



# Newsletter

# THE SPECTRUM

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Sub-editors: Dr. Sara Reza, Dr. Maryam Rafiq

Volume 3; Issue 3; December 2014

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## Retirement of a Great Teacher

Professor (Brig) Dilshad Ahmed Khan TI(M), President PSCP, has retired after 32 years of Army service on 31<sup>st</sup> August 2014. Prof Dilshad is a graduate of first batch of Army Medical College Rawalpindi. He completed his FCPS in Chemical Pathology in 1992. Then he proceeded to USA and got MS degree in Clinical Toxicology from University of Illinois Chicago. He completed his research project after returning home and got a PhD from Quaid-e-Azam University Islamabad. He supervised several FCPS, MPhil and PhD students during his stay in Army Medical College and AFIP Rawalpindi. He won gold medal from 'Pakistan Academy of Sciences' in recognition of his tremendous research achievements. He was awarded Fellowship of the Royal College of Physicians of Ireland in 2011, and in 2013, he had the unique honour of getting Fellowship of the Royal College of Pathologists (London) without examination. Establishment of a state-of-the-art Forensic Toxicology lab at AFIP Rwp is one of the most outstanding achievements. A workaholic who does not believe in wasting time in any non-productive activities, Prof Dilshad is a role model for all the students of Chemical Pathology and other disciplines. He has been affiliated with PSCP since its inception and now as President he has really contributed a lot in the progress of the society. Although 31<sup>st</sup> August 2014 is a landmark in the meritorious career of Prof Dilshad, he will be available to his students and colleagues in civil dress on a very important appointment in Rawalpindi. We wish him a very happy life at his present position.



## Inside this issue

- Animated chemical pathology
- Role of Chemical Pathology in Screening and Diagnosis of Multiple Myeloma
- Harmonization- A global effort to improve patient care
- Meta-analysis
- Accreditation of clinical laboratories
- Changing Role of Laboratory Medicine



Contact us at:  
Spectrum\_2014@yahoo.com

### From The Editor's Desk

*Third issue of The Spectrum is in your hands. In this issue we are lucky to have assistance from Dr Maryam Rafiq who has joined the editorial staff this year. She is the same Dr Maryam who won the title of Chemical Pathology Laureate in DLP-2. Her brilliance in literature and IT skills was recognized by Dr. Sara Reza who recommended her name for sub-editorship. We are also greatly indebted to Dr Sara Reza herself for sparing precious time, so close to her final examination, for this issue. We dedicate this issue to Prof (Brig) Dilshad Ahmed Khan TI(M), President PSCP, who retired from Army service in Aug 2014. The newsletter owes its success to the contributions from our young colleagues. Their brilliant and creative ideas were translated into some very interesting printed matter. For example, the survey appeared in this issue is a masterpiece from our two sub-editors.*

*Some very informative articles on 'Lab Accreditation', 'Role of Lab Medicine', 'Warburg Effect' and 'Harmonization' are useful contributions in the issue.*

*We are honoured to include an Islamic article in this issue and beautiful poem on Youth is the first piece of poetry in the newsletter.*

*Please go through the article 'What is in the name' and give Your opinion as requested at the end. 'Brief report on DLP-2' is included to archive this important educational activity while 'Animated Chemical Pathology' is probably the first of its kind in any Pathology literature.*

*I hope you will find the issue not only entertaining but also a source of some useful information. Lastly I want to pay my gratitude to Dr Qurat-ul-Ain, Dr Uzma Ansari and Dr Amina*

*Tariq for helping in proof reading and all the people who have supported 'The Spectrum' morally and physically.*



**Prof. (Brig) Aamir Ijaz**

email: [ijaz\\_aamir@hotmail.com](mailto:ijaz_aamir@hotmail.com)



The Spectrum' and PSCP welcome participants of 3rd Joint Conference of the Societies of Pathology and 7<sup>th</sup> National Conference of PSCP from 19<sup>th</sup> to 21<sup>st</sup> Dec 2014 at Khyber Medical College, Peshawar

**The PSCP sessions will be:**

Two Pre-Conference Workshops:

*Research Designs in Diagnostic Studies* – 18<sup>th</sup> December 2014 (Thursday) from 0900 h to 1300 h.  
*Interpretation of ABG Reports* – 18<sup>th</sup> December 2014 (Thursday) from 1400 h to 1800 h.

- Plenary Session comprising talks by senior Chemical Pathologist on 19<sup>th</sup> December 2014 (Friday)
- Four Scientific Sessions of free papers of Chemical Pathology










