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# Cases for PACES

## THIRD EDITION


WILEY Blackwell

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# Foreword

We are – as always – in a time of flux, with medical careers and the organization of hospitals needing to adjust to meet changing demands. But the fundamental essentials of the practice of clinical medicine have not changed at all. The doctor needs to be able to take a history from a patient, examine them and decide whether investigations and/or treatment are required. They then need to be able to discuss the various options with the patient in an appropriate manner, hopefully reaching a sensible mutual understanding about how best to proceed. The doctor may need to give difficult and distressing information, and must learn how to do it in a way that is clear and does not duck the issues, but also does not increase the pain. And all of these things must be done in a reasonable time frame: the next patient is waiting.

The MRCP PACES examination remains the measure that is most generally respected as indicating that a doctor has developed a fair degree of the knowledge, skills and behaviours that are necessary to do the things detailed above. They are not yet the finished article (beware of anyone, including any consultant, who thinks they are), but they can proceed from core to specialist training. The examination is not easy, with a pass rate of around 40%. Those preparing for it need to immerse themselves in clinical work. There is no substitute for seeing a lot of cases and taking histories and performing examinations, but – and here is where books such as *Cases for PACES* come in – endless repetition of sloppy practice isn't helpful. The physician examining you in the PACES examination is thinking: 'Is this doctor ready to be my SpR now? Can they sort things out in a reasonably efficient and sensible way? Would I get a lot of people wanting to see me because problems had been explained or dealt with poorly?'

What comes over in *Cases for PACES* is a pragmatic and sensible approach that sorts the wood from the trees and cuts pretty rapidly to the chase. I recommend it to you: if you do what it says you will stand a better chance of passing the examination than if you do not.

Dr John Firth
*Consultant Physician, Addenbrooke's Hospital, Cambridge*
*PACES Examiner*

# Preface

PACES (Practical Assessment of Clinical Examination Skills) was initiated in June 2001 by the Royal College of Physicians as the final stage of the MRCP examination. The initial examination consisted of five stations in a carousel: Station 1, Respiratory and Abdominal (10 minutes each); Station 2, History Taking (20 minutes); Station 3, Cardiology and Neurology (10 minutes each); Station 4, Communication Skills and Ethics (20 minutes) and Station 5, Short Cases (Skin, Locomotor, Eyes and Endocrine; 5 minutes each). The format was refined in October 2009 by restructuring Station 5. This station now has two 10-minute 'Brief Clinical Consultations' that encompass the whole exam and draw on the key skills required to be a competent registrar: the ability to extract a succinct and relevant history, elicit the key physical signs, construct a sensible management plan and communicate this to the patient.

*Cases for PACES*, 3rd edition, prepares candidates for the current PACES examination. It mimics the examination format and is designed for use in an interactive way. The 3rd edition has a completely revised text that has been informed by recent successful candidate feedback. It now has useful advice for the day of the exam and provides updated information on ethical and medicolegal issues. There is plenty of history-taking advice with new examples and mock questions for candidates to practise themselves. Station 5, the newest and perhaps the most challenging of stations, receives more attention than in previous editions.

Avoid further factual cramming at this stage – you know enough! Go and see medical patients on a busy acute medicine unit or outpatient department. This has always been the best way to prepare for PACES and this book will assist you to do this. We now include mock 'mark sheets', designed to enable groups of candidates to practise 'under examination conditions' at the bedside.

Common cases that regularly appear in the exam, rather than rarities, have been deliberately chosen. We assume candidates will be familiar in examination techniques and the appropriate order in which to elicit the various signs. We provide discussion topics on which a candidate could be expected to comment at the end of the case. Examiners are monitoring specifically for knowledge of the differential diagnosis and organized clinical judgement, while managing the patients' concerns and maintaining patient welfare. The detail is not exhaustive but rather what is reasonably needed to pass. There is additional room to make further notes if you wish.

The aim of this book is to put the information that is frequently tested in the clinical PACES examination in a succinct format that will enable capable candidates to practice and pass with ease on the day.

We wish you the best of luck.

Stephen Hoole
Andrew Fry
Rachel Davies

# Acknowledgements

We acknowledge the help of Dr Daniel Hodson in the previous two editions. We thank the doctors who taught us for our own PACES examination, and above all the patients who allow us to refine our examination techniques and teach the next generation of MRCP PACES candidates.

