

英 语

全国高等医学院校检验专业专科教材

主 编 顾可梁 副主编 蒋秉坤 宋小平

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内容简介

本书由教育部教材委员会组织编写，经教育部教材委员会审定，作为全国高等医学院校检验专业专科教材。

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主 编 顾可梁

副主编 蒋秉坤 宋小平

审 订 刘恭植 安乙敏

编 委

顾可梁 顾 主

宋小平 顾 主

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内容简介

本教材是镇江医学院受全国高等医学院校检验专业专科教材编审委员会的委托，组织全国部分院校检验专业的专家、教授和英语教师合作编写完成的。教材内容全部选自新近出版的原文书籍，课文覆盖血液、体液、生化、卫生、寄生虫、微生物、免疫、核医学检验等。课文的选择突出专业性、实用性、科学性。

全书共30课。每课含有课文、词汇、课文注释、练习及补充读物，书末“附录”部分包括总词汇表、阅读材料10篇、检验专业常用缩略语及前、后缀及构词成份等。本书为医学检验专业专科指定英语教材，适合医学检验专业专科学生使用，亦可供检验专业教师、临床检验工作人员参考。

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主编：顾可梁

副主编：蒋秉坤 宋小平

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出版说明

医学检验是医学中一个重要的分支，与临床医学的发展和医疗水平的提高有密切关系。医学检验在全国高等医学院校中是一个新发展的专业，迫切需要有计划地编写出版一套具有我国特色，反映医学检验科学和技术先进水平的教材。国家教委要求，医学检验教育要大力发展专科层次。近年来，全国高等医学院校医学检验专业的教育已有很大发展，开设医学检验专科的院校愈来愈多，但尚缺全国性的系列教材。为此，全国高等医学检验专业校际会议经过几次讨论，决定编写系列的全国高等医学检验专业专科教材。

本系列教材拟编写19门课程，酌情陆续编写出版。为了编好全套教材，校际会议决定成立检验专业大专教材编审委员会，由11名同志组成。

本系列教材适用于医学检验专业专科全日制、职大、业大、函大、专业证书班等及供临床检验人员、中专教师和临床医师参考。

全国高等医学检验专业专科教材编审委员会

1989年1月2日

全国高等医学院校检验专业专科教材

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主 编 顾可梁

副主编 蒋秉坤 宋小平

审 订 刘恭植 安乙敏

参加编审人员 (按姓氏笔划排列)

安乙敏 四川卫生管理干部学院

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黄仁昌 空军医学专科学校

蒋秉坤 蚌埠医学院

程晓梅 镇江医学院

谭 颖 湖北省药检专科学校

前 言

全国高等医学院校检验专业专科教材《英语》是全国高等医学院校检验专业专科教材编审委员会委托镇江医学院负责组织编写的检验专业专科17本教材之一，顾可梁教授担任主编。

本教材充分注意到专业性、实用性、科学性以及大专学生的可接受性。本教材配有《练习答案及参考译文》一书。

本教材由汪国华、张海志、程晓梅、宋小平，谭颖、黄仁昌、蒋秉坤、顾可梁等同志参加编写。在本教材编写过程中，我们得到了各有关院校领导和部门负责同志的大力支持以及检验专业人员的热情帮助。本书完稿后，蒙镇江医学院刘恭植教授、四川卫生管理干部学院安乙敏教授审订。另外，还蒙温州医学院夏莲副教授参加了教材课文部分的审稿，在此一并致谢。

由于时间仓促，编者水平与经验有限，教材中的不妥之处或是错误在所难免。我们恳请使用本教材的广大师生及检验专业人员批评指正。

编 者

1992年2月

使用 说 明

本书是全国高等医学院校检验专业专科指定教材，供医学检验专业全日制专科使用，也可供检验专业教师、临床检验人员参考。

本书共分两大部分。第一部分有30课，每课有课文 (Text)、生词和词组 (New Words and Expressions)、注释 (Notes)、练习 (Exercises) 和补充读物 (Supplementary Readings) 五个部分组成。第二部分为“附录”，其中“附录 I”为10篇阅读材料，供学有余力的同志使用；“附录 III”为一些常用前、后缀及构词成份，借以扩大词汇量。

课文全部选自原文材料，略有修改。选材内容广泛，内容涉及临床检验专业各个领域。

在使用本教材时，仍应注意语音、语调、词汇和语法等基本功的训练。在教学过程中，应以学生实践为主。本教材建议100学时，第1~20课，每课3学时；第20~30课，每课4学时。各院校可视具体情况加以调整。在使用本教材前，各院校可先开设阶梯英语，为学习检验专业英语作准备。

本教材配有较多的练习，难度适当照顾不同层次学生的需要，教师可以根据学生的具体情况选用，有的可留作书面作业。

总之，通过检验专业英语的教学，培养学生顺利阅读专业书籍及专业说明书等的 ability，并提高学生自学的兴趣。

告 謝

1987年5月



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Lesson One

Text

Laboratory Accuracy and Precision

The value reported from the clinical laboratory for the concentration or the amount of a substance in a specimen is not exact. It represents the best value obtainable with the method, reagents, instruments, and technical personnel involved in obtaining and processing the material.