## Second Edition of Distance Learning Programme in Chemical Pathology (DLP-2)-Brief Report

During the feedback of DLP-1, many participants demanded that DLP should be continued in 2014, so DLP-2 was started on 19 Jan 2014. The topics were selected after proper consultation with senior Chemical Pathologists. Some of the seniors also prepared some lessons and DLP-2 is deeply indebted to them i.e. Prof Dilshad Ahmed Khan, Dr Muhammad Aamir, Dr Naveed Asif and Dr Zujaja Hina Haroon (AFIP Rwp), Prof Asma Shaukat and Dr Lubna Sarfraz (QAMC Bahawalpur), Dr Ayesha Habib Khan and Dr Lena Jaffery (AKU Karachi) and, Dr Asma Naseer Cheema (AJK Medical College, Muz-zafarabad). A schedule of the lessons with dates was sent to the participants and lessons were sent on alternate Sundays without fail (Alhamdulillah). The number of participants was quite higher as compared to DLP-1 and participants' response was also much more enthusiastic. DLP-2 consisted of 20 lessons and was participated by 78 trainees and 23 consultants out of total 113 registered participants. Lessons were made in a uniform pattern with 10-12 days for response. The students also contributed in the key presentations and developed an increasing sense of participation



in the programme. Although in some lessons trainees of AFIP (near students) were allocated topics to prepare slides, generally participants sent slides voluntarily. In this regard, contribution from Dr Sabiha Waseem (Canada) is really commendable. Skype sessions followed each lesson and the number of sessions ranged from one to three to facilitate the participants. Connectivity remained an issue in the Skype sessions but participants never got frustrated indicating their deeply entrenched interest in the process of learning. Facebook page of PSCP was also extensively used for sharing literature and important announcements. Dr Usman Munir, a very efficient administrator of the group, changed the cover picture according to the running lesson and kept the group alive. At the end of programme, nine top positions in three different categories were announced based on the total scores earned. In addition, CME/CPD credits have also been awarded to the participants at the rate of 5 credit points per lesson. Facilitators who developed the lessons were given double credit points i.e. 10 per lesson.

### Winners of the Top Positions of DLP-2

Category: Distant Students	Category: Near Students (AFIP Rwp)	Category: Junior Consultants
<p><b>Chemical Pathology Laureate:</b> Dr. Maryam Rafiq, QAMC Bahawalpur</p> 	<p><b>1<sup>st</sup> Position:</b> Dr Qurat-ul-Ain</p> 	<p><b>1<sup>st</sup> Position:</b> Dr Sajida Shaheen, PNS RA-HAT Karachi</p> 
<p><b>2<sup>nd</sup> Position:</b> Dr Farheen Aslam, QAMC Bahawalpur</p> 	<p><b>2<sup>nd</sup> Position:</b> Dr Uzma Ansari</p> 	<p><b>2<sup>nd</sup> Position:</b> Dr Muhammad Anwar Jatt, CMH Quetta</p> 
<p><b>3<sup>rd</sup> Position:</b> Dr Sara Reza, QAMC Bahawalpur</p> 	<p><b>3<sup>rd</sup> Position:</b> Dr Amina Tariq</p> 	<p><b>3<sup>rd</sup> Position:</b> Dr Saleha Zafar, QAMC Bahawalpur</p> 

# ANIMATED CHEMICAL PATHOLOGY

Here is a very unique way of presenting scientific concepts. We have given life to our favourite substances and molecules. It may help to remember these ideas besides entertainment



**AST – THE CHEATER:** Heart expelled AST saying “go away cheater -you are also loyal to the liver” (AST has been removed from the list of cardiac markers because of its non-specificity). To add to its insult liver also gives preference to ALT on AST because of its relation with heart. So poor AST is out of heart and liver, on the accusation of cheating. Do we have a lesson here to learn?

## HDL and CETP – THE HERO AND THE TRAITOR:

‘H’ for hero and ‘H’ for HDL, our hero has a lot of potentials and plays multiple roles – just like Hercules again with an ‘H’. He has a lot of enemies to fight with alone e.g. LDL, VLDL, IDL and Lipoprotein (a). He very successfully fights but unfortunately there is also a traitor in his army and it is Cholesterol Ester Transfer Protein (CETP). When the hero (HDL) is taking cholesterol away from periphery to the liver, the traitor (CETP) smuggles some of its cholesterol to VLDL, which becomes a very dangerous particle i.e. small dense LDL (SDL). In return VLDL gives some cash (triglycerides) to CETP but this money (triglycerides) does not stay long with CETP and is taken up by the liver by the action of hepatic lipase. So at the end of the day the traitor is left with nothing and vanishes.



## HEPCIDIN – THE IRON MASTER:

Hepcidin, holding a stick in his hand, has been assigned the duty of controlling the porters of iron (Ferroportin). On a normal day (with normal Iron levels) the iron master is sleeping in his chamber and the porters keep on doing their job of transporting iron from inside the intestinal lumen to the enterocytes (besides other sites). When body has enough iron stock and does not require more iron from intestine, our iron master (hepcidin) gets a telephone call (from liver) to get up and stop his porters (ferroportin). He takes his stick and put all these porters in a cellar (internalization). In people with haemochromatosis, the iron master is off-stick and there is nobody to control the porters, with the result iron is continuously deposited in the body.



**TSH – THE WORRIED MOTHER:** A worried mother (TSH) brings her two sick children (T3 and T4) to the child specialist. Now whom should the doctor ask to get details? Mother of course, as children are too innocent to tell about their illness. So if you want to know something about thyroid disease (dysfunction) ask from mother (TSH) and not from the children (T3 and T4). The anxiety of mother cannot be compared with that of children. Do you agree?



