In this issue
FIT – NICE Guidance Published
Meet the President
BIVDA Focus 2018
Health & Care Professions Tribunal Service
CSO Bulletin
Innovation and Best Practice
Flexible Working
Trainee Electives – from London to South Africa
Meet Alpha Laboratories on Stand 126 at the IBMS Congress
ICC, Birmingham, 25-27th September

We’ll be showcasing the latest diagnostic developments for gastroenterology patient pathways. You can find out about Faecal Immunochemical Testing using the HM-JACKarc automated FIT system and our expanding range of Calprotectin tests for differentiating IBS and IBD.

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STOP PRESS

The final Diagnostics Guidance on Quantitative Faecal Immunochemical Tests (FIT) to guide referral for colorectal cancer in Primary Care was published on Wednesday 26th July 2017 as the ACB News went to press.

The recommendations include use of particular FIT methods ‘to guide referral for suspected colorectal cancer in people without rectal bleeding who have unexplained symptoms but do not meet the criteria for a suspected cancer pathway referral outlined in NICE’s guideline on suspected cancer’ (ie NG-12).

In other words testing is recommended for the patient groups within recommendation 1.3.4 of NG-12. A cut-off of 10 µg/g faeces is recommended. The articles on pages 20 to 23 have been commissioned to coincide with the launch of this important guidance.

Laboratories need to be aware of this guidance, as FIT is being discussed within Cancer Alliances, NHS England Clinical Networks, Commissioning Groups to name but three! As Ian Godber’s article illustrates, this is of relevance across the UK. The final Report from NICE can be found at: https://www.nice.org.uk/guidance/dg30

Focus 2018

Focus 2018, our National Scientific Meeting, will be held on 6th-8th June 2018 at the Manchester Metropolitan University – please note this in your diaries! (OK, so you probably don’t have a 2018 diary, yet!). Key members of the Organising Committee Members are: Mike Hallworth: Chair, Organising Committee; Chris Chaloner: Chair, Scientific Committee; Sarah Robinson: Vice-Chair, Organising Committee; Secretariat: ACB Office (focus2018@acb.org.uk).

Further information will be available soon. We look forward to seeing you in Manchester.

Sudoku

This month’s puzzle

```
E S Y M
R C
S H I R
Y I E
E M
I T H S Y M
H M R T
```

Last month’s solution

```
R I Y E T M H C S
T C S H R I Y E M
E M H S C Y R T I
C H E M I S T R Y
S T M Y H R C I E
I Y R T E C S M H
R E T I S H M Y C
M S I C Y T E H R
Y H C R M E I S T
```
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Meet the President . . .
Professor Ian Young

It was a great honour to take over the position of ACB President at this year’s AGM, and I am looking forward to the challenge of representing our professions in difficult times. My predecessor, Gwyn, was an excellent President and will continue to work closely with me for the next year in the past-President role.

The ACB News Editor has kindly asked me to write a short article introducing myself – always a difficult task! I joined the ACB approximately 30 years ago as a Trainee Chemical Pathologist, and have been an active member throughout my career. I was Chair of the ACB Scientific Committee for a number of years, before joining the Scientific Division of the IFCC, where I became vice-Chair and then Chair for a period of six years up to the end of 2016.

In my day job, I have been a clinical academic and Consultant Chemical Pathologist in Belfast throughout most of my career. I was appointed as Professor of Medical Biochemistry at Queen’s University Belfast in the late 1990s, and subsequently became Professor of Medicine, a position which I still hold. My clinical and research interests have been mainly in lipids, nutrition, and oxidative stress, and I have published almost 400 papers and review articles in these areas. My University and clinical commitments have now significantly reduced, and my time is mainly spent as Deputy Medical Director in Belfast Health and Social Care Trust, and Chief Scientific Advisor/Director of Health and Social Care Research and Development for the Northern Ireland Department of Health. However, I continue to see patients and to provide clinical advice.

Apart from the ACB, I have a number of other external roles, in particular as a member of the UK Scientific Advisory Committee on Nutrition, Associate Editor for Clinical Chemistry, Chair of the UK NEQAS Clinical Chemistry Steering Groups, member of Scientific Advisory Boards for NIBSC and LGC, and member of JCGM Working Group 2 (all abbreviations can be Googled!).

In my personal life, I am particularly interested in literary fiction/book collecting, and contemporary art (especially urban art), topics I am always happy to chat about!

I am looking forward very much to the next two years as President of the Association. There will be many important issues to address, but in particular I hope to promote initiatives to maximise membership of the Association in all relevant branches of laboratory medicine, and to ensure that leadership roles in the Association reflect the demographics of our membership and that active consideration is given to equality issues in all aspects of the Association’s work.
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Receive an instant result from a drop of blood for:
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- HDL Cholesterol
- LDL Cholesterol
- Triglycerides

SMT-100 Chemistry Analyser

Parameter discs:
- Healthy check
- Liver Function
- Kidney Function
- Electrolyte
- Comprehensive Metabolism

iCHROMA™ I Immunoassay Analyser

Portable analysers tests for:
- Diabetes
- Cardiac
- Deep Vein Thrombosis
- Rheumatology
- Thyroid Disease
- Cancer
- Sports Medicine
- Reproductive Medicine
- Nutritional Status
- Sepsis / Infection

iCHROMA™ II Immunoassay Analyser

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The RPSD separates free plasma from whole blood without the need for centrifugation or a laboratory service

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Simple, hygienic and practical way to take a stool sample for IFOB measurement

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Book Review: Clinical Chemistry

Ian Hanning, Lead Editor, ACB News

Clinical Chemistry
by David White, Nigel Lawson, Paul Masters and Daniel McLaughlin
Published by Garland Science, Taylor & Francis Group, 2017
ISBN 9780815365105
587 pages, including index

I found this new book refreshing, in that the chapters were obviously written de novo, rather than updating the text from previous editions. Thus aspects such as high sensitivity troponin, brain natriuretic peptide, acute kidney injury (AKI), estimated glomerular filtration rate, the use of enzymatic creatinine assays, the measurement of CSF xanthochromia and the use of tandem mass spectrometry are included. Also included is very useful background information on glycated haemoglobin (HbA1c) measurements including standardisation with the now historical cross-over period for the ‘new’ versus ‘old’ units, use (and limitations) of HbA1c in the diagnosis of diabetes. Reference is made to the original Diabetes Control and Complications Trial (DCCT) and the UK Prospective Diabetes Study (UKPDS). At the time, these were landmark studies demonstrating the benefits of good glycaemic control and, probably more important, the effects of poor glycaemic control.

The book is divided into 25 chapters, each with useful side-headings, covering the subject in a very comprehensive manner; topics are well-referenced in the index. The text is inter-spaced with very relevant ‘clinical practice points’, ‘analytical practice points’ and clinical cases. For example, there is a useful reminder that TSH may remain suppressed for several months following treatment of thyrotoxicosis, which those new to the subject may not appreciate. Overall, topics are covered in a logical manner, with good explanations of the basis of disease (after the description of normality!) and the rationale for the testing of particular analytes.

I particularly liked the section on cardiac muscle, which is within Chapter 13, Muscle. This pulls together the clinical presentation and electrocardiogram findings, with the biochemical findings in myocardial infarction. This includes a list of historical markers of myocardial damage which have been superseded by troponins, again, a good learning section for those new to the profession who take troponins for granted! This includes reference to Acute Coronary Syndromes (ACS), together with a clinical practice point.

This book contains some very detailed information and, I feel, would be ideal (together with other resources) for those studying for FRCPath, as well as those looking for a refresher/reminder of particular clinical situations. This book is ideal for dipping into either at a basic level, or when studying for FRCPath.

My only (personal) irritation is the Americanised text, e.g. ‘tumor markers’ and ‘heme’, as well as ‘z’ rather than ‘s’, but as I say, that is a personal preference!

This is certainly a book that you will find on my bookshelf.
Complete QC solutions for results you can trust

QC Data Management
Smarter, faster and more powerful than ever before, our interlaboratory program delivers unique access to instantly updated peer group statistics, interactive charts and automatic calculation of Measurement Uncertainty & Sigma Scores, reducing time spent troubleshooting and analysing QC data.

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Our extensive portfolio of multi-analyte controls allows for effective consolidation in even the most demanding laboratories, ultimately helping to reduce costs & preparation time. The availability of commutable controls, clinically relevant levels and accurate target values will also help to meet regulatory requirements.

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Health and Care Professions Council Launches Arm’s Length Tribunal Service

The Health and Care Professions Council (HCPC) has launched its new tribunal service, The Health and Care Professions Tribunal Service (HCPTS).

The HCPTS is a new impartial hearings service which will provide a distinct identity to highlight that the adjudication of fitness to practise allegations is undertaken at arm’s length by panels which are independent of the HCPC who investigate the matter.

It comprises the Tribunal Services Team, which manages the operations of the hearings and the Tribunal, which are the Panels that make decisions on what action is needed to protect the public. HCPTS Panels may caution or place restrictions on a registrant’s practise and in the most serious of cases remove or suspend professionals from the HCPC Register.

