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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНИТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman** (**Кириллица**), для текста на грузинском языке следует использовать **AcadNusx.** Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - http://www.spinesurgery.ru/files/publish.pdf и http://www.nlm.nih.gov/bsd/uniform_requirements.html
В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректура авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or compu-ter-printed on a single side of standard typing paper, with the left margin of **3** centimeters width, and **1.5** spacing between the lines, typeface - **Times New Roman** (**Cyrillic**), print size - **12** (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf
In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

Articles that Fail to Meet the Aforementioned Requirements are not Assigned to be Reviewed.

ავტორთა საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე,დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx.** შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შეღებვის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფჩხილებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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Содержание:

ANALYSIS OF THE REFRESHER PERSONNEL STRUCTURE IN THE CLINICAL LABORATORY OF A 3A HOSPITAL CHINA

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Abstract.

Background: To analyze the changes in refresher personnel structure in a clinical laboratory of a 3A hospital, understand the development trends in laboratory science, and provide a reference for refresher training in various hospitals.

Methods: The basic information of the trainees in the institute from January 2009 to December 2018 was collected and analyzed with respect to gender, age, educational background, professional title, duration of training, number of trainees in sub-majors, and number of months of training in sub-majors.

Results: In the past 10 years, the gender of the trainees in the institute was mostly female. The educational level and professional title of the trainees have gradually increased. The training period was most often 6 months, and the sub-majors were mostly clinical microbiology and bone marrow cytology.

Conclusion: With the change in the social environment, the structure and needs of personnel refresher training will change. Each hospital should reasonably plan the enrollment scale and scientifically formulate training plans and programs to meet the needs of continuing education in the new era.

Key words. Clinical laboratory, Refresher personnel, Structural analysis, Environment, Education.

Introduction.

The development of medicine is changing with each passing day, and the advances in laboratory medicine have been rapid. The clinical laboratory is one of the indispensable and important departments in hospitals at all levels, and the relationship with clinical work is getting closer. The two complement each other and promote each other. For better development of clinical laboratory department, it needs the support of clinical department. At the same time, the accuracy of clinical diagnosis depends more and more on the sensitivity and specificity of clinical tests. Although clinical tests and test results are irreplaceable and important, and some results are even decisive, it should also be seen that the test results have many errors due to the influence of various factors. Such as the quality of personnel, the performance of reagents, equipment and so on. In recent years great changes are taking place in the development of the inspection discipline. Medical colleges and universities all over the country have also reformed the higher education of laboratory medicine. The purpose of this study was to understand the development and changing trends in laboratory science by analyzing the structural changes in the 10-year refresher training in the Laboratory Science Department of a 3A hospital, and to provide a reference for refresher training in various hospitals.

Materials and Methods.

The basic information of 699 personnel who studied in the Clinical Laboratory Department of Sichuan Academy of Medical Sciences and Sichuan Provincial People's Hospital from January 2009 to December 2018 was collected. This statistical analysis did not involve or disclose personal privacy information. Statistical analysis was made on the gender, age, educational background, professional title, duration of the study, number of sub-majors, and number of months of study. An Excel spreadsheet was used for data analysis and graph making.

Results.

Gender composition ratio of trainees:

Analysis of the gender data of trainees in the past 10 years showed that the majority of trainees were women. The number of female trainees accounted for 62.2%-75.8% of all trainees, while the number of male trainees accounted for 24.2%-37.8% of all trainees.

Composition ratio of academic qualifications of refresher personnel:

From 2009-2018, the educational level of the trainees gradually increased. The proportion of personnel with bachelor's degree increased year-after-year; specifically, the proportion of personnel with bachelor's degrees increased by 44.0% in 10 years. The proportion of personnel with specialized academic qualifications decreased year-after-year; specifically, the proportion of personnel with specialized academic qualifications decreased by 47.3% in 10 years. It is worth noting that the postgraduate education personnel gradually became more prominent, as shown in Figure 1.

Composition ratio of professional titles of refresher personnel:

The proportion of people with primary professional titles gradually decreased from 82.5% in 2009 to 62.9% in 2018. The number of people with senior and middle professional titles increased year-after-year, increasing by nearly 20% in 10 years. It is suggested that the professional title level of the trainees received by the institute continuously improved, as shown in Figure 2.

Composition ratio of learning time periods:

Each year, the composition ratio of the training period for the trainees is six months, three months and one year respectively. Six months of study was the most popular, with 88.7% of those studying for 6 months in 2018, as shown in Figure 3.