## FLUORIDE – THE RBC CONTROLLER :

In a sample tube Sodium (or Potassium) fluoride addresses the RBCs “Look gentlemen this glucose is not for you; so please don’t eat it. Its patient’s glucose and is sacred for us”. In the tubes without fluoride, there is nobody to control RBCs and they party with glucose as the main course!!



**Prof. (Brig) Aamir Ijaz,  
AFIP, RWP**

### IQ Test Lab

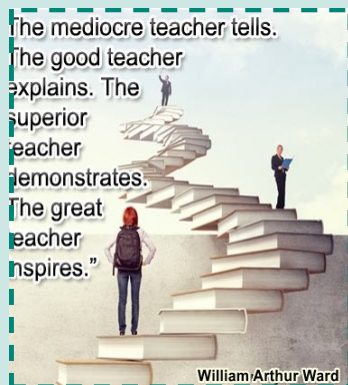
- Six drinking glasses stand in a row, with the first three full of juice and the next three empty. By moving only one glass can you arrange them so empty and full glasses alternate?
- Fill in the sequence:  
prl, my, jn, jly, gst ?

Please see the answers on page 10

## TRIBUTE TO PROF DR. AAMIR IJAZ

From  
Quaid-e-Azam Medical College

Prof. Dr Aamir Ijaz , for us , he is one of the most exciting teachers we have come across in our academic career. We feel so grateful to have been taught by such a diligent and committed teacher, putting his heart and soul into teaching , driven by a constant need to give his best in contributing to the enlightenment of his students all over a way of communi- resonated far beyond manage to achieve. him, it is a passion that only he is a great us, and could make his even years afterward. His friendliness , constant motivation and impetus left an indelible mark in our educational journey . To put it briefly, this has made him loved, appreciated, and respected by the chemical pathology trainees all over Pakistan, especially the trainees from QAMC including me who has the privilege to learn from him over the past couple of years. We salute you Sir, these words can never be enough to laud your absolute dedication and impeccable allegiance towards your endeavor !!!



Pakistan. Sir Aamir Ijaz has communicating with his students that what most teachers ever Teaching is not just a job for flowed from his heart. Not chemical pathologist but he ing us think critically, inspire lessons resonate within us ,

*Dr. Sara Khan*  
2<sup>nd</sup> year trainee, Chemical Pathology,  
QAMC, BWP



### Rosalind Franklin

Rosalind Franklin, who was a scientist working in King's College London, contributed greatly in the understanding of the structure of DNA. She came very close to solving the DNA structure between 1951 and 1953 but her crystallographic portraits of DNA were shown to James Watson *without her knowledge*. On seeing these pictures the solution became immediately apparent to Watson, and the results went into an article in 'Nature' (one of the world's biggest science journal).

Franklin's work did appear as a supporting article in the same issue of the journal. Franklin died in 1958 of ovarian cancer probably due to over-exposure to X-Ray radiations. Nobel Prize in Chemistry was awarded to James Watson and Francis Crick, for their work in the discovery of the structure of DNA in 1962 four years



*I met an old lady,  
Her walk was slow but steady.  
She said, I was beautiful like  
you,  
My eyes shown like morning  
dew.  
My rose like cheeks,  
I used to climb the mountain  
peaks.  
I danced like a fountain flows,  
My hair with many glows.  
I was so engrossed,  
In my youth that I lost.  
I lost it in a split second,  
Without knowing it ever hap-  
pened.  
Now I am so old  
That it is hard to keep the  
hold.  
My face covered with wrinkles,  
I no more see the star with  
twinkles.  
Time has passed like sand,  
Held in the closest fist of  
hand,  
Leaving behind just lines,  
on my face and no other sign.  
Leaving the memories good  
and the bad,  
Which I treasure with a smile  
but sad.  
I listened to her for a minute  
or two  
But had to take my own way  
too.*



*Capt (Dr) Sumbal Nida*  
2<sup>nd</sup> Year Trainee  
(Chemical Path)  
AFIP Rwp

## Role of Chemical Pathology in Screening and Diagnosis of Multiple Myeloma

Multiple myeloma (MM) is a cancer of plasma cells in the bone marrow. Normally, plasma cells produce antibodies and play a key role in immune function. However, uncontrolled growth of these cells leads to bone pain and fractures, anaemia, infections, and other complications.

**Criteria for diagnosis** — the diagnosis of symptomatic multiple myeloma requires the following:

M protein in the blood or urine, plus a bone marrow aspirate or biopsy showing that at least 10 percent of the cells are plasma cells plus evidence of damage to the body as a result of the plasma cell growth, such as high Calcium in the blood, Renal failure, Anaemia or destructive Bone lesions (CRAB).

### Screening Tests:

#### *Serum and Urine Protein Electrophoresis:*

During electrophoresis, intact monoclonal immunoglobulin molecules will migrate as a sharply defined band called paraprotein. It is almost always found in association with Bence-Jones protein in the urine protein electrophoretogram.

#### *Quantification of non-isotypic immunoglobulins:*

Measuring total concentrations of IgG, IgA and IgM in serum can reveal elevation of a specific immunoglobulin isotype that is suggestive of the presence of a paraprotein.