Based in a dedicated centre in Kennington, London, the HCPTS is part of the HCPC but will be operationally separate from the regulator’s complaint handling, investigation and case presentation.

John Barwick, Acting Director of Fitness to Practise, HCPC said: ‘It is important for us to deliver a service where there is a distinct separation. The HCPTS will provide reassurance to registrants that the Panel making a decision on allegations about them is at arm’s length from the organisation that investigated the matter. It is important from a registrant and public perspective that our hearings are objective, impartial and transparent.’

For more information on the HCPTS, all current fitness to practise cases, and recent decisions visit: www.hcpts-uk.org

Please note:

1. The Health and Care Professions Tribunal Service (HCPTS) is the fitness to practise adjudication service of the Health and Care Professions Council (HCPC). For more information on the purpose and structure of the HCPTS, visit: www.hcpts-uk.org/aboutus/roleofhcptribunalservice

2. The Health and Care Professions Council is an independent regulator set up by the Health and Social Work Professions Order 2001. The HCPC keeps a register for 16 different health and care professions and only registers people who meet the standards it sets for their training, professional skills, behaviour and health.

3. You can find out more about hearings and allegations by visiting: www.hcpts-uk.org/hearings/calendar

4. Anyone can contact the HCPC and raise a concern about a professional on the HCPC Register. This includes members of the public, employers, the police and other professionals. Visit: www.hcpc-uk.org/complaints/raiseaconcern/

5. The HCPC currently regulates the following 16 professions. Each of these professions has one or more ‘protected titles’. Anyone who uses one of these titles must register with the HCPC. To see the full list of protected titles please see www.hcpc-uk.org/aboutregistration/protectedtitles

- Arts Therapists
- Biomedical Scientists
- Chiropodists/Podiatrists
- Clinical Scientists
- Dietitians
- Hearing-aid Dispensers
- Occupational Therapists
- Operating Department Practitioners
- Orthoptists
- Paramedics
- Physiotherapists
- Practitioner Psychologists
- Prosthetists/Orthotists
- Radiographers
- Social Workers in England
- Speech and Language Therapists

6. The HCPC regulates social workers in England. Social workers in Northern Ireland, Scotland and Wales are separately regulated by the relevant Care Council in that country.

7. Registrants can appeal the panel’s decision. Appeals are made directly to the High Court in England or Wales, the Court of Session in Scotland or the High Court of Justice in Northern Ireland. Appeals must be made within 28 days of when the Notice of Decision and Order is served. The Panel’s order does not take effect until the appeal period has expired or the appeal has concluded.
Snippets from the Chief Scientific Officer’s Bulletin, June 2017

Voicepiece

The greatest challenge for the NHS over the coming years is to find new and more effective ways of working to ensure sustainable, high quality care for all. One significant change is the growing coupling of diagnostics to medicine as more personalised drugs and approaches are developed.

As Healthcare Scientists, we have to constantly transform the way we work in response to advances in technology and changes in the external environment, and constantly strive to improve our services and the way we work within them so we can do the best for our patients.

Many healthcare science interventions require administration of prescription-only pharmaceuticals, from the use of salbutamol in the diagnosis of asthma by Physiologists through to the use of contrast agents in MRI or the drugs used in nuclear medicine. It doesn’t make sense to patients or service efficiency that different professions have to be brought in to the delivery of routine tests and procedures when it could be delivered in a one-stop, joined up way.

Finding ways that Healthcare Scientists could be permitted to administer prescription-only drugs could potentially provide real benefits for patients by allowing the creation of more flexible, redesigned services which would be patient-centred with new roles and new ways of working within the profession.

NHS England’s Chief Professions Officers’ Project: Medicines Supply, Administration and Prescribing Mechanisms, is a new programme which aims to make the case for legislative change so that suitably qualified and registered staff can get the right medicines to their patients when they need them. Ultimately this will improve services to patients, transform care, and deliver value and sustainability.

Healthcare Scientist Associates Announced

Working in partnership with the National Measurement System, NHS England’s Chief Scientific Officer’s Knowledge Transfer Partnership programme presents a unique opportunity for clinical leaders to collaborate with senior Scientists.

Following a call for applications, NHS England’s Chief Scientific Officer would like to congratulate the first four Healthcare Scientist Associates who have been appointed. They are:

- Dr Rachel Carling, Consultant Clinical Scientist, Director of Service and Clinical Lead, Viapath, Guys and St Thomas’ NHS Foundation Trust.
- Dr Colin Baker, Head of Radiotherapy Physics, Royal Berkshire Hospital NHS Foundation Trust.
- Dr Bal Sanghera, Clinical Scientist, Paul Strickland Scanner Centre, Mount Vernon Hospital.
- Dr Jason Cashmore, Consultant Physicist, Deputy Head of Physics, University Hospital Birmingham.

Opportunities

Innovative Healthcare Scientists are invited to join the Clinical Entrepreneurial programme. Applications opened on 10th July 2017.

The Clinical Entrepreneurial programme, hosted by NHS England and Health Education England, is aimed at health professionals who are developing clinical innovations or enterprises. Healthcare scientists who are passionate about
continuing in clinical practice whilst pursuing their entrepreneurial aspirations are invited to apply for a place on the programme. Applications are open until 9th August 2017.

The NHS Innovation Accelerator (NIA) 2017 is now open for applications.

Launched in January 2015, the NIA is an NHS England initiative, delivered in partnership with academic health science networks, and hosted by UCL Partners. The NIA aims to create the conditions needed to make evidenced healthcare innovations more widely available to patients. The NIA 2017 is looking for local, national and international innovations that address NHS priorities including mental health, urgent and emergency care and primary care. The deadline for applications is 26th July 2017.

**Updates from the CSO Team**

Consultant Clinical Scientists make a very important contribution to high quality, safe and effective patient care through advances in technology, innovation and improved interaction and communication with clinical teams and patients. The NHS Higher Specialist Scientist Training programme aims to train and develop an increased number of very senior Consultant Clinical Scientists who can lead the development of new research, technology and practice working within multi-professional clinical teams to deliver quality improvement, innovation and world-class outcomes for patients. If you are an employer, you can access guidance for employers planning for and recruiting Consultant Clinical Scientists.

**Accreditation Masterclass Presentation Slides now available**

In April 2017, NHS England, in partnership with the Royal College of Physicians Imaging Services Accreditation Scheme and the United Kingdom Accreditation Service, hosted an Accreditation Masterclass. The masterclass was aimed at health professionals involved in commissioning or implementing an accreditation or quality improvement programme or with an interest in this subject. The presentation slides from the masterclass are now available on NHS Networks’ website. Please contact england.cso@nhs.net if you have any queries.

**New Healthcare Science pages of the NHS England website now available**

The Office of the Chief Scientific Officer has published new Healthcare Science pages on the NHS England website. Access the pages to learn about healthcare science and how the CSO’s Office drives the contribution of science to health through its programmes, to ensure the NHS can deliver on its commitment to work at the limits of science. As well as keeping you up-to-date with the latest healthcare science news, there are links to publications and events from the Office of the Chief Scientific Officer, and the opportunity to subscribe to the CSO bulletin. These pages will also host the upcoming series of CSO blogs from across healthcare science. Please share the pages with your networks.
Workforce Plans

We are asking all ACB Members to participate in the next workforce survey which will be sent out soon.

Workforce information is essential for workforce planning at local and national level, and it is vital in the current changing climate within the NHS, Universities and industries. It will enable the ACB, in collaboration with the RCPath, to effectively support its members across a range of areas and ultimately lead to improved patient care.

The information gathered will be anonymous and strictly confidential. It will be used for statistical purposes, workforce planning, education, training and ACB Office based projects.

Your input will be appreciated very much.

Charles van Heyningen
ACB Workforce Lead
Email: charlesvh@icloud.com

Request for Examples of Innovation and Best Practice Across the Chemical Pathology and Histopathology Workforce

Health Education England (HEE) is working with the College, the Institute of Biomedical Science and the Association for Clinical Biochemistry and Laboratory Medicine to address issues relating to the development of the pathology workforce.

As part of this work, they are looking for local examples of workforce innovation and best practice. The initial focus of this work is on the chemical pathology and histopathology workforces, considering the role of the Healthcare Scientist as well as the medical workforce.

Please share examples of innovative ways of working. Suggestions include, but are not restricted to, examples of:

♦ Skill mix and role expansion.
♦ Innovative local solutions to address workforce gaps.
♦ How training capacity has been increased to deliver training within service.
♦ Workforce adaptation and development to address IT and technological changes.

In your response please provide a summary of your local arrangements and outline what you perceive to have worked well and what hasn’t worked well.

To respond to this request please print out and complete the form printed opposite and email it to workforceplanning@rcpath.org by 31st August 2017 (extended from July).
<table>
<thead>
<tr>
<th>Name of organisation/service</th>
<th>Example of workforce innovation/best practice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
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<tr>
<td>What worked well?</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>What didn’t work well?</td>
<td>Please include a summary of any particular issues or challenges</td>
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</table>
The Association for Clinical Biochemistry & Laboratory Medicine Benevolent Fund

The deed governing the Benevolent Fund was revised in 2013 to cover persons who are or have been Members or employees of the Association and the dependents of deceased or disabled past or present Members or employees of the Association.

