臨床検査のプロフェッショナルとしての取り組み

洛和会音羽病院 臨床検査部
森藤 哲史

【はじめに】

遺伝子診断や個別化医療など，近年の医学の進歩に伴って疾患概念や治療法の多様化が進み，臨床検査を取り巻く状況もめまぐるしく変化しています．変化するニーズに応え，また，検査の質を高めていくためには，積極的な医療への参画が求められます．本演題では，病院で勤務する臨床検査技師の立場から，幅広い視野を持って専門性を向上させていくための取り組みについて，我が国の状況を踏まえて私見を述べさせて頂きたいと思います．

【資格試験の有用性】

我が国では，臨床検査技師の各分野において様々な認定資格制度があります．認定資格の取得は，該当分野における知識・技能の向上に非常に有用であると考えます．目標を明確にすることで学習のモチベーションを維持し，また，専門分野について網羅的に学ぶ機会にもなります．現在，日臨技が認定する認定技師制度や，日本臨床検査同学院が認定する二級・一級臨床検査士など，各分野で様々な認定資格が存在します．特に二級・一級臨床検査士は全分野において実技試験が課され，実際の検査手技を評価する実用性の高い資格として，臨床検査技師の卒後教育において重要な役割を果たしています。また，グローバル化が進む社会において，国際細胞検査士やASCPiといった国際的に認知された資格を取得することも有用と考えます．

【学会活動への参画】

日臨技や都道府県技師会をはじめとして，様々な学術団体が活発に活動を行っています．各団体が独自に，また，協働して様々な学術集会や研修会，また，精度管理事業を実施しています．学会活動に積極的に参加することは，知識・技能の向上のみならず，情報交換や人脈形成の場としても非常に重要です．様々な分野の技師と交流をすることで視野が広がり，自分の専門分野に対する見方も深めることができます．また，今後はさらに国際学会にも積極的に参加することが期待されると考えます．世界基準でより高い専門を発揮していくためには，国内の状況のみならず世界の情勢にも目を向け，幅広い情報収集を行うことが求められます．

【学術活動への取り組み】

臨床検査のプロフェッショナルとして，臨床検査を臨床検査技師の手で発展させていくためには，学術活動が不可欠です．日常業務で遭遇する疑問や問題について一つ一つ解決し，得られた知見について世界中の臨床検査技師と共有することは，臨床検査の発展，ひいてはよりよい医療への貢献につながります．常にリサーチマインドを持って業務に取り組み，研究活動，さらには論文執筆を通じて臨床検査の発展に寄与する姿勢が重要であると考えます．

【まとめ】

多様化・専門化が進む医療の中で，検査の専門家として臨床検査技師の果たす役割はますます高まっています．広い視野と高い専門性，さらにはリサーチマインドを持った臨床検査技師が求められると考えます．

Activities for the Professionalism of Biomedical Laboratory Scientist

Satoshi Morito
Rakuwakai Otowa Hospital

【Introduction】

Thanks to the recent advancements in medicine, such as genetic diagnosis and precision medicine, the situations involving laboratory medicine have been dramatically changing. In order to meet evolving needs and enhance the quality of clinical examinations, active participation in clinical practices is essential. In this presentation, I would like to discuss the activities to foster practical proficiency from the viewpoint of a biomedical laboratory scientist working in a hospital.

【The role of certifications】

In Japan, there are numerous certifications for various subspecialties of laboratory medicine. I believe that acquiring such certifications is beneficial for the development of specialized skills and knowledge. Clear goals keep us motivated, and certification exam preparation provides an excellent opportunity to delve deeply into the target area. Noteworthy certifications include those accredited by the Japanese Association of Medical Technologists (JAMT) and Technologist and Specialist certifications from the College of Laboratory Medicine of Japan (CLMJ). Especially, Technologist and Specialist certifications are based on the evaluation of not only theoretical knowledge but also practical skills, therefore, playing a pivotal role in career advancement. In addition, international certifications such as International Cytotechnologists and ASCPi are also considerable in the globalized society.