Accuracy refers to the degree to which the determination agrees with the true value. **Precision** refers to the reproducibility of the analysis and is expressed in terms of variation among several determinations on the same sample. **Reliability** is a measure of the congruence of accuracy and precision.

Precision is not absolute but is subject to variation inherent in the complexity of the method, the stability of reagents, the accuracy of the primary standard, the performance of equipment, and the skill of the technical personnel. Each laboratory should maintain data on precision (reproducibility) that can be expressed statistically in terms of the standard deviation (SD) from the mean value obtained by repeated analyses of the same sample. For example, the precision in determination of serum cholesterol concentration in a good laboratory may be the mean value $\pm 5\text{mg/dl}$. The 95% confidence limits are $\pm 2\text{SD}$, or $\pm 10\text{mg/dl}$. Thus, any value reported is "accurate" within a range of 20mg/dl . The reported value 200mg/dl thus means that the true value lies between 190 and 210mg/dl . For the determination of serum potassium concentration with a variation of $1\text{SD} = \pm 0.1\text{mmol/L}$, values differing by $\pm 0.2\text{mmol/L}$ could be obtained on the same specimen. A report of 5.5 could represent at best the range 5.3 — 5.7mmol/L . That is, the 2 results, 5.3 and 5.7mmol/L , could be obtained on analysis of the same sample and be within the limits of precision of the test.

Every physician should obtain from the laboratory the value for the variation of a determination, i.e. the SD for that determination, in order to appreciate when one reported value truly represents a change from another reported value in the same patient.

New Words and Expressions

| | | | |
|---------------------------------------|----------------|---------------------------------|---------------------------|
| accuracy/'ækjurəsi/ | n. 准确度 | subject/'sʌbdʒikt/ | a. 从属的, 易受...的, n. 论题, 病人 |
| precision/'pri:siʒən/ | n. 精密度 | be subject to | 易受...的, 须经... |
| value/'vælju/ | n. 值, 价值 | inherent/in'hierənt/ | a. 固有的, 内在的 |
| clinical/'klinikəl/ | a. 临床的 | complexity/kəm'pleksiti/ | n. 复杂性 |
| concentration/kənsən'treɪʃən/ | n. 浓度 | stability/stə'biliti/ | n. 稳定性 |
| substance/'sʌbstəns/ | n. 物质 | primary/'praɪməri/ | a. 主要的, 原发的 |
| represent/'reprɪ'zent/ | vt. 代表, 象征 | performance/pə'fɔ:məns/ | n. 性能, 施行 |
| obtainable/əb'teɪnəbl/ | a. 可获得的 | maintain/men'tein/ | vt. 保持, 维持 |
| reagent/ri(:)'eidʒənt/ | n. 试剂 | datum/'deɪtəm/ (pl. data) | n. 论据, 资料, [复]数据 |
| instrument/'ɪnstrəmənt/ | n. 仪器 | statistically/stə'tɪstɪkəli/ | ad. 统计学地 |
| technical/'teknɪkl/ | a. 技术的 | deviation/di:vi'eɪʃən/ | n. 偏差, 离差 |
| personnel/pə:sə'nel/ | n. 全体人员 | mean/mi:n/ | a. 平均的, n. 平均数 |
| involve/in'vɒlv/ | vt. 牵涉, 包含 | analyse/'ænləɪz/ | vt. 分析 |
| process/'prəuses/ | vt. 加工, 处理 | serum/'sɪərəm/ (pl. -s or sera) | n. 血清 |
| refer/ri'fə:/ | vi. 提到, 有关 | cholesterol/kə'lestərəl/ | n. 胆固醇 |
| refer to | 指...而言; 指的是 | confidence/'kɒnfɪdəns/ | n. 信任, 信心 |
| determination/di,tə'mi'neɪʃən/ | n. 测定 | range/reɪndʒ/ | n. 范围, 区域 |
| agree with | 与...一致, 相符 | potassium/pə'tæsjəm/ | n. 钾 |
| reproducibility/'ri:prədʒu'sɪ'biliti/ | n. 重复性 | differ/'dɪfə/ | vi. 不同, 相异 |
| term/tə:m/ | n. 期限, 术语 | at best | 至多, 再好 |
| in terms of | 根据, 按照, 在...方面 | physician/fi'ziʃən/ | n. 医师, 内科医师 |
| variation/'væəri'eɪʃən/ | n. 变化, 变异 | appreciate/ə'pri:ʃieɪt/ | vt. 正确评价 |
| sample/'sɑ:mpl/ | n. 样品, 标本 | | |
| reliability/ri,laiə'biliti/ | n. 可靠性 | | |
| measure/'meʒə/ | n. 测量 | | |
| congruence/'kɒŋgruəns/ | n. 一致, 和谐 | | |