#### *Serum urea, creatinine, calcium & albumin:*

Many patients with myeloma have myeloma-related organ impairment (ROTI) in which corrected serum calcium of usually  $>0.25\text{mmol/l}$  above the upper limit of normal or  $>2.75\text{mmol/l}$  and serum creatinine of  $1.9\text{ mg/dl}$  is suggestive of ROTI.

### Tests to Establish Diagnosis:

#### *Immunofixation electrophoresis (IFE) of serum and urine:*

Identification of the immunoglobulin isotype of a paraprotein by immunofixation of the paraprotein band enables it to be classified as an IgG, IgA or IgM molecule.

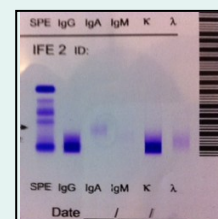
### Tests to Estimate Tumor Burden and Prognosis:

#### *Quantification of monoclonal protein in serum and urine:*

Concentrations of serum paraproteins below the threshold value are more likely to be monoclonal gammopathy of uncertain significance and those above are more likely to be myeloma.

#### *beta-2 Microglobulin:*

As a tumor marker B2M test helps to determine the severity and spread (stage) of multiple myeloma and may sometimes be ordered to evaluate the effectiveness of treatment.



Dr. Noreen Sherazi,

Agha Khan University, Karachi



Prof Dilshad Ahmed Khan and Dr Wafa Munir Ansari represented PSCP at IFCC Conference at Istanbul, Turkey in June 2014.





Congratulations to Prof Ejaz Hassan Khan, Professor of Chemical Pathology, present Councilor and ex-president of PSCP, to be appointed as Principal Khyber Medical College, Peshawar.

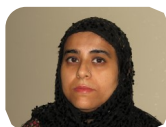
## An Interesting Case Report

A 64-year-old female presented with generalized fatigue, poor appetite, and weight loss. She had hepatosplenomegaly and diffuse petechiae. Her glucose was 1.4 mmol/L,  $\text{HCO}_3^-$ : 12 mmol/L, lactate: 28.5 mmol/L (Ref range, 0.5–3.4), and pH 7.24. Urine ketones were trace positive. She also had pancytopenia. Further workup for insulin-mediated hypoglycemia, growth hormone deficiency, adrenal insufficiency, and vitamin deficiencies were within normal limits. Bone marrow aspirate/biopsy confirmed the presence of Epstein-Barr virus-positive diffuse large B-cell lymphoma of the elderly.

*Name the phenomena causing Hypoglycaemia in this patient and give its biochemical mechanism?*

**Answer: Hyper-Warburgism.** The extreme glucose consumption by the tumor and the paradoxical lactate generation by the tumor provide compelling evidence for an increased Warburg effect.

Dr. Sabiha Waseem  
Trainee Clinical Biochemistry  
Canada



Participants of Chemical Pathology Sessions at 5th National Conference of PSCP and 37th annual conference of PAP in Lahore December 2013



Workshop with Professor Ichihara (Japan) at AFIP, Rawalpindi July 2014

## Useful websites

- ◇ **Evolve:** Evolve is a one-stop online portal for healthcare educators and students to access and purchase all of their Elsevier digital teaching & learning materials.  
<http://evolve.elsevier.com/>
- ◇ **Uptodate:** UpToDate® is the premier evidence-based clinical decision support resource, trusted worldwide by healthcare practitioners to help them make the right decisions at the point of care.  
<http://www.uptodate.com/home>
- ◇ American Association of Clinical Chemistry (AACC)  
<http://www.aacc.org/>
- ◇ American Society of Clinical Pathologists (ASCP)  
<http://www.ascp.org/>



# Harmonization

*A global effort to improve patient care*

Today's healthcare system revolves around evidence-based clinical guidelines that frequently rely upon laboratory test results to diagnose an ailment and to determine if and when treatment is necessary. This situation becomes more complicated by rapidly expanding use of EHR as well as an increasingly mobile population that results in use of different laboratories for same test at different times. Unfortunately, results of the same test from different laboratories often show large inter-laboratory variation and decisions based on these non-uniform test results increase the risk of erroneous clinical, financial, regulatory, or technical decisions that may have negative impact on patient care. There is wide agreement within the medical and laboratory community that harmonization of laboratory test results is critical to improve the quality and value of health care system. Harmonization of clinical laboratory results means that results between different clinical laboratory measurement procedures should be equivalent, within clinically meaningful limits, to enable optimal use of clinical guidelines for disease diagnosis and patient management. Harmonization of test results includes consideration of pre-analytical, analytical, and post-analytical aspects.

**Pre-analytical** factors such as vocabulary for the name of test procedure, patient preparation, specimen collection and transport needs a lot of improvement but these are not yet internationally synchronized.

**Analytical** considerations are the main focus of harmonization efforts by various organizations. The aim is to have the calibration of all procedures traceable to the same higher-level reference system and to have a common calibrator that is commutable with clinical samples for all of its measurement procedures. The conference of AACC recommended organizing a worldwide approach for prioritizing and managing the harmonization process. As a result International Consortium for Harmonization of Clinical Laboratory Results (ICHCLR) was formed to provide a systematic approach for prioritization of clinically important and technically feasible measurands to achieve harmonization and to formulate procedures for harmonization of measurands without any reference measurement procedure was likely to be developed.

