome and voluminous over the years and the smaller version is woefully inadequate! Fitzpatrick suffers from the frequent updated editions making it difficult to keep buying editions! So, pick up one book, maybe Bolognia, and stick to it, since it does not help to be 'jack of all trades and master of none'!

STD

We still feel nothing beats reading the CDC guidelines for STDs and selecting long cases from Holmes textbook. A combination of King and Nicol for detailed clinical features and Holmes for pathophysiology, plus a knowledge of the syndromic approach to STDs, would do for most examinations.

Leprosy

With leprosy, we believe a concise updated book is ideal and the latest Jopling Handbook of leprosy builds on the legendary textbook by WH Jopling, on whom the eponymous RJ classification is based. It figures in the top 10 books on infectious diseases on popular websites in India and is, needless to say, very handy. A new (7th) edition released in 2023 is available as a brief and updated read.

Table 2: Essential of PG procedural training as per NMC*.

Common OT and specialised procedures	Skin biopsies Electro surgical procedures Acne surgery Cryo surgical procedures Chemical peels Skin grafting procedures Intralesional injections Keloid treatment Nail surgeries NUVB/PUVA therapy Laser • Hair reduction • Scar revision • Pigment removal
Clinics	Vitiligo clinic Psoriasis clinic Autoimmune disease clinic Vesiculobullous diseases Hansen's clinic STD clinic Pigmentary clinic
Mandatory equipment	Biopsy punches Hyfrecator/electro-surgical instrument Patch testing kits Liquid nitrogen cryotherapy Chemical peels PUVA Chamber (total body) NBUV chamber Laser for hair reduction Laser for scar revision Laser for pigment removal Pulse oximeters ECG Crash cart

*Note that hair transplant is not a mandated requirement (Form-NMC-2-PG (Dermatology)-V_2020).
PG: Postgraduate, NMC: National medical commission, OT: Operation theatre, PUVA: Psoralen (P) and ultraviolet A (UVA) therapy, NBUV B: Narrow-band ultraviolet B, ECG: Electrocardiogram, STD: Sexually transmitted diseases

Rheumatology

We would recommend either Kelly Textbook of Rheumatology[39] or Hochberg *et al*.[40] for connective tissue disorders. They are some of the finest works on the topics and would score better than any dermatology book chapter on these topics; this includes immunosuppressants and biological drugs. Often drugs that dermatologists adopt such as parenteral methotrexate or JAK inhibitors, have been thoroughly researched and

used by rheumatologists.[41,42] It is always preferable to read from the 'masters' rather than listen to varied slide presentations, which may often be industry sponsored!

Examination-directed books

Often, during examinations, a resident is unable to replicate what he/she has learnt in 3 years of residency. The reasons are two-fold, the first being inadequate or misdirected reading, and the second being the trend of 'tablet learning'-reading soft copies on tablets! 'Tablet learning' is difficult to replicate, and we believe nothing is better than holding a book and marking it! God gave us the gift of tensile localisation and holding and reading lead to more neural connections and may prove to be more useful in the long run.

We carried out a search on Google Books with the keywords 'Dermatology, Examinations and Boards' and while very few books directed at Dermatology examinations are available,[43-45] we have listed the merits and demerits of the existing books in the Table 1 below, without mentioning names and authors. We would advise the readers to read the author biographies of such books before buying them as those authored by more experienced Dermatology teachers and examiners would surely be more suitable.

Thus, an ideal examination-directed book is a single volume book that covers the textual part of all cases and common theory topics, sourced from the best books and journals and ideally updated periodically. It should have diagrams that make pathogenesis simple to comprehend, which is crucial as a good diagram should be self-explanatory. Notably, no book can teach the skills of examination and reaching a diagnosis, which can only be learnt in the 3 years of clinical residency. A good book can, however, encapsulate the existing data into one concise work. Thus, examination-directed books can facilitate learning and serve as a quick read for examinations, while the teachers in medical institutes are better suited to train students in the art and science of clinical dermatology. Remember, books cannot replace MD training.

CONCLUSION

Dermatology training in India follows certain prerequisites and norms set up by NMC [Table 2]. These include training assessment of the clinical load, procedures, speciality clinics and knowledge of dermatopathology, X-rays and instruments. These should all be known to an MD student. It is pertinent to note that cosmetology or hair transplantation is not an essential requirement as per NMC; hence, the knowledge of 'core' dermatology would be more pertinent; one can, of course, acquire a knowledge of and master whatever one feels is his/her calling later on.

We hope that more books directed at MD training are written by faculty who have worked over the years in active full-time PG training programmes, as the future of dermatology is firmly ensconced in our PGs.

Declaration of patient consent

Patient's consent not required as there are no patients in this study.

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Conflicts of interest

There are no conflicts of interest.

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