Notes

- (L.6) Precision refers to the reproducibility of the analysis and is expressed in terms of variation among several determinations on the same sample. 精密度是指分析的重复性, 并根据对同一标本所做的几次测定之间的变异度来表达。 in terms of, 根据, 按照
e. g. You may explain this phenomenon in terms of the primary principle.
- (L.10) Precision is not absolute but is subject to variation inherent in the complexity of the method, the stability of reagents, the accuracy of the primary standard, the performance of equipment, and the skill of the technical personnel.

精密度不是绝对的，它取决于实验方法的复杂性、试剂的稳定性、一级标准的准确性、设备的性能，以及技术人员的技能等所固有的变化。

be subject to, 有待于……的, 须经……的

e. g. The plan is subject to change.

Exercises

I. Choose the best answer for each of the following according to the text.

1. The value for the concentration or the amount of a substance in a specimen is _____ reported from the clinical laboratory.

- a. exactly
- b. not exactly
- c. not exact

2. Accuracy refer to _____.

- a. the true value of a determination
- b. the degree of the true value of a determination
- c. the degree of the determination in agreement with the true value

3. Precision is expressed _____.

- a. in terms of variation among a number of determinations on one sample
- b. by the reproducibility of the analysis
- c. in terms of the variations of the same sample

4. _____ can show reliability.

- a. A measure of accuracy and precision
- b. The measure of the congruence of accuracy and precision
- c. The congruence of accuracy and precision

5. The precise data can be expressed _____.

- a. by the standard deviation from the mean value of reported analyses on the same sample
- b. by the standard deviation of the same sample
- c. by the mean value of reported analyses of the same sample

6. The 95% confidence limits for the mean value ± 5 mg/dl of serum cholesterol concentration are _____.

- a. ± 1 SD or ± 5 mg/dl
- b. ± 2 SD or ± 10 mg/dl
- c. ± 3 SD or ± 15 mg/dl

7. when serum potassium concentration has a variation of 1 SD = ± 0.1 mmol/L, values _____.

- a. of ± 0.2 mmol/L could be obtained
- b. differing by 5.5 mmol/L could be obtained on the same sample
- c. differing by ± 0.2 mmol/L could be obtained on the same sample

8. To obtain from the laboratory the true value is _____.

- a. to get the value for the variation of a determination

b. to get the different values on the same sample

c. to obtain the values different from one another

II. Choose the definition from Column B that best matches each word in Column A.

A

B

1. exact

a. to include

2. to represent

b. degree of varying or being variant

3. obtainable

c. to treat and preserve (a substance)

4. to involve

d. that can be obtained

5. deviation

e. accordance

6. to process

f. difference between a measure and the

average of all the measures

7. variation

g. to judge rightly the value of

8. congruence

h. precise

9. inherent

i. to stand for

10. appreciate

j. existing as a natural quality of

III. Fill in the blanks with suitable words or phrases from the list given below. Change the forms if necessary.

personnel substance refer to accuracy agree with

measure in terms of mean be subject to maintain

1. Laboratory work requires precision and accuracy.
2. This test provides a measure of ability.
3. A physician can obtain the mean value by repeated analyses on the same specimen.
4. When he said some people are stupid he wasn't referring to you.
5. Soil consists of various substances.
6. Food is necessary to maintain life.
7. Precision refers to variation in several respects concerning laboratory.
8. His explanation agrees with the facts of the situation.
9. There are doctors, nurses, and the rest of the personnel in the hospital.
10. Accuracy is expressed in terms of the degree to which the determination agrees with the true value.

IV. Combine the following pairs of sentences after the model.

Model 1: The value is not exact.

It is reported from the clinical laboratory for the concentration or the amount of a substance in a specimen.

The value reported from the clinical laboratory for the concentration or the amount of a substance in a specimen is not exact.