The Fund has had a few applications for support in the last 10 years. While this may be a reflection that hardship is, unfortunately, uncommon, it is possible that people who might be eligible for support, for example, the surviving partner of a deceased member or employee, individuals that may be having problems with disability, long-term illness, health or other circumstances making their life intolerable may not be aware of the Fund’s existence. We would therefore ask members to make potential beneficiaries aware of the Fund’s existence.

Applications for support should be sent to the ACB Office.

You may also like to make a donation to the Benevolent Fund, which again can be sent to the ACB Office. If you would like to increase the value of your donation, for UK tax payers, at no extra cost to yourself you can do this through CAF (Charities Aid Foundation) at https://www.cafonline.org/my-personal-giving/start-giving/find-a-charity

You will then need to enter in the Charity Number 254213 in Charity Name, tick the search charity number box and then select search. You will then be able to select donate, in this way the fund will receive the tax you have already paid on your donation from the Inland Revenue.

We thank you for your kindness in considering this request.

C P Stewart Memorial Fund

The CP Stewart Memorial Fund was established specifically to provide financial help to Members wishing to travel to other laboratories in order to learn a new technique and introduce it in their own departments.

It cannot provide funds to support research performed in a member’s home laboratory, for which scientific scholarships are available.

Again, applications for disbursements from the Fund should be addressed to the ACB Office in the first instance.

Condolences

It is with regret that we must inform you of the sad news of the passing of several ACB Members.

Emeritus Member Peter Scott passed away on 2nd June aged 90. During his time with the ACB Peter served as Chairman (1985-1987), Chair of the FCS (1980-1982), National Member of Council (1983-1984), Council representative for Midlands (1971-1973) and Chair of the Midlands region (1966).

Emeritus Member Professor Barbara Billing died on 20th May 2017. Professor Billing joined the Association in 1957.

Retired Member Raymond Smith, who joined the ACB in 1960, has passed away.

Retired (Overseas) Member, Dr David Gordon Campbell, has also passed away. He joined the Association in 1964.
The Diggle Microbiology Challenge

These multiple-choice questions, set by Dr Mathew Diggle, are designed with Trainees in mind and will help with preparation for the Microbiology Part 1 FRCPath exam.

Question 2 from June
A 22-year old female medical student recently returned from Tanzania presents with a history of haematuria. On investigation schistosomal serology is shown to be positive. Select the treatment of choice:

A) Albendazole
B) Ivermectin
C) Mebendazole
D) Praziquantel
E) Suramin

Answer
D) Praziquantel is an anti-trematode agent, causing severe paralysis of the fluke’s muscles.
Albendazole is an anti-helminthic agent, effective against cestodes, and some nematodes (Ascaris, Enterobius). Ivermectin is effective against Strongyloides. Mebendazole is effective against nematodes (Enterobius, Trichuris and Trichinella). Suramin is prescribed in the treatment of sleeping sickness (Trypanosoma brucei rhodesiense, Trypanosoma brucei gambiense).

Question 3
Many antiviral drugs act by inhibition of a viral DNA polymerase enzyme. Select the virus for which this class of drugs would be effective:

A) Cytomegalovirus
B) Influenza
C) Measles
D) Mumps
E) Rabies

The answer to Question 3 will appear in the next issue of ACB News – enjoy!
You need to make up a phosphate buffer with a pH of 7.4 and a total phosphate concentration of 40 mmol/L. Calculate the amounts of sodium dihydrogen phosphate and disodium monohydrogen phosphate that need to be weighed into 1 litre of water, given that the pKa is 6.82 (atomic weights: Na 23, P 31).

The Henderson-Hasselbalch equation relates the concentrations of acid and salt to pH:

\[
\text{pH} = \text{pKa} + \log_{10} \left( \frac{[\text{salt}]}{[\text{acid}]} \right)
\]

The dihydrogen phosphate ion dissociates to give monohydrogen phosphate and hydrogen ions:

\[\text{H}_2\text{PO}_4^- \rightarrow \text{HPO}_4^{2-} + \text{H}^+\]

Therefore the relevant form of the Henderson-Hasselbalch equation is:

\[
\text{pH} = \text{pKa} + \log_{10} \left( \frac{[\text{HPO}_4^{2-}]}{[\text{H}_2\text{PO}_4^-]} \right)
\]

Only the total phosphate concentration is given so express the concentration of one in terms of the other:

Total phosphate = \([\text{HPO}_4^{2-}] + [\text{H}_2\text{PO}_4^-] = 40 \text{ mmol/L}\)

Therefore \([\text{HPO}_4^{2-}] = 40 - [\text{H}_2\text{PO}_4^-]\)

Substitute this, pH = 7.4 and pKa = 6.82 into the Henderson-Hasselbalch equation and solve for \([\text{H}_2\text{PO}_4^-]\):

\[
7.4 = 6.82 + \log_{10} \left( \frac{40 - [\text{H}_2\text{PO}_4^-]}{[\text{H}_2\text{PO}_4^-]} \right)
\]

\[
\log_{10} \left( \frac{40 - [\text{H}_2\text{PO}_4^-]}{[\text{H}_2\text{PO}_4^-]} \right) = 7.4 - 6.82 = 0.58
\]

\[
\frac{40 - [\text{H}_2\text{PO}_4^-]}{[\text{H}_2\text{PO}_4^-]} = \text{antilog}_{10} 0.58 = 3.80 \quad \text{(to 3 sig figs)}
\]

\[
[\text{H}_2\text{PO}_4^-] = \frac{40 \times 3.80}{4.80} = 8.33 \text{ mmol/L}
\]
The concentration of the other species $[\text{HPO}_4^{2-}]$ is calculated by difference:

$$[\text{HPO}_4^{2-}] = 40 - 8.33 = 31.67 \text{ mmol/L}$$

For each salt:

$$\text{Conc}^n (\text{g/L}) = \frac{\text{Conc}^n (\text{mol/L}) \times \text{MW}}{1,000} = \frac{\text{Conc}^n (\text{mmol/L}) \times \text{MW}}{1,000}$$

$$\text{MW NaH}_2\text{PO}_4 = 23 + (2 \times 1) + 31 + (4 \times 16) = 120$$

$$\text{MW Na}_2\text{HPO}_4 = (2 \times 23) + 1 + 31 + (4 \times 16) = 142$$

$$\text{Wt NaH}_2\text{PO}_4 \text{ to make 1L} = \frac{8.33}{1000} \times 120 = 1.00 \text{ g} \quad \text{(to 3 sig figs)}$$

$$\text{Wt Na}_2\text{HPO}_4 \text{ to make 1L} = \frac{31.67}{1000} \times 142 = 4.50 \text{ g} \quad \text{(to 3 sig figs)}$$

### Question 192

A metabolic disease is known to result in decreased plasma activity of enzyme X. X was measured in 100 normal subjects and 100 individuals with the disease. A reasonable Gaussian distribution was obtained for each population with the following statistics:

<table>
<thead>
<tr>
<th></th>
<th>Mean ($m$)</th>
<th>Standard deviation ($s$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal subjects</td>
<td>1025 U/L</td>
<td>100 U/L</td>
</tr>
<tr>
<td>Diseased group</td>
<td>530 U/L</td>
<td>200 U/L</td>
</tr>
</tbody>
</table>

Find the decision level at which sensitivity is equal to specificity. What is the sensitivity (and hence specificity) at this decision level?

Two-tailed values of the normal deviate (z-score) and probability ($P$) are:

<table>
<thead>
<tr>
<th>$P(%)$</th>
<th>10</th>
<th>5</th>
<th>2</th>
<th>1</th>
<th>0.2</th>
<th>0.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>$z$</td>
<td>1.65</td>
<td>1.96</td>
<td>2.33</td>
<td>2.58</td>
<td>3.09</td>
<td>3.29</td>
</tr>
</tbody>
</table>
FIT for the Future: Using Faecal Testing to Triage Symptomatic Patients at Risk of Colorectal Cancer

Dr Ian Godber, NHS Lanarkshire

Colorectal cancer (CRC) is the third most common cancer in the UK, and when the National Institute for Health and Care Excellence (NICE) published their guidance on Suspected Cancer: Recognition and Referral (NG12) in June 2015, one particular aspect of it came as a surprise to the laboratory community. Faecal Occult Blood Testing (FOBT) was being advocated once again for patients over 50 without rectal bleeding who had weight loss or abdominal pain or those under 60 with change in bowel habit or iron deficiency anaemia or over 60 with anaemia. This was to become an issue for many Biochemistry laboratories, as despite its successful use in bowel cancer screening programmes, most labs had discontinued FOBT due to poor sensitivity and specificity in the symptomatic population. These patients were now being referred directly for a colonoscopy, putting pressures on this service and possibly subjecting many more people to a potentially risky invasive procedure. This led us as a profession to question whether we should be reintroducing a test with proven fallibilities, or should we be looking for an alternative?

