

Experience of Standardized Training for Residents in Clinical Pathology Base

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Abstract: Pathology regulation training includes two parts: standardized materials and standardized diagnosis. Pathology has its own characteristics, according to the system but with different requirements. Similarly, diagnosis needs to be classified according to the system, and different systems have different diagnostic criteria. The diagnostic training has various contents, covering various systems. It not only needs to master the diagnostic criteria, but also needs to make the diagnosis with comprehensive clinical information. Hence, the learning task of three years of regular training is heavy. Therefore, our department has summarized the teaching methods of the base, which are practical and effective, and greatly improve the quality of standardized training for resident doctors.

Keywords: Pathology base; Standardized training; Systematic course

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1. Introduction

Baoding No. 1 Central Hospital is a large tertiary general hospital integrating medical treatment, teaching, scientific research, prevention, healthcare, pre-hospital emergency care, rehabilitation, and community medical services. It serves as a teaching hospital and postgraduate teaching base for multiple medical schools, as well as a national standardized training base for resident physicians. Its clinical pathology department is a key medical specialty at the provincial and municipal levels. It is also a key laboratory for molecular pathology and early diagnosis of tumors in Hebei Province. Equipped with excellent instrumentation, the hospital handles over 40,000 routine external inspections annually. Every year, it trains three to five resident physicians, with the number increasing year by year. Through systematic teaching and training, the hospital continuously improves the competency of its trainees^[1]. It has accumulated rich teaching experience in cultivating resident physicians and achieved good teaching results. The following presents an overview of the experiences gained in this context.

2. Familiarity with pathology workflow and attention to detail are crucial

Upon joining the department, trainees receive induction education emphasizing safety, discipline, and medical ethics. They are also assigned a mentor to whom they can report any issues promptly. In the first three months, trainees familiarize themselves with the pathology workflow, starting from specimen reception. During this period, they learn to pay attention to details, such as verifying specimen information and checking the completeness of application forms ^[2]. They also become acquainted with various steps of pathology preparation, including dehydration, embedding, sectioning, and Hematoxylin and Eosin (H&E) staining for routine sections, as well as the preparation process for frozen sections, immunohistochemistry, cell room specimens, and molecular room specimens. By learning these technical tasks, trainees understand the precautions to take during preparation, thereby avoiding mistakes in future practical operations.

3. Standardized guidance for sampling and diagnostic criteria

Pathology study consists of two major parts: sampling and diagnosis. For sampling training, we focus on learning the sampling of one system per month. Every Wednesday morning, we provide theoretical knowledge lectures on sampling for that system, emphasizing key points to note. In the afternoon, we conduct sampling demonstrations, and practical operations are allowed. After a round of theoretical courses, trainees are arranged to formally conduct sampling, with each trainee guided by a mentor. This cyclical training approach aims for continuous improvement.

Our base has sub-specialties including lymphoma, breast, gynecology, digestion, respiration, thyroid, renal biopsy, and soft tissue. Trainees can observe and practice sampling on specimens, and then review the slides with their mentors, receiving microscopic explanations. Each time, trainees review slides with different mentors who specialize in different sub-specialties, providing more professional diagnostic criteria and diagnostic thinking. This cyclical mentorship and slide review ensure balanced mastery of various professional knowledge ^[3].

4. Systematic curriculum completed in a hierarchical and planned manner

A systematic curriculum is developed, with lecture content based on “Ackerman’s Surgical Pathology” ^[4]. It is divided into digestive system, respiratory system, urinary system, lymphohematopoietic system, female reproductive system, male reproductive system, central nervous system, and many more. Different theoretical lecture content is developed based on different grades ^[5].

Hierarchical teaching is implemented. The first-year focus is on technical theory and sampling techniques. The second year involves learning diagnostic fundamentals and mastering diagnostic criteria for common and frequently occurring diseases. In the third year, based on a solid foundation of diagnosis, students become familiar with the diagnostic thinking and criteria for difficult cases. Every Tuesday, difficult case discussions are held to hone the diagnostic thinking of third-year students. Every Thursday, in-house lectures guide the diagnostic criteria for second and third-year students. Every Friday, morning lectures provide guidance on sampling for first-year students, ensuring standardization.

During practical sessions, third-year students guide second-year students, and second-year students guide first-year students. This approach enhances the competency of upper-grade students and hones their problem-solving abilities.

5. Establishing a professional slide reading library

According to the syllabus requirements, typical pathology slides from each system are re-cut and preserved, categorized by system, and scanned into the library. An electronic slide reading library is maintained, and if mentors encounter classic cases with complete information during their studies, they are included in the electronic library for easy access by trainees. Additionally, the skill assessment for monthly and annual evaluations—slide reading assessment—is retrieved from the electronic slide reading library and slide library, simplifying the assessment process and fully preparing trainees for the practical skills assessment at the end of their standardized residency training.

6. Regular case reports and literature reading

Trainees are arranged to present case reports and read literature every month. In the form of mini-lectures, they create PowerPoint presentations for the entire department, select classic cases, and read the latest developments in relevant cases on PubMed ^[6,7]. This exercise helps to develop trainees' diagnostic thinking, keeps them updated on the latest advancements in pathological diagnosis, improves their English reading and writing skills, and lays the foundation for pathological diagnosis and paper writing ^[7].

7. Regular assessments

Monthly assessments are conducted based on the systematic curriculum implemented that month. Different assessment content is developed for different grades, with first-year trainees focusing on sampling assessment, second-year trainees focusing on slide reading assessment of common and frequently occurring diseases, and third-year trainees focusing on slide reading assessment of difficult cases. This allows trainees to better self-test and adjust, achieving better learning outcomes.

8. Quality feedback

Our department uses the Langla pathological system software for trainees' sampling and slide reading training. Data is exported monthly, allowing for detailed statistics on each trainee's monthly sampling and slide reading volume. Additionally, statistics are collected on sampling and slide reading issues to gain a detailed understanding of the systems that require additional training for trainees.

A monthly quality feedback meeting is held to summarize the detailed data. The monthly sampling and slide reading volume for each trainee are quantified, and sampling and diagnostic issues are refined to identify weaknesses and areas that need improvement. Intensive training is provided, and the process is repeated continuously.

The current month's quality feedback is compared to the previous month's quality feedback. If issues have been resolved, the focus shifts to improving new problems. If there is no improvement, the reasons are analyzed, and intensive methods are changed for continuous improvement until the issues are corrected.

9. Urging trainees to learn from online platforms

With the current development of online media and abundant learning resources, we can fully utilize online

platforms to learn from the experiences and classic cases of experts across the country, broadening learning ideas and extending learning content ^[8].

As precision medicine advances, pathology is also rapidly evolving. New World Health Organization (WHO) classifications are continuously emerging, and new diagnostic terms are constantly updated ^[9]. With the advent of new detection methods, it is necessary to combine routine, immunohistochemistry, molecular detection, and clinical information to make comprehensive diagnoses ^[9,10]. This requires pathology trainees to diligently and continuously learn and keep up with the times, so as to master pathological knowledge proficiently.

10. Conclusion

In short, the base aims to improve the competency of trainees so that they can meet the requirements of standardized training program for resident physicians, and at the same time, be competent for the front-line work of clinical pathology, striving to cultivate practical specialized resident trainees.

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Disclosure statement

The authors declare no conflict of interest.

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