Model 2: It represents the best value.

The best value is obtainable with the method, reagents, instruments, and technical personnel involved in obtaining and processing the material.

It represents the best value obtainable with the method, reagents, instruments, and technical personnel involved in obtaining and processing the material.

1. The mean is the arithmetic mean which is the sum of the items of data divided by the number of items.
The mean is generally used in basic statistical work.
2. The procedure to be described is intended for assays of substance.
These substances are available in pure form.
3. The choice ultimately depends on a summation of factors.
The factors are not readily amenable to statistical analysis.
4. Graphical presentation of data may reveal limitations.
These limitations are caused by nonlinearity and errant points.
5. How do results compare when run in parallel on patients' samples?
The results are obtained by the existing method and by the proposed new method.
6. When the acceptability of recovery at each level is assessed, the S.D. of the differences must be used.
The S.D. of the differences are appropriate to that level.

V. Fill in the blanks with the words given below.

by of be more one that from any

The mode is the value that occurs most frequently in a list 1 items of data. It is not affected 2 extreme values or outliers.

In some sets of data there may 3 two values that occur so much 4 frequently than 5 of the rest that a bimodal distribution of the data may be suspected, and this may imply 6 the data are drawn 7 two populations rather than 8.

VI. Translate the following sentences into English.

1. 他们都参加了这项实验。
2. 这例标本的血清胆固醇浓度还有待于确定。
3. 我们最多只能和去年干得一样多。
4. 精确的数据能够根据对同一标本重复分析所获平均值的标准差来表达。

Supplementary Reading

SI Units

(Système International d'Unités)

A "coherent" system of measurement has been under development by an international organization designated the General Conference of Weights and Measures. An adaptation has been tentatively recommended by the Commission on Quantities and Units of the Section on Clinical Chemistry, International Union of Pure and Applied Chemistry. SI units are in use in some European countries, and the conversion to SI will continue if the system proves to be helpful in understanding physiologic mechanisms.

Eight fundamental measurable properties of matter (with authorized abbreviations shown in parentheses) were selected for clinical use.

length, metre (m)

mass, kilogram (kg)

amount of substance, mole (mol)

time, second (s)

thermodynamic temperature, kelvin (k)

electric current ampere (A)

luminous intensity, candela (cd)

catalytic activity, katal (kat)

Derived from these are the following measurable properties:

mass concentration, kilogram/litre (kg/L)

mass fraction, kilogram/kilogram (kg/kg)

volume fraction, litre/litre (L/L)

volume, cubic meter (m³); for clinical use, the unit will be the litre (L)

substance concentration, mole/litre (mol/L)

molality, mole/kilogram (mol/kg)

mole fraction, mole/mole (mol/mol)

pressure, pascal = newton/m² (Pa)

Decimal factors are as follows,

| Number | Name | Symbol |
|------------------|------|--------|
| 10 ¹² | tera | T |
| 10 ⁹ | giga | G |
| 10 ⁶ | mega | M |

| | | |
|-----------|-------|-------|
| 10^3 | kilo | k |
| 10^2 | hecto | h |
| 10^1 | deca | da |
| 10^{-1} | deci | d |
| 10^{-2} | centi | c |
| 10^{-3} | milli | m |
| 10^{-6} | micro | μ |
| 10^{-9} | nano | n |

All chemicals used in analytical chemistry procedures are specified in their labels and must be prepared from high quality materials. For analytical reagents, this is the grade known as Reagent Grade Analytical Reagent. Per, (as in "per second", is often written as the negative exponent. Per second becomes, s^{-1} ; per square meter becomes, m^{-2} ; per kilogram becomes, kg^{-1} . For example, $cm/s = cm \cdot s^{-1}$, $g/m^2 = g \cdot m^{-2}$, etc.

In anticipation that SI may be adopted in the next several years, values are reported here in the traditional units with equivalent SI units following in parentheses.

- coherent a. 连贯的 designate vt. 指明, 指定
- conversion n. 转化 thermodynamic a. 热力学的
- luminous a. 发光的 catalytic a. 催化的, n. 催化剂

On the other hand, manufacturers label some chemicals with only descriptive terms such as "purified or highest purity". There is no standard for such labeling, and the quality of the product varies from one brand to another. Organic compounds are often graded in this way, with the melting point range given as a further indication of purity. These chemicals are not recommended for the clinical chemistry laboratory, but they may have to be used when no better quality is available. It may be necessary to further purify these compounds before using them or include a reagent blank with each batch of tests.

Technical or commercial grade chemicals are not suitable for the laboratory or for high performance liquid chromatographic assays.

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