Like FOBT, Faecal Immunochemical Tests (FIT) can detect blood in stools that is not visible to the naked eye, but quantitatively rather than qualitatively and with increased sensitivity and specificity. FIT has been approved for the Scottish Bowel Screening Programme and has been recommended for adoption in the NHS Bowel Cancer Screening Programme in England. It uses a dedicated faecal sampling device which the patient uses to collect a minute amount of sample which is stored in a stabilising buffer. These sampling devices have been approved for transport by UK postal services and they can be analysed directly in the laboratory using either a dedicated analyser or on some mainline chemistry analysers depending on the method chosen.

Could FIT therefore be used to determine which patients are most likely to benefit from further investigation? With this in mind the Diagnostics Assessment Programme of NICE is developing guidance on the use of quantitative faecal immunochemical tests in the NHS. The independent NICE Diagnostics Advisory Committee considered the evidence from published studies (n=10) on the subject and economic modelling, and took into consideration the views of clinical and patient experts. The final guidance was published on Wednesday 26th July 2017 and recommends that FIT is used to triage referrals for people reporting bowel symptoms to their GP, who are considered unlikely to have bowel cancer. It is thought that the use of the tests can aid a decision to refer on a suspected cancer pathway.

Now we are left with the question of how we go about introducing a new test as part of the diagnostic patient pathway. Successful trials using quantitative FIT have taken place in Scotland within the NHS.
Lanarkshire and NHS Tayside Health Boards and both are now offering FIT as part of the referral pathway from Primary to Secondary Care. Practice does vary though with results either going back to the General Practitioner or to the secondary care gastroenterology or gastric surgeons depending on the referral pathway being used. Successful implementation does however require collaboration between all groups of health professionals involved in this diagnostic pathway with adequate educational resources being provided. In NHS Lanarkshire for example the laboratories worked with representatives from Primary Care, General Surgery, Public Health Medicine and the Endoscopy service in order to agree the pathway and the testing protocol. Dedicated sampling devices are required, hence logistics must also be considered. How do you supply these devices along with patient instructions to your GP surgeries? How do you get the samples back from the patients? These will all be important questions which need to be considered when a service is set up. Funding will also be an issue. However, should the test result in a reduction in colonoscopies then this may be easier to justify with a potential transfer of funding from endoscopy services. Getting the evidence to support this may prove to be more problematic though as patients are often still seen in secondary care but in an outpatient clinic where their symptoms can be assessed, rather than in the endoscopy unit.

The introduction of FIT testing is one example of how we, as laboratory professionals can be leading on, and working with clinical specialties to incorporate biochemistry tests appropriately and effectively into diagnostic pathways. We need to ensure that diagnostic tests of this nature are introduced and used in an appropriate manner with agreed outcomes based on the results, and that there is an effective mechanism in place to further investigate and treat patients highlighted by abnormal results.
NHSE Scoping Workshop: FIT for Symptomatic Patients, the way forward

Sophie Lumley, GP Trainee, Clinical Fellow, NHS England and Sally Benton, Guildford Screening Hub Director

On 8th March 2017, this Workshop was hosted by NHS England in partnership with the British Society for Gastroenterology and the Association of Coloproctology of Great Britain and Northern Ireland

In England, endoscopy services are struggling to cope with increasing demand and there is currently a low conversion rate to cancer in all symptomatic pathways i.e. we are conducting endoscopies on a large numbers of patients who don’t have cancer. FIT may have a wider role as an objective triage tool in all symptomatic patients referred from primary care. The updated NICE guidance will be helpful to support clinicians to think about making FIT testing available and how best to use it in the colorectal diagnostic pathway.

On the 8th March NHS England conducted a workshop with 50 clinicians from 10 different geographical areas in England and representatives from across the colorectal cancer pathways including those from: General practice, gastroenterology, colorectal surgery, clinical chemistry, the bowel cancer screening programme, screening hub managers, NICE, NIHR, the companies who supply the 4 analyser platforms. The purpose of the workshop was to hear from those who had already collected data about FIT for symptomatic patients, discuss the gaps in our knowledge and how we could fill them, and to find out what the various groups thought they could do to move forwards with FIT.

- A summary was given of pre-analytical and analytical variability of FIT testing. There is currently no standardisation or harmonisation across the different analytical platforms, there are potential inherent problems with sampling technique (stool samples aren’t homogeneous) and there are no established EQA schemes or 3rd party IQC materials available.

- Research underway in 4 units in England was presented. All studies had different approaches and all did demonstrate that FIT has potential as a rule out test for colorectal cancer:
  - Aintree (Paul Scaife, Colorectal Surgeon) talked about a prospective research study they conducted on FIT samples acquired via per rectum (PR) examination, and processed on an OC Sensor.
  - Nottingham (Ayan Banerjea, Colorectal Surgeon) talked about a service evaluation that they had conducted in partnership with their CCG. They have been measuring quantitative FIT testing on two different analyser platforms.
  - Coventry (Monika Widlak, Gastroenterology Registrar) reported on a study comparing...
faecal calprotectin and FIT test results on 2ww patients. Tests were processed on an HMJJack at Rugby screening hub.

- **York (James Turvill, Gastroenterologist and Daniel Turnock, Clinical Biochemist)** reported on a prospective research study that they are in the second phase of. They have been doing 2 FIT tests and a faecal calprotectin on all patients.

It is hoped that once complete all pieces of work will be published.

**The main gaps in our knowledge, identified from talks and discussions during the workshop were:**

1. The pre-analytical and analytical variability of FIT testing, the lack of EQA scheme.
2. What the threshold for ‘FIT negative’ patients should be in the symptomatic population.
3. How we can manage the potential for confusion between FIT for symptomatic patients and for the colorectal cancer screening programme (non-symptomatic patients).
4. The role of FIT in symptomatic patients – what the impact on services would be if it was used a triage tool.
5. Whether FIT testing and decisions around the results should be made in primary or secondary care.
6. The practicalities of operationalising FIT in the colorectal diagnostic pathway.

Moving forward, a 3 phase approach was proposed for collecting sufficient data around the robustness of FIT testing and then how best to use it in the colorectal diagnostic pathway.

- **Phase 1 – Robust data collection on 5000 patients** – to confirm the ability of FIT to safely exclude cancer, and highlight which patients and cancers are at risk of false negative FIT results. Data of this nature are already being collected in various locations, but it will be important to link up the findings to look at large numbers of patients and cancers.

- **Phases 2 and 3** – Using FIT as a triage tool first in Secondary Care and eventually in Primary Care. Initially patients may be triaged to a specialist clinic to review their symptoms but ultimately FIT testing could be used as a tool by GPs to rule out cancer and decide how best to manage a patient’s symptoms.

NHS England is keen to encourage collaboration between different localities to collect data as part of these phases. Coordination of activity in different areas is key to facilitate moving forward pragmatically with FIT and the 16 Cancer Alliances across England are ideally positioned to support work locally and help with this coordination of activity.

Dr Rachel Wheeler, St George’s University Hospitals NHS Trust

The flexible working survey showed that over a third of the 191 respondents had flexible working arrangements, either part-time or full-time equivalent (see the Documents section in the Member’ area of the ACB website). Individual responses suggested that opinion is split between those who view part-time/flexible working as a burden on the department versus those who saw it as an opportunity to bring more people to the team, retain skills and knowledge, and employ more productive, motivated staff (Table 1).

<table>
<thead>
<tr>
<th>Table 1: Opinions from the flexible working survey on flexible working</th>
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<td><strong>Pros</strong></td>
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<tr>
<td>Part-time workers are more focussed/motivated</td>
</tr>
<tr>
<td>Can help cover extended hours</td>
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<tr>
<td>Good for Trust reputation</td>
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<tr>
<td>Retention of staff</td>
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<tr>
<td>Jobshare can bring wider experience</td>
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<tr>
<td>Potential to save money for Trust</td>
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<tr>
<td>Medical Consultants already have very flexible contracts.</td>
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<tr>
<td>Helps with a difficult commute/childcare/home pressures</td>
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<tr>
<td>Reducing hours makes work intensity and stress manageable, protects health.</td>
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<tr>
<td>Part-time posts can potentially bring more people in to the department.</td>
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Generally people reported choosing to work part-time to achieve a better work-life balance, though it was widely believed that the only really accepted reason for this involved children. Impending retirement may be another increasingly common reason, or the ‘retirement’ that leads to part-time work (so-called ‘retire and return’). This article looks at working flexibly. There is not much advice around about working non-standard hours, but drawing on feedback from the survey and members’ personal opinions, this article attempts to give some pointers.

1. Be Aware

Prejudice exists and like it or not, if you are working flexibly you may face this. It helps if you are supported by strong leadership and an open, fair system. All of us should try to support colleagues and gently challenge prejudice. Many of us have already benefited from flexible arrangements, and owe it to others to create the same opportunities despite current pressures.

Colleagues may make assumptions about you because you work flexibly (especially if you are returning to work after an absence), about your abilities or what you might want/be interested in. This is more likely to be due to unconscious bias rather than malice. Work hard to command respect and be patient. It takes time to win people over.

2. Be Brave

If you want to change your working hours, let your manager know – they cannot begin to consider your request until they know what you would ideally like. If you are worried, ask around, pay attention to the diversity of working arrangements already in place in your department, and raise the subject informally to gauge initial reaction.