【Active participation in academic associations】

Various academic associations have been vigorously serving, including JAMT and its local divisions, hosting academic meetings, lectures, and quality surveillance. By participating in such activities, we can obtain opportunities to interact and build connections with experts from different fields. This activity leads to wider perspectives and a deeper understanding of our subspecialty. Furthermore, we are expected to actively join in international congresses, and collect information from broad resources worldwide, with the aim of nurturing and exerting our specialized skills consistent with the global standard.

【Academic activities】

As professional biomedical laboratory scientists, academic activities are indispensable in terms of responsibility for progress in laboratory medicine. Engaging in research offers insights to address challenges we may encounter in practical situations, leading to developments in laboratory medicine and further contributions to overall medicine by sharing new findings with fellow biomedical laboratory scientists around the world. A positive attitude toward research is required, including publishment of academic papers.

【Conclusion】

In conclusion, this presentation argues for the importance of biomedical laboratory scientists adopting an attitude that embraces broad perspectives, high subspecialties, and a research-oriented mindset, further, taking the initiative to progress laboratory medicine.

Tips for maintaining professionalism

がん研究会 有明病院　臨床病理センター
石井　脩平

【はじめに】

臨床検査技師の専門性は、所属部署における技術や学術性を示すことが多いが、勤務する職場から「臨床検査の専門家」として優れた専門性を有していることが期待される場合も存在すると考えます。新しい技術の情報収集は重要ですが、検査に関わる法令は変化しますので、全てを網羅した情報収集のシステムを構築することが求められると考えます。

【専門職者として】

1. 基礎知識の確立：各分野において様々な認定資格制度があります。技術の客観的な評価として、専門分野の認定試験合格は一つの目安となると考えております。また危険物管理や作業主任者などの国家資格を有することは、施設にとっても有用です。資格を取ることが目標ではなく、必要な内容を職場に還元することが必要だと思っております。法令は変化するので資格取得後も継続学習が必要なことは忘れてはならないと考えます。

2.最新の技術・知識の導入：当院では Whole Slide Image を活用した病理診断を導入しており、臨床検査技師が標本のスキャンの領域やファイリングなどを行っております。データ管理等は今後の課題です。

3.管理者として：検体検査分野と遺伝子解析分野は 2018 年から法令で精度管理が要求されるようになっております。ISO15189 でも要求事項ですので、日常業務とし要員全員が精度管理の重要性を認識する必要があると実感しています。

【医療スタッフとして】

現在我々病理技師が取得できる資格は、一級臨床検査士、第一種衛生管理者、技師会主催の認定病理技師など多々存在します。我々は有資格者として院内の安全衛生委員会に所属し、病院内のホルマリン管理の助言、研究所での試薬管理のアドバイスなどを行っております。2024 年法令が改訂され、安全衛生委員会の付議事項に試薬のリスクアセスメント情報をいれることが追加されたことや関連する事項なども臨床検査技師から発信しております。認定病理技師としては、がんゲノム治療拠点病院としてのエキスパートパネルに参加し、検体の取り扱いなどで意見を求められることもあります。膵臓超音波検査の ROSE は臨床現場に出向いておりますが、技師の業務拡大による内視鏡検体採取は、今後の課題であると考えます。病院への貢献が、臨床検査技師の存在のアピールに繋がると考えます。

【研究活動】

世界の情報に目を向け、論文を読み地道に研究しながら、日臨技や専門学会などを通して発信するためには、中期計画を立てることが有効と考えております。様々な学術集会や研修会への参加は、知識・技能の向上のみならず，情報交換や人脈形成の場としても非常に重要です。

【まとめ】

臨床検査技師が活躍する場所は多岐に渡りますが、臨床検査技師として活動するには生涯学習が必須です。勤務する部門における臨床検査技師としての専門性を高めるとともに、グローバルな視野をもち、組織要員としての立場からも適切な役割を果たすことが、専門家としての能力であると考えます。

Practical side of maintaining Professionalism of Biomedical Laboratory Scientists

Shuhei ISHII
The Cancer Institute Hospital, Japanese Foundation for Cancer Research

【Introduction】

The expertise of a biomedical laboratory scientists (BLSs) often indicates the skills and knowledge for our department, but we are required by our workplace as an expert of as "the specialist of the clinical laboratory department". It is important to collect information on new technologies. Since the laws and regulations related to clinical laboratory testing have been changing, we need to build a system for collecting information.