**Post analytical** aspects include harmonization of reporting units, referenced interval and decision limits. IFCC working group for reference intervals and decision limits is running a global project to assess potential for global reference intervals in various measurands. In Pakistan, AFIP is also a part of this multicenter study.

*Major (Dr) Qurat-Ul-Ain  
IV Year Trainee (Chemical Pathology)  
AFIP, Rawalpindi*

## Breaking News

### Structured Assessment of Skills (SAS) in Chemical Pathology

Under the auspices of PSCP we have successfully conducted two DLPs for the improvement of cognitive domains of our students i.e. recall interpretation and application of knowledge. In the feedback of DLP2 many students demanded a programme of practical training. So we have decided to organize a skill training programme by the name of Structured Assessment of Skills (SAS) in Chem Path. This programme will focus on practical aspects including laboratory skills, data interpretation skills, lab and biosafety practices, managerial skills and soft skills (e.g. communication with patients, staff, clinical colleagues, administrators and vendors, ethical issues and professionalism). The collective wisdom of all qualified Chemical Pathologists will result in development of a valid and reliable assessment format most suitable to our peculiar specialty. All the centers where MPhil and FCPS training in Chemical Pathology is conducted may participate in SAS and *all consultants, supervisors and examiners in Chemical Pathology may participate in preparation and conduct of SAS. Chemical Pathologists who are presently not on a teaching appointment may contribute in making the questions.* SAS will be conducted on monthly basis and it will comprise two components:

**Practical** which will include 'Major Biochemical Practical', 'Quality Control Procedure' and TOACS.

**Data Interpretation Skills:** Every month we may give a test of 10 cases. We will improve the format of this very essential component and give it a proper name. One suggested name is "**Quick Assessment of Data Interpretation Skills –QADIS**"

*Further details of the programme will be communicated later.*



THE SPECTRUM



# Human Heart

## A Versatile Thinker

Presently, we are living in the age of materialism and it can also be called the age of anti-spiritualism. Here, the body is split from soul which consequently separated heart from brain. It led to research in the fields of biomedicine, psychology and social sciences to establish a link between heart and brain. Researchers came with unique findings that the human heart possesses its own kind of intelligence which affects the brain in various ways and it is not just a pumping organ but much more than that.

Quran uses “qalb” and “fuad” at various places for heart. The word qalaba in Arabic means “to turn around”, “to turn upside down continuously”. The word “fuad” in Arabic means a place of benefit. “In the acceptance of Islam, heart is the actual thing. When the heart agrees on a change and it is convinced about a matter, then the whole body has no choice except to obey the heart”. “Do they not think deeply in Quran, or are their hearts locked up (from understanding it)?” (Al-Quran)



Its fuel is Tazkiyah (purification) and Zikr (recitation from Quran and remembrance of Allah). The Muslims of today also need a vaccine of Qur’an and Sunnah at least once a day to make their hearts united once again.

(Al-Quran)  
 “Do they not think deeply in Quran, or are their hearts locked up (from understanding it)?”  
 (Al-Quran)

**NEUROCARDIOLOGY** explains that, The heart possesses its own **little brain**, capable of complex computational analysis on its own (containing more than 40,000 neurons). Intrinsic cardiac nervous system acts as much more than a simple relay station for the extrinsic projections to the heart.



Functioning of the heart is not only in concert with the brain but also independent of it. “The heart in particular, seemed to have its own peculiar logic that frequently diverged from the direction of other autonomic nervous system responses.

*“The heart seems to behave as if it had mind of its own”* (Dr Gohar Mushtaq)

Prophet Mohammad (PBUH) and his companions used to weep while listening to Quran. Medically it has been proved that it stimulates parasympathetic system of heart which causes stimulation of lachrimal glands of eye and causes tearing (weeping) and stimulation of erector Pilli muscles of skin which causes goose bumps.

Dr Rubina Shafi  
 Chemical Pathology and  
 Endocrinology Dept,



## FACILITATIONS



We offer our warmest congratulations to Dr. Syed Talha Naeem, Agha Khan University, Karachi on passing his FCPS II exam in April 2014. Wish you a bright future filled with the promise of a wonderful career.



## Meta Analysis

Meta-analysis is a statistical procedure that integrates the results of several independent studies considered to be “combinable.”

Meta-analysis would be used for the following purposes:

- To establish statistical significance with studies that have conflicting results
- To develop a more correct estimate of effect magnitude
- To provide a more complex analysis of harms, safety data, and benefits
- To examine subgroups with individual numbers that are not statistically significant

### Conducting meta-analyses

**Location of studies:** Meta-analysis requires a comprehensive search strategy which interrogates several electronic databases, hand searching of key journals and checking of the reference lists of papers.

**Quality assessment:** Good meta-analyses will use **objective criteria for inclusion or rejection** of studies on quality grounds.

**Calculating effect sizes:** Two approaches used are: **odds ratio (previously)**, and now **the risk ratio (relative risk)**. Ratio of 2 implies that the defined outcome happens about twice as often in the intervention group as in the control group.

**Checking for publication bias :** Examine a **funnel plot**. It displays the studies in a plot of effect size against sample size.