Apply for full time posts! Most posts will consider applications from people who want to work part-time or flexibly. If that ends up being the only reason why you are rejected, you will still have gained valuable interview experience.

3. Be Reasonable

Ultimately, your department has a service to deliver. Yes, everyone has the right to request a change to working hours, some fixed commitments e.g. Same amount of mandatory training or CPD, regardless of hours worked.

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Some Guiding Principles – Geoff Lester

1. Managers have to manage the service delivery to the necessary standards. Remember they are spending public money.
2. Employment law includes the right to request a change to working patterns and the right to an explanation for refusal; the principle of equal pay for equal work; freedom from discrimination (at least on the protected characteristics); equitable treatment of part-time workers.
3. The Agenda for Change national terms and conditions of an average 37.5 hour week. AfC also defines what bands have access to enhanced pay for unsocial hours and/or overtime (hours more than 37.5). These are contractual entitlements.
4. Remember, when managers consider a request they will have to look at the impact on the full relevant workforce. E.g. Does it mean that someone else ends up always working into the evening to complete work not done because you finish at 15:30? Does it mean that some do not get opportunity for enhanced pay because someone else always works Sunday?
5. There are some fixed commitments e.g. Same amount of mandatory training or CPD, regardless of hours worked.
Flexible Working – Jessica Schroeder

I started to work part-time (22.5 h then 30 h) in my 8B post following maternity leave. This has improved my work and family life balance, especially while my son is young, and also allowed the band 7 taken on for my maternity cover to extend her contract.

I have relocated since then and when I applied for another Band 8b post, I was able to negotiate part time hours (30 h per week). I have managed this by working flexible days or shorter days, but I find it is easier for me and the department to have one full day off rather than working shorter days. The funds for the hours I did not work were kept within the department and used for other positions. I did not feel that my role was undermined by working part-time, although sometimes it does feel like working a full-time job within less hours.

It was interesting to note that in the recent survey over a quarter of respondents work part-time, and most were arrangements made in post. I would hope this would highlight that in our profession there is very much a need for part time roles, and it would be good to see more posts advertised as part-time or job share.

but that does not mean it will be granted. The more senior your post, the more responsibility you will have in service delivery so try to come up with a plausible way in which the department might cope with you reducing your hours.

Take full responsibility for your work – don’t assume colleagues will finish your work. Make it the exception rather than the norm, or make sure there is some planned handover process. It can be difficult if you have to leave at a certain time and cannot work late, and this can lead to resentment from staff if they often end up staying late to finish work.

Be aware of others’ hours and be as flexible and constructive as you can.

Flexible working often requires flexibility on both sides. There may be particular hours or meetings that you must be there for. Consider working different days occasionally (with appropriate notice) to gain training opportunities, or even to provide extra cover to the department for exceptional staff absences.

How to Work Flexibly – Consultant Clinical Scientist

As we all strive to establish a true work-life balance, more and more staff are submitting flexible working requests, whether because of childcare or carer responsibilities, or just a hatred of shift-working. The key to a requests’ success and maintaining positive working relationships is to be empathetic with your department, and don’t be selfish. This will endear yourself to colleagues who will have to pick up the slack that your absence creates. Consider your department’s pressures and processes, recognise when labs are at their busiest e.g. due to the GP work coming in.

Don’t hold your lab to ransom; in every lab where I’ve worked, there has been someone on a 7.5 hr/week contract. Why? “Because they’d have left if I didn’t agree to it”. This type of arrangement is not helpful and I’m yet to find one where both sides are happy with it.

Most trusts will have a lengthy “Flexible Working Policy” but the reality is, if your request is reasonable and is perceived to be based on necessity and not just a knee-jerk response to a negative experience, it is likely to be looked on favourably by most reasonable managers.
**Flexible Working and Retirement – Charles van Heyningen**

In the later stages of my career I developed a serious illness and had to take six months off on sick leave. On returning to work my colleagues encouraged me to work flexibly and part-time before resuming full-time work.

Soon after this it became apparent that I could retire from the NHS and resume on a fixed-term part-time basis. This was financially attractive and ensured an optimum long-term pension. This was in keeping with my wish to step down towards retirement rather than opt for a sudden cessation from full-time working.

The Hospital Medical Director was very supportive and made arrangements with the medical staffing team for the change of contract required. At the end of the two-year part-time contract I chose to fully retire.

A Consultant Clinical Scientist colleague had made a similar part-time working arrangement and in practice the outcome was equivalent to having a job share contract.

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**4. Think Ahead**

If you reduce your hours, your department may see this as an inconvenience, or as a useful cost-saving. Either way, there is no guarantee that you can then increase your hours whenever you might want to in the future. Consider this when planning your finances. Consider also the impact on your pension e.g. the 2015 NHS Pension Scheme is calculated from Career Average Re-valued earnings (based on a proportion of pensionable earning in each year of membership).

**5. Be Patient**

If you choose to reduce your hours, your career may slow down. It can be hard to watch full-time colleagues apparently progress faster, but be patient. Make a realistic plan for your career. Keep trying to fit in things that will advance your career or improve your CV. Don’t let yourself be side-lined because you are part-time; find constructive, realistic ways to stay involved and if necessary, bide your time. Reducing your hours should not rule out career progression in the longer term.

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**Making it Work – Sarah Beck**

My experience of flexible working at two Trusts has been a positive one. When I first reduced my hours to 0.8 WTE (from full-time) this was met with no issue from managers or colleagues. More recently I moved to a different Trust taking up a Consultant Scientist position. I continue to work 0.8 WTE despite the fact that the job was advertised as a full-time post. Due to my inability to relocate, my hours have been adjusted (late start, late finish) to cope with the long commute, and I have the ability to work from home.

I am lucky to work in a department whose leadership and management is inclusive and forward-thinking in the interest of retaining high quality HCS staff. Fifty percent of the band 7 and above HCS staff within our team have some form of flexible working arrangement. Whilst this can be challenging, it needn’t be detrimental to the service with good communication, a team ethos and a reasonable degree of flexibility on all sides. On the contrary, I think staff that have a work-life balance that suits them, will perform better in work with increased efficiency and enthusiasm.
Anyone in their 40s or younger will now not be eligible for state pension until 68, so that’s an extra year in which to achieve your goals!

6. Be Realistic

Even in the most supportive department, the reality is that there will be regular times when you are not present in the department. This means that tasks that are continuously required will have to be shared with someone else, or may not be given to part-time staff. Also, communication will be more of a challenge. We pick up a surprising amount just from daily chatter. Be pro-active in staying up to date with information, and in constructively suggesting helpful communication channels.

Every department is different and you bring a unique set of skills to your department. Managers must abide by employment laws, but ultimately each situation will be resolved locally. Some useful and interesting resources are given below. It may be that there is something you think the ACB could provide or facilitate e.g. Carer travel grants (see this example www.smbe.org/smbe/AWARDS/ChildCareTravelAward.aspx), a mechanism to search for potential job share partners or potential part-time candidates to complement a flexible working proposal. If you have ideas of initiatives or resources you would like to see from the ACB to support flexible working, please contact the ACB Workforce Lead, Charles van Heyningen, or the Equality, Diversity and Inclusion Champion, Rachel Wilmot.

In the next two ACB News, we will look at flexible working from the manager’s perspective, and the impact of part-time work around retirement.

References

- Iwasaki, A. Balancing family life with a science career. *Nature Immunology*, 2015; 16 (8): 787-790
- Pensions website: https://www.nhsbsa.nhs.uk/nhs-pensions
Manchester Metropolitan University

Save the Date!

www.acb.org.uk/focus
Trainee Elective in South Africa: Sunsets, Safaris and Science

Kate Fenna, Royal Surrey County Hospital, Guildford

After attending the STP elective presentation day in my first year, shortly after starting the programme, I was inspired by the amazing opportunity and endless possibilities the elective presented. Before leaving the event, I had made the decision that I wanted to use my elective to experience healthcare in a completely new social-economic setting, and push myself out of my comfort zone. I therefore decided to spend 4 weeks at the Chemical Pathology Department of Tygerberg Hospital, Cape Town, South Africa (SA). In January of my second year I contacted the Head of Department (HOD), and by April my placement was arranged and booked for the following September. Tygerberg Hospital is the largest public tertiary hospital in Western Cape Town that works as a teaching hospital in conjunction with the Stellenbosch University Faculty of Medicine. The public hospital laboratories in SA are run by the National Health Laboratory Service (NHLS), with over 6,700 employees, all of whom are joint service and academic employees at one of 9 university partners. Throughout my elective I was therefore an affiliated student at the Stellenbosch University Faculty of Medicine and honorary employee at Tygerberg Hospital. Throughout the 4 weeks I shadowed...
registrars, consultants and laboratory staff. The team were so welcoming and kindly arranged a full time table for my time there. I attended daily ward rounds and clinics in different disciplines, spent time at the home of the first ever heart transplant, Groote Schuur Hospital, and visited the Red Cross Children’s Hospital. As a way of giving back to the department I presented at two journal clubs, and completed a project on AKI prevalence rates which is currently under review for publication. As a result of my project the HOD has offered to sponsor me to attend and present my project at a conference in SA later this year. I had the most incredibly eye-opening experience, saw sights I will never forget and made friends for life. The elective is an amazing opportunity for you to grow professionally and personally, to experience once in a life time challenges, and make professional and personal connections. As a result of my elective I have a network of international colleagues, have become an affiliated member of the South African Chemical Pathology Society and will be sponsored to return to SA. All because I made the decision to go for it! I even managed to tick off a few bucket list items whilst I was there; like a real African Safari and climbing Table Mountain.
Trainee Elective in London: King’s College Hospital Toxicology

Edmund Rab, Northern General Hospital, Sheffield

What would you do with six weeks in which you could decide the location and content of your training? This is the question faced by Scientific Training Programme (STP) trainees as they head into their second year of training. The elective experience is a mandatory part of the STP which is aimed at facilitating a wider experience of healthcare in a setting that is different from the trainee’s usual environment. Many choose to head abroad to experience healthcare in a different culture, but there are a huge range of opportunities available to the resourceful and imaginative trainee at home in the United Kingdom (UK).