【As a Professional BLS】

1.Establishment of basic knowledge: There are various certification in each field. I believe that passing the certification exam is one of the objective evaluations as a specialist. In addition, getting national qualifications such as a manager of hazardous materials, or toxic reagents will be also useful for our facilities. It is important to remember that the goal is not to obtain a qualification, but to return the necessary feedback to the workplace. On top of that, it is necessary to continue learning even after obtaining the qualification because laws and regulations have changed.

2.Introduce the up-date technology and knowledge: We have introduced pathological diagnosis using Whole Slide Image. We determine the area of slide canning, and data filing. Data management is future subject.

3. As a manager: Since 2018, quality control system has been required by law in the field of genetic analysis. It is a requirement of ISO15189, as well. We feel that it is necessary for all BLSs to recognize the importance of quality control in our daily work.

【As a Medical Staff】

Currently, there are many qualifications in pathology filed, such as Specialist in Pathology, industrial hygienist, certified pathology technologist which is recognized by JAMT. In our institute, some BLSs belong to safety and health committee, and give the advice about reagent management. Attending the expert panel, ROSE activity, and reagent assessment at the safety and health meeting are our current activities. Sampling by the gastroendoscopy is the next discussion as our profession expanding. Contribute to the Hospital will raise our value.

【Academic activities】

As professional BLSs, academic activities such as reading papers, conducting study research are important. A medium-term plan will be effective. Attending scientific seminars are very useful, not only for improving knowledge and skills, but also for exchanging information and creating personal network.

【Conclusion】

There are a wide variety of places where BLSs can play an active role. When we work as an active BLS, lifelong learning is essential. In addition, I believe that our ability as a specialist should have a global perspective and play an appropriate role from the standpoint of our workplace.

A Review Study of the Clinical Physiological Examination Practical Training Curriculum
Tips for Maintaining Professionalism

Jin-woo Park
Samsung Medical Center

Abstract

In clinical physiology, as a branch of medical science, the examination methods are becoming specialized, simplified, automated, and subdivided through integration with electronic engineering, resulting in facilitation of rapid and accurate medical information obtainment. Among them, the information primarily obtained from clinical physiological tests is highly important in medical diagnostics.

As clinical pathologists have entered the field of physiological testing, education and quality control on the pathologists have become important. As physiological testing accompanies the process of biopsy performed directly on the subject's body, practical training is necessary as well as theoretical one for an accurate test.

In a survey on clinical pathology graduates, clinical physiology and molecular biology were selected as the subjects most in need of hands-on training, suggesting the need for education. However, considering the nature of the clinical physiology testing field, which requires various types of equipment and a high degree of skill, there are limits to practical training in universities. For this reason, the need to develop a practical training curriculum was discussed at the Clinical Physiological Laboratory Society, which is comprised of experienced experts, to provide practical training that can be easily adapted to clinical settings.

The training areas were selected as nervous system, circulatory system, respiratory system, and ophthalmic examination, and experts with more than 10 years of experience in general hospitals were selected as lecturers to develop training programs in each field. In order to establish a formalized and standardized education plan in all practices, education demand and feasibility were examined considering the location, equipment, and manpower required for implementation.All training courses were set to be 8 weeks long, and trainees were allowed to apply and participate in the field of their choice. The nervous system examination includes electrophysiological testing of electroencephalogram, nerve conduction, and evoked potentials, as well as practice of cerebral blood flow and carotid ultrasound and a separate educational program has also been developed for polysomnography, for which demand for testing has recently increased rapidly. For the circulatory system examination, echocardiography, which practitioners find most difficult, was included and with inclusion of electrocardiogram monitoring, the education was found to be effective. For the respiratory system examination, practice of spirometry testing and judgment and interpretation of pulmonary function tests were included. In addition, ophthalmological examination is a field that has not been included in university clinical pathology and clinical physiology courses despite the necessity of inclusion and, thereby, the theory and practice have been structured in depth. At the end of the training, a practice test was conducted to evaluate learning achievement and a survey was conducted on all trainees to evaluate training satisfaction.The survey results showed that most trainees were highly satisfied with practical training, with many of whom expected regular training and in-depth courses to be offered. In the lecture evaluation conducted by instructors, it is shown that practical training was at a level that could be applied directly to an actual laboratory, suggesting that continuous and regular education should be provided.