**Sensitivity analysis** A good sensitivity analysis will explore effect of excluding various categories of studies. It may also examine how consistent the results are across various subgroups.

**Presenting the findings:** *Forest plot* displays the findings from individual study as a blob or square, with squares towards the left side indicating the new treatment to be better, whereas those on the right indicate the new treatment is less effective. The size of the blob or square is proportional to the precision of the study. A horizontal line (usually the 95% confidence interval) is drawn around each of the studies' squares to represent the uncertainty of the estimate of the treatment effect. The aggregate effect size obtained by combining all studies is usually displayed as a diamond.

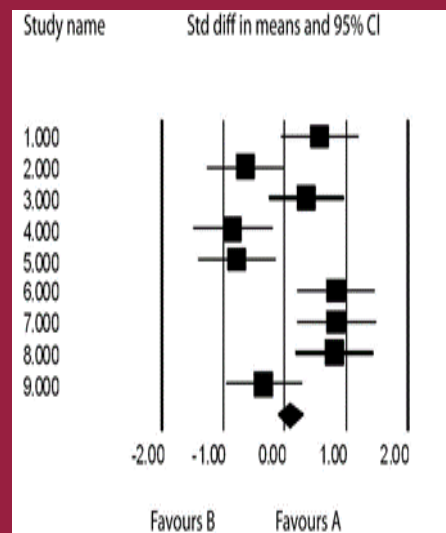
**Heterogeneity:** A major concern about meta-analyses is the extent to which they mix studies that are different in kind. Studies can differ on the types of patient studied, the nature of local healthcare facilities, the intervention given and the primary endpoint (death, disease, disability). Meta-analyses should test for the existence of heterogeneity with 25% corresponding to low heterogeneity, 50% to moderate and 75% to high. If heterogeneity is absent, then the analysis employs **fixed-effects modelling** which assumes that variation seen between studies is by chance. **Random-effects models** assume that variation between studies exists. When the amount of heterogeneity is large, meta-regression is introduced to overcome this problem .

### Advantages:

- \* To increase power
- \* To improve precision
- \* To settle controversies arising from apparently conflicting studies or to generate new hypotheses
- \* Considered as evidence-based resource

### Disadvantages:

- \* Difficult and time consuming to identify appropriate studies
- \* Not all studies provide adequate data for inclusion and analysis
- \* Requires advanced statistical techniques
- \* Heterogeneity of study populations



Dr. Farheen Aslam  
4<sup>th</sup> Year trainee, Chemical Pathology  
QAMC, Bahawalpur

### Answers of IQ test on page 4

- Pour the second glass into the fifth glass.
- **sptmbr**  
**Explanation:**Name of the months after removing the vowels - APRIL, MAY, JUNE, JULY, AUGUST, SEPTEMBER

## *Accreditation of Clinical Laboratories: Stride along the Perfection*

Clinical laboratory results are central to diagnosis, risk assessment, management and monitoring of disease and accreditation is a formal, third party recognition of competence to perform specific tasks. Laboratory accreditation benefits laboratories by allowing them to determine whether they are performing their work correctly and to appropriate standards, and provides them with a benchmark for maintaining that competence. Laboratory accreditation is a voluntary activity of complete, accurate and objective assessment of laboratory processes and management practices. Accreditation helps laboratories demonstrate their efficiency, accuracy, and cost-effectiveness while keeping the main focus on quality and patient safety. Approved international standards are applicable and followed by approved accreditation bodies for medical or clinical laboratories accreditation. International organization of standard (ISO) has developed a laboratory standard for use only by medical laboratories i.e. 15189 (ISO 15189) which is a well-accepted international standard and specifies particular requirements for quality and competence of medical laboratories. Other medical laboratories standards are adopted from Clinical and Laboratory standard institute (CLSI), College of American Pathologist (CAP), The Joint Commission (TJC) and World Health Organization (WHO). International Laboratory Accreditation Cooperation (ILAC) is a global laboratory accreditation association.

In conjunction with ILAC, specific regions have established their own accreditation co-operations such as Asia Pacific Laboratory Accreditation Cooperation (APLAC) for Asian and Pacific Rim laboratories. National accreditation councils and bodies are approved or affiliated with regional or international accreditation organizations to provide accreditation service to medical laboratories at national level.

Pakistan National Accreditation Council is the statutory body, which have been assigned the task of accreditation of clinical laboratories in the country and it has already accredited a few laboratories. Medical laboratory accreditation bodies use standards to assess factors relevant to laboratory and quality management system. Usually a pre-assessment visit is scheduled before final assessment to highlight any area that requires attention with corrective action. At the end of final assessment a detailed report on evaluation is presented to laboratory to announce the decision about accreditation. On the basis of report if laboratory fulfils the minimum criteria for accreditation the laboratory is declared accredited and an accreditation certificate and number is issued to laboratory. Later surveillance is carried out to assess the maintenance of competence.