I decided to use my elective to broaden my experience and understanding of mass spectrometry. Fortunately, the Sheffield-based laboratory where I was training had close links with the Department of Toxicology at King’s College Hospital in London, with both departments being headed by Professor Robert Flanagan. Professor Flanagan put me in contact with his senior method development scientist, Lewis Couchman, who arranged a six-week programme in which I worked alongside some of the scientists responsible for developing and running the mass spectrometry assays at King’s. Lewis allowed me to gain hands-on

Tecan freedom evo robotic sample handling platform used for the pre-analytical preparation of samples for clozapine and norclozapine analysis
experience in some of the assays that he was developing. This included a flow injection tandem mass spectrometry method for the analysis of clozapine and norclozapine which utilised a robotic platform for pre-analytical sample preparation, and the analysis of haemoglobin variants using high resolution mass spectrometry. I was also able to gain insight into the use of Q-Exactive™ accurate mass technology for the screening and confirmation of drugs of abuse in urine. Away from the toxicology laboratory, I spent a week working alongside David Taylor and Norman Taylor in the steroids laboratory and even had time to attend a porphyria clinic, something which I would not have had the opportunity to do in Sheffield. When I was not working, accommodation and nutrition was kindly provided by my parents in law and I was able to use the time in London to catch up with friends and family.

My elective experience was thoroughly enjoyable and allowed me to expand my knowledge in a way that I would not have been able to achieve at my home hospital. Prior to arranging my visit to King’s, I did think about going abroad for my elective but it is my opinion that I gained more beneficial experience and contacts by staying in the UK. The experience gained at King’s was a major contributing factor to my suitability for the job that I acquired following my STP training and I now work at Sheffield Teaching Hospitals developing mass spectrometry assays on our own instruments. My words of advice for any trainee thinking about what to do for an elective would be to think about the skills that you could gain which you could bring back to your home hospital. You may find that the skills and experience acquired become instrumental in attaining your first post as a Clinical Scientist and they may be something that you draw upon throughout your career.
ACB Scotland gathered for their ‘Spring’ meeting at Wishaw General Hospital, NHS Lanarkshire. The theme of the meeting was ‘The Liver’ and some hot topics were eagerly anticipated.

Liver Fibrosis Biomarkers
The first speaker, Professor Peter Hayes, showed that a meeting in Scotland is the apt place to discuss liver disease as he highlighted that Scottish mortality rates are still on the rise despite a decrease in our UK and European neighbours. He gave a detailed description of the advantages and disadvantages of current liver fibrosis markers such as hyaluronic acid which his clinic has access to in Edinburgh. He then explained that liver biopsy is not the gold standard anymore and that non-invasive elastography using a Fibroscan, which is a measurement of liver stiffness, is the preferred option. In addition, the Fibrotest and Enhanced Liver Fibrosis (ELF) scores were also discussed as tools of fibrosis assessment. His memorable comment that 5 cups of coffee a day gives an 80% reduction in risk of liver cirrhosis certainly made an impact on the audience.

Non-alcoholic Fatty Liver Disease
Next to present was Dr Jennifer Logue, who gave us a clinician’s perspective of assessing patients with non-alcoholic fatty liver disease (NAFLD). She talked us through her approach at the lipid clinic and how she uses the AST:ALT ratio (with a ratio >0.8) to decide which patients need referral to gastroenterology. She justified the use of statins on her patients by citing the GREACE trial published in The Lancet, 2010 which demonstrated that statins were associated with an improvement in LFTs. Lastly, she gave an interesting account of how they refer patients to Weight Watchers in a bid to reduce their NAS score. Just a 7% body weight reduction is required to improve your NAS score by 3 points bearing in mind that a score of >5 is consistent with NASH. A study by Sattar et al, BMJ (2014) which used Weight Watchers on their patients led to a reduction in ALT and improved triglycerides were noted too.

Alcoholic Liver Disease
Dr Alistair Gilchrist opened his talk on alcoholic liver disease (ALD) with some thought-provoking statistics on death rates due to alcohol. He reported that 1 in 20 of all deaths in Scotland is due to alcohol and this is twice the level seen in England. In fact, a female in Scotland will die from liver disease more than a male of the same age in England because of alcohol. He showed that alcohol is now 70% more affordable than compared with prices back in 1980. Medically speaking, he explained the use of the Glasgow Alcoholic Hepatitis Score (GAHS) which uses age, wcc, urea, platelet ratio and bilirubin to assess prognosis with a score of >9 being poor. Plus the use of decompensated cirrhosis care bundles in the first 24 h of admission are saving lives.
He concluded by saying that public health measures are cheap and the most effective at tackling ALD in Scotland.

**Intelligent Liver Function Testing Project**

Dr Michael Miller of Ninewells Hospital, Dundee presented preliminary data from his pilot evaluation of a synergistic liver diagnostic pathway. The key reasons for doing this are that liver disease continues to rise as a cause of death rates in the UK and that studies have shown that LFTs are not always reliable predictors of liver disease. The aim of the study was to compare current pathways for LFT requesting with the new semi-automated system. The iLFT pathway was used in 6 GP practices in Tayside during a 6 month period and they were asked if they wanted to screen for liver disease if the results were abnormal. The GPs first had to enter in patients alcohol consumption, their BMI and if metabolic syndrome was present or not. Also in Dundee hospital laboratories, they use a real-time track system which can change where the sample goes for testing depending on the patient’s results and so further testing can be done on the sample and it will give a preliminary diagnosis and suggest referral to secondary care. The preliminary outcomes from a data-set of 229 subjects showed that 65 patients were diagnosed with liver disease. The early data has shown that iLFT can improve the interpretation of primary care LFTs.

**Viral Hepatitis**

Dr John Logan, Consultant of Public Health Medicine in NHS Lanarkshire, talked us through a public health exercise that resulted when a health professional was diagnosed with hepatitis C. He highlighted the extensive contact tracing required, organisation of laboratory services to test contacts and he discussed some of the issues surrounding routine testing of medical professionals for blood borne viruses. He gave an interesting insight into how to deal with the media when such news is released to the general public.

**Retiring Consultants**

At the end of the meeting, the ACB Scotland Chair honoured the careers of three newly retired Consultants: Dr Ian Gunn, Dr Philip Wenham, and Dr Simon Walker. It was an amazing fact to know that they had clocked-up more than 100 years of clinical biochemistry between them. They were wished all the best for their plans for retirement.

Thanks to ACB Scotland for organising this informative meeting.
The Role of the Laboratory Professional in the Development, Validation and Evaluation of New Tests

Dr Owen Driskell, National Institute for Health Research (NIHR), and Dr Phillip Monaghan, The Christie NHS Foundation Trust, Manchester

With the stratified/personalised medicine agenda, the 100,000 genome project, diagnostics in the battle with AMR and the new IVD regulations, the evidence-based use of In Vitro Diagnostic (IVD) medical tests is increasingly being recognised as a vitally important way the NHS can improve the healthcare it provides.

In recognition of the importance of IVDs to healthcare, the National Institute for Health Research Clinical Research Network (NIHR CRN) West Midlands sponsored a Scientific Meeting on 19th June at Birmingham Research Park, Edgbaston where over 70 delegates representing industry, laboratories and academia gathered on a very warm Monday morning. The meeting was to explore the needs of the NHS, industry and academia working together in the development, validation and evaluation of tests and new ways of working. Organised by the West Midlands Laboratory Medicine Research Group in conjunction with the West Midlands ACB, it featured short talks from a range of stakeholders and organisations involved in the IVD development pathway, showcasing the potential of laboratory contributions to raise the profile of the research, clinical and diagnostic expertise of laboratory professionals.

The speakers reinforced the central role IVDs play in clinical pathways and the need for a common understanding and language to describe the pathways for their development. There were presentations from academic, industry and clinical perspectives with speakers from the University of Birmingham, the European Federation of Clinical Chemistry and Laboratory Medicine (EFLM), BIVDA, the NIHR Diagnostic Evidence Cooperatives (DECs), the Academic Health Science Network (AHSN), the CRN, the MHRA Devices Division, NICE and the 100,000 Genome Project. They outlined, using examples, the roles their organisations play along the pathway and the services and expert advice they provide to support researchers (including laboratory professionals), academics and industry in ensuring the work is relevant to and can benefit the NHS and to improve the rate of successful study delivery in the NHS.