In order to achieve the goal, it was proposed that the Association of Clinical Pathologists and the Society of Clinical Physiology should cooperate and provide continuous support to develop and maintain high-quality educational programs. Furthermore, contributing to increasing the reliability of physiological tests and ultimately improving the quality of clinical pathologists, it should serve to solidify the practice area of clinical pathologists in the field of physiological testing.

Title : Tips for maintaining professionalism
Sub Title : A causal study based on diagnostic tests - Causal association between serum bilirubin and ischemic stroke: Multivariable Mendelian Randomization

Name : Jong Won Shin
Affiliation : ASAN Medical Center, seoul, Korea

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BACKGROUND
The expertise of medical technologists has evolved over time in the field of diagnostic testing. They assess the severity of human diseases based on various diagnostic data and have progressed to predicting the presence of cancer and even the likelihood of future-onset diseases. This study aims to expand the expertise of medical technologists through causal study based on the most commonly observed blood data in diagnostic testing, namely serum data.

METHODS
Utilizing Two sample Multivariable Mendelian randomization (MVMR) analyses, summary data for bilirubin were extracted from the KCPS-II (Korean Cancer Prevention Study-II; n=159,844) and the KoGES (Korean Genome and Epidemiology Study; n=72,299), while ischemic stroke data were derived from the BBJ (Bio Bank Japan; n=201,800).

RESULTS
The crude two-sample MR analysis revealed a significant negative association between total bilirubin and ischemic stroke in KoGES data (odds ratio [OR], 0.86; 95% confidence interval [CI], 0.75-0.98). Subsequent bivariable MR analyses, controlling for lipid profile, also showed significant results. In KCPS-II data, direct bilirubin showed significance in both crude (0.65, 0.43-0.97) and bivariable analyses, while indirect bilirubin demonstrated significant associations in MVMR analyses (0.76, 0.59-0.98), emphasizing its role in mitigating the risk of ischemic stroke.

CONCLUSIONS
Our study establishes a causal association between genetically determined levels of serum bilirubin (total, direct, and indirect) and a reduced risk of ischemic stroke in an Asian population. Notably, the protective effect was predominantly associated with indirect bilirubin. The findings of this study indicate that causal study reveals that serum data commonly addressed in diagnostic testing are not merely markers for specific diseases but have causal relationships with various conditions. It is expected that as medical technologists continue to enhance their expertise, they will provide extensive knowledge and guidance in diagnostic testing.

Tips for maintaining professionalism

Ching-Yuan Lin
Secretary General of Taiwan Association of Medical Technologists (TAMT)
Vice President and Director of Laboratory Department of Zhongli Ten-chen Hospital

For Julius Erving, a basketball legend, professionalism in the workplace is simple. “Being a professional is doing the things you love to do, on the days you don't feel like doing them.” Medical laboratory technologists are engaged in clinical professional testing work. How to establish a good professional image and enhance social status, just like during the COVID 19 epidemic, the efforts and contributions of medical laboratory technologists are obvious to the world. We are the eyes of doctors and we are professional Medical technologists.

What is a professional in the workplace? Professionalism in the workplace means that employees: Knowledge, skills and behaviors required to excel in their role. Do your best to get the job done even on tough days; go beyond their job description; continuously look for opportunities to develop and improve the organization and ourselves.

4 key indicators of professionalism
1. Consistently exceed expectations
2. Create an inclusive environment
3. Communicate effectively with team members, customers, managers and other stakeholders
4. Demonstrate integrity and honesty

How to encourage professionalism in the workplace
1. Cultivate an inclusive culture
2. Set a strong example
3. Encourage accountability and responsibility
4. Promote cultural integration and cultural supplementation

Professionalism at work
Being a professional at work ensures a great first impression, successful relationships, and a lasting reputation. Key elements of on-the-job professionalism include time management, effective communication, enthusiasm, task delivery and appropriate attire.

Stay calm under pressure
It's natural to feel stressed when things go wrong at work, but if you show your employees or teammates that you can stay calm when things heat up, they will be more likely to adopt similar behaviors, allowing them to better to manage stress. This will really come in handy the next time a disaster, big or small, strikes your business.