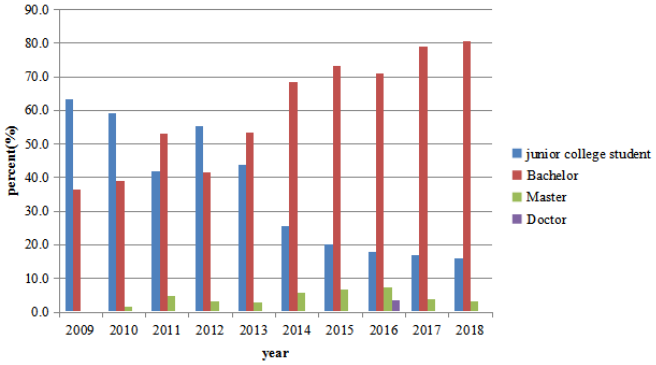

Figure 1. *Histogram of academic qualifications composition ratio of trainees from 2009-2018 (%).*

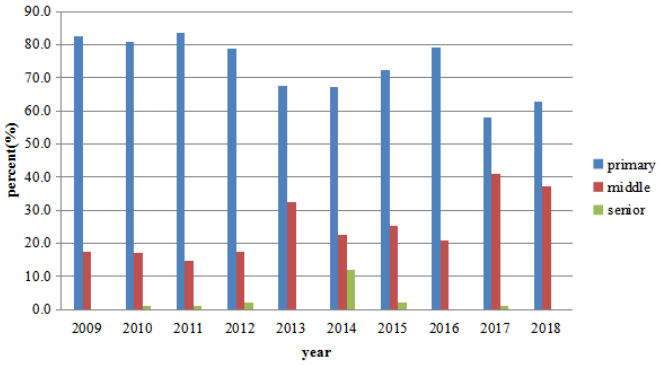

Figure 2. *Histogram of professional titles composition ratio of trainees from 2009-2018 (%).*

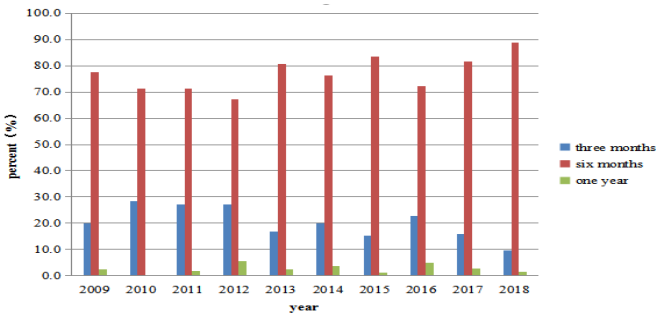

Figure 3. *Histogram of learning time periods composition ratio of trainees from 2009-2018 (%).*

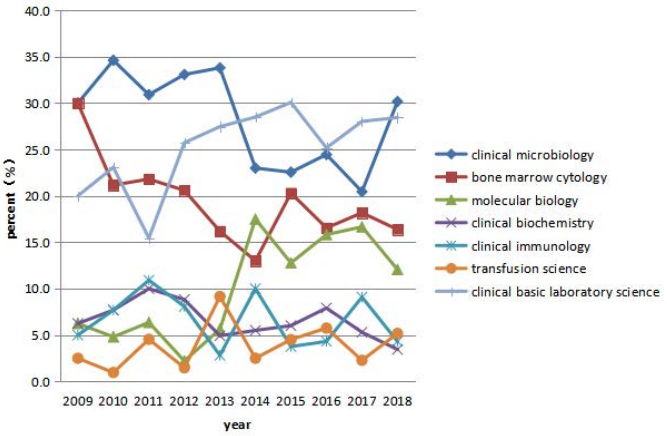

Figure 4. *Line chart of composition ratio of trainees in the sub-majors group from 2009-2018 (%).*

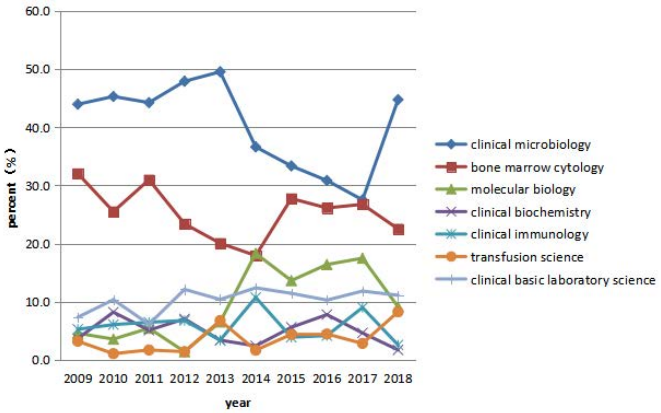

Figure 5. *Line chart of composition ratio of the total number of sub-major months of continuing education from 2009-2018 (%).*

Composition ratio of sub-majors studying and number of months:

From 2009-2018, clinical microbiology, bone marrow cytology, and basic clinical laboratory science were the sub-majors with the largest number of further studies, followed by molecular biology, clinical immunology, and clinical biochemistry; transfusion science had the smallest number of sub-majors, as shown in Figure 4. The number of molecular biology sub-majors increased sharply in 2014.