*Dr. Sahar Iqbal  
Consultant Chemical Pathologist  
Dow University of Health Sciences  
Karachi*



### Congratulations!!

Our heartiest congratulations to Prof Asma Shaukat, Professor of Chemical Pathology, present Councilor to assume the responsibilities of Head of The Pathology Department, Quaid-e-Azam Medical College, Bahawalpur



First day of Prof. Asma Shaukat as Head of Department

Pathology department, QAMC, Bahawalpur



## CHANGING ROLE OF LABORATORY MEDICINE

Clinical laboratories represent an area of healthcare that has always undergone major changes because of technological advances and external economic pressures. A hospital laboratory has to meet the requests for laboratory investigations by maintaining adequate diagnostic facilities, to provide professional advice on management of the patient, to provide laboratory facilities for research projects undertaken by clinicians, to collaborate in the development, study and control of new methods of treatment, to undertake applied research on pathology problems and to collaborate in education and training of medical and paramedical personnel. Pathology service plays a pivotal role in the disease diagnosis. With growing dependence on the laboratory services, more than two third diagnoses are made by the laboratory workup.

These are the days of economical considerations and provision of cost effective services. It has been observed that at least, one third laboratory tests are solicited, without their relevance to the patient's care.

If the efforts are made in the right direction, many highly sophisticated and costly tests may easily be replaced with a few simple and widely accepted tests. The laboratory-clinic interface is, therefore, of fundamental importance to ensure that the patient is given high quality care.

In order to fill the need for better quality health care, avoidance of medical errors and cost reduction, three strategies have been recommended for supporting and promoting clinical consultancy in Laboratory Medicine.

It is an era of **Evidence-Based Laboratory Medicine (EBLM)** which focuses on the use of diagnostic tests and the goal of improving patient outcomes. Asking a question is the first step of the evidence-based laboratory medicine (EBLM) cycle, the other steps being acquiring the evidence, critically appraising the evidence, applying the evidence and auditing use of the evidence. Whilst the main focus of the EBLM cycle is to provide a strong evidence base for use in clinical practice.



Sqn Ldr Muhammad Younas, FCPS (Chem Path)  
Consultant Pathologist, PAF Hospital Islamabad

Alfred Nobel

*Alfred Nobel invented dynamite and made lot of money. In his will, Nobel directed that the bulk of his estate should be used to award prizes that would promote peace, friendship, and service to humanity. After his death in 1896, the governments of Sweden and Norway established Nobel Prizes in five categories: chemistry, physics, physiology or medicine, literature, and peace. A sixth category, economics, was added in 1969. Every year, Nobel laureates assemble in Oslo or Stockholm on December 10<sup>th</sup> on the anniversary of Nobel's death. Each laureate receives a medallion, a scroll, and all or part of a cash award currently valued at about \$1 million per category.*

## PSCP website

We proudly announce that the new interactive website of **Pakistan Society of Chemical Pathologists** is being developed by Dr Junaid Akhtar, who is an IT Expert and a trained Chemical Pathologist. It will be available soon at the following address:

[www.PSCP.org.pk](http://www.PSCP.org.pk)

- \* Education is the most powerful weapon which you can use to change the world. (**Nelson Mandela**)
- \* Wherever you stand, be the soul of that place. (**Moulana Rumi**)
- \* There is nothing either good or bad, but thinking makes it so. (**William Shakespeare**)
- \* More the knowledge lesser the ego, lesser the knowledge more the ego. (**Albert Einstein**)
- \* The highest result of education is TOLERANCE. (**Helen Keller**)

Dr. Ayesha Siddiq  
QAMC, BWP



## What is in the Name!!

Our specialty is not universally known by one name but in different countries different names are used. Following is a list of countries using different names. The list is not only an interesting piece of information but also a fruit for thought for us:

### Clinical Biochemistry

Albania, Australia, Bolivia, Bosnia, Brazil, China, Denmark, Greece, India, Iran, Ireland, Malaysia, Nepal, New Zealand, Norway, Paraguay, Russia, Singapore, Slovak Republic, South Africa\*, Spain, Sri Lanka, Thailand, UK\*, Vietnam

### CLINICAL CHEMISTRY

Austria, Belgium, Canada, Egypt, France, Finland, Germany, Greece, Hong Kong, Hungary, Indonesia, Italy, Japan, Kenya, South Korea, Mexico, Morocco, Holland, Nigeria\*, Portugal, Saudi Arabia, Slovenia, Sweden, Switzerland, Turkey, USA

### Chemical Pathology

Pakistan

\*In some countries the names of their associations contains Clinical Biochemistry but Chemical Pathology is also used in hospital and university labs.

Isn't it astonishing that Pakistan is the only country, which is using the name of '**Chemical Pathology**' for this specialty. *Should we consider a change of name? Let us start a national debate on it. Please send your opinion at any of our emails.*



# THE SPECTRUM SURVEY

*As a Kid what did you want to be when you grew up? And how you ended up becoming a chemical pathologist?*