Themes that ran through the talks included an emphasis on placing clinical need at the centre of development work, the need to evaluate tests in appropriate patient groups, the importance of accurate data collection for test performance informing the design of appropriate clinical evaluation studies, and the need for research comparing tests and practices in current use with access to real life data. The new IVD regulations were spoken about in depth with the potential for more test evaluation studies. The ‘value proposition’ was introduced as paramount in demonstrating what an IVD test could do and where the greatest benefit may be,
including the role and purpose of any new test in the clinical pathway. Does it fit with the health system priorities? Is the cost justifiable (in terms of its impact on health resources)? What are the patient outcomes (are there incremental patient benefits)? Working towards a well constructed and reliable evidence base, with the publishing of protocols and full results, in order to facilitate implementation.

All of the speakers stressed the need to think of the whole IVD development pathway early, and not just the different stages, as evaluating the clinical need or the type of evidence required early, dictates how you progress along any pathway and what support you might need. There is a lot of help out there.

In terms of the roles for NHS laboratories there are multiple opportunities at every stage along the pathway. Specific examples mentioned include the use of ‘real’ patient samples, following appropriate guidelines for R&D activities, and the need for beta testing sites (where products in the final stages of development are trialled by parties unconnected with the development process) in real life situations. Furthermore, the laboratory professional’s knowledge of current diagnostic practice within the NHS informs the value propositions and the design and delivery of clinical trials and service evaluations. Our laboratories serve the patient populations that would benefit from the research and this is where the research needs to be done according to Prof Chris Whitty, Chief Scientific Advisor to the Department of Health.

Discussion at the end centred around where the different organisations fitted along the IVD development pathway (included in Figure 1 below) with the Accelerated Access Review cited as a good place to start understanding the overview. The different organisations overlapped in areas along the pathway but had different perspectives and functions with some being laboratory scientist led (the EFLM), others being NHS (eg. the DEC, CRN and AHSN) and industry led (BIVDA), and others being non-governmental bodies or regulators (MHRA). It was agreed that there are many needs and opportunities for NHS laboratory professionals to contribute their skills and expertise at multiple stages along this development pathway with possibilities to collaborate and lead on future developments.

Overall, the day provided a thoroughly enjoyable and productive meeting prompting requests for it to be repeated.

For further information please contact Owen on owen.driskell@nihr.ac.uk
Bioinformatics in Laboratory Medicine

Dr Adrian Heald, Salford Royal Hospital, Salford and Dr Chris Duff, Royal Stoke University Hospital, Stoke

It was on a sunny Friday 30th June 2017 when ACB delegates from across the UK arrived at the august surroundings of the Governor’s Hall at St Thomas’ Hospital in Central London. After a cordial introduction from Dr Chris Chaloner we heard from Dr Nick Furnham (London School of Hygiene and Tropical Medicine) with a wide-ranging talk about the relationship between single nucleotide polymorphisms and drug resistance; he demonstrated how phylogenetic variation in bacterial DNA can inform us about current and impending drug resistance, and how this may aid future drug design.

The next talk by Dr Juan Antonio Vizcaino (European Bioinformatics Institute) was an informative and future-scoping presentation on the links between genomics, transcriptomics, proteomics and metabolomics, and how mechanistic understanding of these links may uncover novel biomarkers in the future.

The next presentation was by Dr Spiros Denaxas (The Farr Institute) who gave us a real sense of the complex algorithms, including machine learning, used in the analysis of big data. Examples included the use of the UK CPRD to generate risk prediction tools in disorders such as type 2 diabetes and COPD.

After lunch, Professor Dimitris Grammatopoulos (Chair, Translational Medicine, Warwick) took us on a journey through the labyrinth of bioinformatics. We were struck by the amount of data which is available for analysis from the genome to biomarkers to socioeconomic and educational data.

Tom MacDonald, Professor of Clinical Pharmacology and Pharmaco-epidemiology in the Medicines Monitoring Unit, Medical School at Dundee gave a very entertaining and relevant narrative of his group’s work over recent years in relation to drug prescribing patterns and how these relate to critical outcomes for patients. For example, he described how exposure to sodium-containing formulations of medicines was associated with significantly increased odds of adverse cardiovascular events compared with standard formulations of those same drugs. He also highlighted the incalculable value and under-utilised potential of NHS records in understanding the antecedents and course of disorders from the rarest to the most common across all of the UK.

Next, Craig Webster (Birmingham) gave us a very helpful update on the interface between the laboratory and GP practices in relation to how clinical diagnosis and decision-making can be aided by the laboratory at many levels.

Finally, Professor Jonathan Kay (Oxford) gave a seminal review of how the high level design of laboratory systems, in terms of data management and analysis, can enhance the value of results by giving them greater context and interpretation, citing renal function as one example.

All the speakers gave time for questions both at the end of their presentations and at the breaks. At the end of the day, we all took away our own learning points which will aid us in the coming weeks and months in our work and in our aspirations ever to do better for our patients.
ACB Retired Members’ Group

Ruth Lapworth

Our fourth meeting was held in the ACB Conference Suite on 24th April 2017. After networking over a sandwich lunch, retired members were treated to presentations by Dr Sandra Rainbow on “Vitamin D; new wonder hormone?” and “Biological variation in kidney disease” by Dr Ed Lamb.

Dr Rainbow began her talk with a description of a primitive plankton that has existed for over 500 million years and which makes what is probably the original sunscreen!

She then described the advances leading to the discovery and role of Vitamin D in calcium homeostasis. She highlighted the fact that foodstuffs in the US have been fortified with Vitamin D since the 1930s; this does not occur in UK with the exception of hard margarine.

Sandra reported that there has been a dramatic increase in the number of publications on Vitamin D over the last 10 years. There has also been substantial media interest in the benefits of Vitamin D with articles on its role in boosting...
immunity, disease prevention and the need for supplementation.

Vitamin D deficiency is widespread in the UK population, especially in winter. Sandra explained this is probably due to public awareness of preventative measures against skin cancer, lifestyle changes due to a reduction in outdoor activities as well as changes in the population mix. There has also been a resurgence in the number of cases of rickets. Despite this, the UK government has not taken steps to fortify food and there is no national guidance on supplementation for the general (well) population.

However, most of the retired members in the audience admitted taking supplements (up to 10,000 IU once a week) during the winter months.

Ed introduced the subject of biological variation by stating that kidney disease is asymptomatic until the late stages and is therefore heavily reliant on biochemical data. Knowledge of biological variation allows an objective assessment of the value of various kidney function tests in the diagnosis, monitoring and management of patients with kidney disease.

He described the sources of variation including pre analytical, analytical, within and between subject variation and how these could be combined to derive the overall biological variation and the critical difference for an analyte.

Creatinine is widely used as a test of kidney function but is poor at detecting kidney disease in the population. Ed stated that two sequential creatinine results need to differ by more than 12% to be significant. In contrast, cystatin C is good for the detection of kidney disease in the population but it has been reported that the within-subject variability is too large to make it useful for monitoring an individual’s disease progression.

The clinical utility of creatinine has been improved by stratifying results with respect to age, gender and muscle mass: essentially the eGFR. Comparison of the variability of the eGFR compared to the reference GFR and its use in outcome studies resulted in defined changes in eGFR being used in NICE Guidelines.

Ed then showed data to support the use of ACR to detect albuminuria: it has lower variability than alternative indices. He then cast doubt on the use of PTH to monitor CKD patients for metabolic bone disease due to its large biological variation. His view is that bone alkaline phosphatase is a better index of bone disease.

Finally, he provided 2 examples where knowledge of the biological variation of a test limits its usefulness. These were TSAT (transferrin saturation index) in renal anaemia and troponin as a marker of ACS (acute coronary syndrome) in dialysis patients.