From 2009-2018, the total of months of sub-major studies showed that clinical microbiology accounted for the highest proportion each year, followed by bone marrow cytology. Since 2014 the proportion of molecular biology has ranked third, as shown in Figure 5.

Discussion.

Medical workers should embrace lifelong learning and constantly acquire new technologies to improve their professional level. One of the important ways to acquire new information is to go to higher-level hospitals to take refresher courses. In this paper, a 3A hospital in the National Class A of the Third Grade Hospital, Affiliated Hospital of University of Electronic Science and Technology, Sichuan Academy of Medical Sciences and Sichuan Provincial People's Hospital, attached great importance to teaching. As the first cohort of National Leading Clinical Specialties, the Clinical Laboratory Department of the hospital has long been committed to the comprehensive development of medical treatment, teaching, and scientific research. During the 10 years from 2009-2018, the clinical laboratory received 699 refresher personnel from hospitals all over the country. This paper analyzed the basic information of all the advanced study personnel and determined the rules that can provide reference for the clinical laboratory with the task of advanced study teaching and understanding the development and trends of the laboratory.

Gender differences have their own characteristics in clinical specialties. According to the data analysis from 2009-2018, it was found that the gender of the trainees was mostly female with a smaller percentage of males. The proportion of males in the clinical laboratory was far lower than females, as is the case in many laboratories. At the same time, the proportion of males-to-females is consistent with the higher proportion of females

than males among college students majoring in laboratory medicine. This finding suggests that the clinical laboratory should consider the gender gap in the allocation of resources (duty room, dressing room, and washroom).

In 1983, the medical colleges and universities in China recognized laboratory medicine as a specialty and formally established undergraduate laboratory education. Since 1983, the number of colleges and universities that have sponsored the laboratory medicine specialty has gradually increased. Subsequently, the number of undergraduate students and the number of master's graduates have also continuously increased [1]. In the past 10 years, the educational level of the continuing education personnel in the institute has gradually increased, among which the undergraduate education level has shown a trend of increasing year-after-year, and the graduate education level has gradually become prominent. It is suggested that the rising educational level offered by the hospital is suitable for the training of national laboratory medicine talents, which in turn reflects the continuous improvement in the cultural quality of the employees in the field of laboratory medicine in China. For the refresher with more solid medical theoretical foundation and better acceptance ability, refresher units and departments should formulate more scientific and reasonable refresher training programs to meet the needs of refresher personnel for knowledge [2].

The change in professional titles of continuing education personnel cannot be ignored. In the past 10 years, the proportion of junior professional titles has gradually decreased, and the number of senior professional titles has increased year-after-year. The professional title level of the trainees admitted by the institute is continuously increasing. Indeed, the proportion of mid-level professional title personnel has increased. There are many reasons for this phenomenon. First, the mid-level professional title personnel are in the promotion phase of their career and generally feel that their knowledge is insufficient, so they choose higher level hospitals for further study to improve their technology and update their knowledge [3]. Second, the phenomenon is related to policy orientation. When promoted to a senior professional title, the personnel with intermediate professional title need to go to a higher-level hospital to complete further studies, and to compete for the senior professional title.

Each year, the duration of study is mainly 6 months, followed by 3 months, with the minimum duration being 1 year. Thus, 6 months of study is more consistent with the needs of those who go out to study in the laboratory specialty of primary hospitals. The admission scale for different study periods can be adjusted according to the actual situation in the study receiving department to facilitate the department to carry out clinical work and the study personnel to acquire more knowledge.

There are many sub-specialties in the clinical laboratory, and the degree of difficulty differs. By analyzing the composition ratio of the total number of months of refresher training in each sub-professional group, the needs for sub-professional refresher training can be more scientifically based. Analysis of the total number of months of sub-professional studies in 10 years shows that clinical microbiology accounted for the highest proportion each year, followed by bone marrow cytology. This finding suggests that the basic unit of microorganism and bone marrow professional abilities is relatively weak. In recent years, with the diversity of bacterial infections in various medical institutions and the continuous improvement in bacterial drug resistance, health management departments and clinical medical personnel pay more and more attention to the monitoring of bacterial drug resistance and the selection of effective antibacterial drugs [4]. This effort requires that microbiological inspectors to have a high comprehensive quality, which also makes microbiological education a sought-after field. The cognition of inspectors on the changes of bone marrow image analysis rules of hematologic diseases and related diseases, especially the accumulation of morphologic judgment experience, requires long-term observation of a large number of cases to master the essence [5]. Therefore, hospitals at all levels actively send bone marrow cytology inspectors to higher level hospitals for further study.

To summarize, the structure of inspection professionals and the needs of refresher personnel training will change with university reform, the change in the medical system, and the change in the medical environment. Each hospital should understand the trend of further education, plan a reasonable enrollment scale, formulate scientific training plans and programs, and prepare rich teaching contents to meet the needs of further education in the new era.

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