- \* I wanted to become everything but a pathologist!! On a serious note I entered in the field of Pathology because of AFIP and in Chemical Pathology because of inspiration from Maj Gen Farooq Ahmad Khan (retd), my teacher and mentor.  
( *Prof Aamir Ijaz* )
- \* I wanted to become doctor like my ideal mother .But I was inspired by my (late) father who was Professor of Chemistry, so the interest of being a doctor and Chemist turned out to be an amalgam—"chemical pathologist"  
(*Asma Shaukat* )
- \* My childhood dream was to become a nuclear scientist but I changed my mind just to fulfil the more prestigious wish of my mother to become a doctor. After joining army, I felt pathology, being an emergency free field, was the most suitable for me. In pathology I love chemical pathology because of its vast canvas and closeness to medicine.  
(*Dr Qurat-Ul-Ain AFIP* )
- \* As a kid , it was my very " own " dream to become a doctor and I became a chemical pathologist by choice as well. On realizing the fact unlike other fields , there is still quite a lot of opportunity for females to excel in this emerging speciality. I then decided to take pathology part 1.  
(*Dr Sara Khan QAMC* )
- \* I wanted to be a doctor and fortunately was lucky enough (but off the record sara josh thanda par gya .it was a stressful time .UHS exams tu bas tension he tension thi). As I am a native of Bahawalpur and the only good option here is chemical pathology so I decided to be a trainee of madam Asma, MASHALLAH a very co-operative and nice teacher.  
(*Dr Kamran QAMC* )
- \* I always wanted to be a doctor. During 1st year of MBBS I decided to do Mphil in anatomy as I observed the easy and relaxed life of anatomy teachers. But in 3rd year. I started making my mind for specialization in pathology. (I still remember the very first lecture of Pathology was taught by Prof Asma shaukat. When Ma'am introduced herself I was so inspired and told my friend, that one day I will be like her and now Alhumdulillah I am her trainee and I am proud of it. (*Dr Nudrat Khan QAMC* )
- \* As a kid I wanted to be a lawyer or justice but when I was not allowed to adopt the profession I took MBBS as second option which was wish of my parents as well. I chose chemical pathology for specialization because It is an interesting field and of course impressive personality of my supervisor made me join chemical pathology  
( *Dr shahnaz Noor QAMC* )
- \* As a child, I always wanted to be a scientist. As I grew up, I chose to become a doctor as it was suggested by my parents. I chose Chemical Pathology because it is a vast and dynamic field which also touches other fields of science besides the medicine.  
( *Dr Masud Ansari QAMC* )
- \* As a kid I had not as much defined goals, just had an inspiration to be a doctor. Ending up in chemical pathology was such a sudden decision of my life. I could not exactly figure out how I joined this field. May be I felt I can't cope with the hectic duties of medicine. I thought to opt a field in which there is an easy life style plus more chances to progress, as chemical pathology is relatively less saturated.  
(*Dr Faghia Shahid QAMC* )

## THE SPECTRUM

## Why Female doctors Opt Chemical Pathology more than male doctors??

- \* Because they get ample time and sufficient money to shop dopattas, angrakhas, choridaars and plasmo? (What is the name of that very loose trouser? I am sorry I forgot) etc.  
(*Prof Aamir Ijaz*)
- \* It goes very well with their family lives  
(*Prof Asma Shaukat*)
- \* The reason may be 3-fold; either the females are never scared of difficult things so they love to be in this challenging field or they are too innocent to understand the dire needs of this specialty or like me they love the duty hours of this field.  
(*Dr Qurat-Ul-Ain AFIP*)
- \* Chemical Pathology is all about colors and I think females reflect the colored side of na-



- \* Yes it affects because LAURELS is more important than friendship!!! But hold on, there is another problem here. Some wise person once said "*the friendship which ended was, in-fact, never there*"  
(*Prof Aamir Ijaz*)
- \* Yes, I am more friendly with my juniors  
(*Prof Asma Shaukat*)
- \* Ahhmm! "kyun pakki dushmani karwani hai"... just kidding. Certainly not, rather DLP helped us in making more friends that was nearly impossible otherwise. Thanks to DLP we all are now a family.  
(*Dr Qurat-Ul-Ain AFIP*)
- \* No my friendships are all the same: D  
(*Dr Sara Khan QAMC*)

ture so females opt Chemical Pathology more than male doctors.

(*Dr Ayesha Siddiqa QAMC*)

- \* Comfortable working environment makes them choose chemical pathology.  
(*Dr Sara Khan QAMC*)
- \* I think female doctors prefer the basic medical sciences over the clinical fields as they also have to look after their families. Chemical pathology has good scope and offers opportunities to progress for young pathologists.  
(*Dr Masud Ansari QAMC*)
- \* As females have a double job in their lives i.e. looking after their homes and kids and to excel in their carrier so chemical pathology is a field which provide you both opportunities  
(*Dr Faghia Shahid QAMC*)

## Certainly, DLP improved our knowledge and had a vast impact on our understanding, did it affect your friendships??

- \* DLP has created the atmosphere of competition among trainees and ironically it has created a lethal atmosphere of jealousy as well ....LOLz  
(*Dr Nudrat Khan QAMC*)
- \* DLP had an indirect impact on our friendships. It helped us to differentiate our real friends from the rest.  
(*Dr Masud Ansari QAMC*)
- Yes, it created an environment of competition among my friends so had a great effect on friendships.  
(*Dr sumbal Rani QAMC*)
- \* DLP provided a platform where PGRs all over Pakistan and abroad became familiar and developed good relationships with one another like a family.  
(*Dr Tahira Jabeen QAMC*)

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