◆ The next meeting will be held on Monday 6th November 2017.
ACB South-West and Wessex Regional Scientific Meeting

Trace Elements

Jointly organised with the Supra-Regional Assay Service for Trace Elements

6th October, 2017

The Oake Manor Golf Club, Oake, Taunton, Somerset, TA4 1BA

09:45-10:30 Registration & Tea/Coffee
10:30-11:00 Principles of Trace Element Analysis using ICP-MS
   Chris Harrington, Guildford
11:00-11:30 The Acute Phase Response and Its Effect on Trace Element Status
   Nicholas Martin, Imperial
11:30-12:00 The Assessment of Iodine Status
   Patrick Wainwright, Southampton
12:00-13:00 Lunch, networking & meeting our Sponsors
13:00-13:30 Dangers of Ayurvedic Medicine
   Kishor Raja, King’s
13:30-14:00 Trace Element Supplementation and Toxicity – Separating Sound Advice from Bad Science
   Elizabeth Fox, Leeds
14:00-14:30 Parenteral Nutrition Associated Hypermanganesaemia
   Maeve Tierney, Southampton
14:30-15:00 Tea/Coffee break and networking
15:00-15:30 Management of Parenteral Nutrition Associated Hypermanganesaemia
   Peter Austin, Southampton and Oxford
15:30-16:00 Low serum Copper: A Diagnostic Approach
   Paul Cook, Southampton
16:00 Close

Information on this meeting and registration is accessible via the ACB Regional Meetings website: www.acb.org.uk
ACB Scotland
National Autumn Meeting

9th-10th November 2017
Norton House Hotel, Ingliston, Edinburgh

Thursday 9th November
09.00-09.30  Registration and Welcome
09.30-10.45  Junior Members’ Papers  Speakers TBC
10.45-11.00  Tea and Trade Stands
11.00-12.30  Reproductive Endocrinology:
              Update on the Uses of AMH
              Prof Richard Anderson (Queen’s Medical Research Institute, Edinburgh)
              Diagnosis and Management of the Menopause: Highlights from Recent
              Guidelines  Dr Heather Currie (Dumfries & Galloway Royal Infirmary)
              Testosterone Measurement and Reference Intervals in the Male
              Dr Julian Barth (Leeds General Infirmary)
12.30-13.30  Lunch
13.30-15.30  Renal Biochemistry and Fluid Balance:
              Update on Investigation and Management of Hyponatraemia
              Prof Stephen Ball (Manchester Royal Infirmary)
              Clinical Biochemistry and Kidney Disease: Current Laboratory Issues
              Dr Edmund Lamb (East Kent Hospitals)
              Measurement of Creatinine in Paediatrics: A Clinician’s Perspective
              Dr Heather Maxwell (Royal Hospital for Children, Glasgow)
15.30-16.00  Tea and trade stands
16.00-17.00  Inter-region Biochemistry Pub Quiz
              Quizmaster – Dr Kevin Deans (NHS Grampian)
17.15-19.30  Leisure activities
19.30 til late  Dinner

Friday 10th November
09.00-09.30  Registration
09.30-10.00  Updates in Cardiology
              Prof Nick Mills (Queen’s Medical Research Institute, Edinburgh)
10.00-12.00  Introducing a New Test to Your Laboratory: An Interactive Workshop
              Dr Bernie Croal (NHS Grampian) (Break for tea & trade stands at 10.30)
12.00-12.15  ACB Scotland Business Meeting
12.15-13.15  Lunch
13.15-14.00  Audit Session:
              Pancreatic Enzymes Audit  Dr James Logie (Edinburgh Royal Infirmary)
              Critical Results Communication Audit  Dr Neil Greig (Victoria Hospital, Fife)
14.00-15.30  Hot Topics:
              FIT Testing  Dr Ian Godber (NHS Lanarkshire)
              Use of Biologic Therapies  Dr Jonathan MacDonald (QUEH, Glasgow)
              Copeptin (CT-ProAVP) in the Investigation of Polyuria/Polydipsia
              Dr Christopher Boot (Royal Victoria Infirmary, Newcastle)
15.30-16.00  Tea and trade stands
16.00-16.45  Plenary Lecture: Communication of Laboratory Results
              Dr Craig Webster (Birmingham Heartlands Hospital)
16.45-17.00  Presentation of John King Award and Close of Meeting

Register at www.acb.org.uk by 13th October
As we head into summer, a lot of time is being taken up with getting back in touch with politicians before they head off after recess on 20th July. BIVDA first started its Parliamentary work stream in 1998 supported by the then labour backbencher and scientist Dr Ian Gibson MP (Norwich North). Government affairs was not something I had really been involved in other than attending a couple of Parliamentary receptions as a member of BIVDA, so it seemed quite daunting back then. It’s become the side of my role I possibly enjoy the most! I’ve been an active member of the Parliamentary & Scientific Committee and I am now proud to have been re-elected as a Vice-President of this All Party Parliamentary Group which does tremendous work to raise awareness of scientific issues among Parliamentarians and holds monthly meetings on topical issues presented by some of the country’s experts in that field. The last meeting was on Fungal Disease and there was a big emphasis on the role of diagnostics as well as some frightening statistics about the increase of prevalence and the number of global deaths from fungal infection (see graph) – as many as from TB and more than from malaria! If anyone is interested in reading more then have a look at www.gaffi.org

The biggest challenge working in government affairs is keeping relationships going as we don’t just have to contend with general election and re-shuffles but also with changes to politicians’ staff and within the civil service so re-establishing these post election and making new contacts has been high on our agenda. Over the past 16 years I have only had a handful of difficult or disappointing meetings, MPs get a bad press but they are very committed to what they do, working very hard and when people complain the debating chamber looks empty on television then they should be aware there are a huge number of committees and activities going on which are doing valuable work on specific issues for the country. I think health issues in particular get a good deal of supportive cross party co-operation which is not visible through the media.

Laboratory Medicine is getting a very good profile steadily and I always try to leave a mental image of something positive for an MP or Peer to remember about how testing can improve outcomes – probably my favourite in recent years has
been Calprotectin as they all get the message that this can help prevent an unnecessary colonoscopy, a procedure nobody would have on the top of their list of life experiences to have!

Last week we had our first formal meeting with Health Minister Lord O’Shaughnessy who has a very wide portfolio of responsibilities to cover including both pathology and the life sciences industry. His background is in education but he is really getting to grips with his brief and extended our allotted time in order to really engage in the issues BIVDA wanted to raise. And two days later the Minister made a very welcome announcement about £86 million of funding to support the practical uptake of medical technology (including IVDs). This includes a £6 million Pathway Transformation Fund, which will help NHS organisations integrate new technologies into everyday practices - this will help overcome more practical obstacles such as training staff on how to use new equipment.

Two days before recess started I had a really helpful meeting with Kevin Hollinrake MP (Thirsk and Malton), who is passionate about raising the profile of antimicrobial resistance and is looking for routes to support this agenda and in particular the better use of diagnostics. It’s a privilege to be able to engage with people like this who are prepared to make a difference practically.

Laboratory medicine is also being seen positively by organisations like the Wellcome Trust, Cancer Research UK and the Medical Research Council, all of whom have approached BIVDA to learn more about issues to support aspects affecting the use of diagnostics in healthcare.

Of course there have also been meetings to go to with a more practical side including an introduction to Ei nav Ben Yehuda who has just started at the end of June on a secondment from the Cabinet Office to head procurement within NHS Improvement. Hopefully her fresh pair of eyes from a different background will spot the opportunities being lost to benefit from pathology by all the perverse financial flows of which we are all too familiar.

We are also really starting to look at the implications of the new IVD Regulation with a UK stakeholder group meeting at MHRA on 18th July, the first since the Regulation was published. The shadow of Brexit inevitably lies over this and the frustration of not yet knowing if we will be able to use this or will need a separate UK regulation for IVDs.

So plenty to keep the BIVDA team busy and for the October issue I will be able to share some news about the work we are doing on transparency of industry to the NHS – stay tuned and enjoy the rest of the summer!

“It is a constant source of frustration that implementation of new tests takes years to achieve. It means that not only are people not benefiting from improved diagnosis and disease management but also that the NHS is losing the chance to gain cost efficiencies along clinical pathways.”

Part of BIVDA’s response to Lord O’S haughnessy’s funding announcement on 14th July
ACB News Crossword

Set by Rugosa

Across
7  The process of reduction division: is some information incorrect? (7)
8  Following regular practice, predecessor of Army Reserve return home (7)
10 Lawrence begins current high school (5)
11 Conductor led coterie carelessly; one missing (9)
12 Reactive chemical toxin promotion is out of order (7)
14 New space probe leaves base for this 21 (6)
16 Reformulated reagents help one make a diagnosis of infection (7,6)
20 Under the weather? Pointless sailing (6)
21 See 3 Down
24 Microwave oven component (not German made) (9)
25 Group settlement contains disquiet (5)
27 Send short MS for higher degree research worker (7)
28 Phone registered nurse about renal unit (7)

Down
1  Component of biochemical insulator (4)
2  Model pharmacists reject scrip for a chest problem (6)
3/23/21 Licensee’s ale treatment destroyed critical nutrient (9,5,7)
4  Change course without qualification (5)
5  Rota a bit disorganised? Shambles! (8)
6  Pressure aunt to leave rough apartment house (10)
7  Practice orderliness (6)
9  They admit gold speculation (6)
13 Visionary speculator got so idle one worried (10)
15 Phosphorus-free hen protein could provide this 3 nutrient (9)
17 Cast aside distressing unsanctioned imputation (8)
18 Centre-forward distressing unsanctioned preparatory exercise (4-2)
19 Drug for immediate use at home (6)
21 Supplies eye-opening gags (6)
23 See 3
26 Materials for analysis will be Spanish (4)

Solution for June’s Crossword
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A visit, either prior to shortlisting or interview, can be facilitated. Interested candidates should contact either Dr Tim Nokes - Clinical Head of Department for Derriford Combined Laboratory on 792404/ 01752 431001 or Dr Tony Avades, Consultant Chemical Pathologist on 01752 430037 / email tonyavades@nhs.net

For further information and to apply, please see NHS Jobs.
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