# Abbreviations

| | |
|---|---|
| **ABG** | Arterial blood gas |
| **ABPA** | Allergic bronchopulmonary aspergillosis |
| **ABPM** | Ambulatory blood pressure monitoring |
| **ACE** | Angiotensin-converting enzyme |
| **ACE-I** | Angiotensin-converting enzyme inhibitor |
| **ACTH** | Adrenocorticotrophic hormone |
| **ADLs** | Activities of daily living |
| **AF** | Atrial fibrillation |
| **AFP** | Alpha-fetoprotein |
| **AICD** | Automated implantable cardiac defibrillator |
| **AIH** | Autoimmune hepatitis |
| **ADPKD** | Autosomal dominant polycystic kidney disease |
| **ANA** | Anti-nuclear antibody |
| **AR** | Aortic regurgitation |
| **ARB** | Angiotensin receptor blocker |
| **ARVD** | Arrhythmogenic right ventricular dysplasia |
| **5-ASA** | 5-Aminosalicylic acid |
| **ASD** | Atrial septal defect |
| **AVR** | Aortic valve replacement |
| **BIPAP** | Bi-level positive airway pressure |
| **BMI** | Body mass index |
| **CABG** | Coronary artery bypass graft |
| **CAPD** | Continuous ambulatory peritoneal dialysis |
| **CCB** | Calcium-channel blocker |
| **CCF** | Congestive cardiac failure |
| **CF** | Cystic fibrosis |
| **CFA** | Cryptogenic fibrosing alveolitis |
| **CFTR** | Cystic fibrosis transmembrane conductance regulator |
| **CK** | Creatine kinase |
| **CML** | Chronic myeloid leukaemia |
| **CMV** | Cytomegalovirus |
| **COMT** | Catechol-O-methyl transferase |
| **COPD** | Chronic obstructive pulmonary disease |
| **CRP** | C-reactive protein |
| **CSF** | Cerebrospinal fluid |
| **CVA** | Cerebrovascular accident |
| **CVID** | Common variable immunodeficiency |
| **CXR** | Chest X-ray (radiograph) |
| **DBP** | Diastolic blood pressure |
| **DIPJ** | Distal interphalangeal joint |
| **DM** | Diabetes mellitus |
| **DMARDs** | Disease-modifying anti-rheumatic drugs |
| **DVLA** | Driver and Vehicle Licensing Agency |
| **DVT** | Deep vein thrombosis |
| **EBV** | Epstein–Barr virus |
| **ECG** | Electrocardiogram |
| **eGFR** | Estimated glomerular filtration rate |
| **EMG** | Electromyogram |
| **ESR** | Erythrocyte sedimentation rate |
| **FBC** | Full blood count |

**$FEV_1$** Forced expiratory volume in 1 second
**FTA** Fluorescent treponema antibodies
**FVC** Forced vital capacity
**GH** Growth hormone
**Hb** Haemoglobin
**HBV** Hepatitis B virus
**HCG** Human chorionic gonadotrophin
**HCV** Hepatitis C virus
**HGV** Heavy goods vehicle
**HLA** Human lymphocyte antigen
**HOCM** Hypertrophic obstructive cardiomyopathy
**HRT** Hormone replacement therapy
**HSMN** Hereditary sensory motor neuropathy
**HSV** Herpes simplex virus
**IBD** Inflammatory bowel disease
**IDDM** Insulin-dependent diabetes mellitus
**IGF** Insulin-like growth factor
**INR** International normalized ratio
**ITP** Immune thrombocytopaenic purpura
**IV** Intravenous
**JVP** Jugular venous pressure
**$K_{co}$** Transfer coefficient
**LAD** Left axis deviation
**LDH** Lactate dehydrogenase
**LFT** Liver function test
**LMWH** Low molecular weight heparin
**LQTS** Long QT syndrome
**LV** Left ventricle
**LVEF** Left ventricular ejection fraction
**LVH** Left ventricular hypertrophy
**LVOT** Left ventricular outflow tract
**mAb** Monoclonal antibody
**MAO** Monoamine oxidase
**MCPJ** Metacarpophalangeal joint
**MI** Myocardial infarction
**MND** Motor neurone disease
**MPTP** Methyl-phenyl-tetrahydropyridine
**MR** Mitral regurgitation
**MRI** Magnetic resonance imaging
**MTPJ** Metatarsophalangeal joint
**MVR** Mitral valve replacement
**NIPPV** Non-invasive positive pressure ventilation
**NSAIDs** Non-steroidal anti-inflammatory drugs
**NSCLC** Non-small cell lung cancer
**OA** Osteoarthritis
**$P_a$** Partial pressure (arterial)
**PBC** Primary biliary cirrhosis
**PCT** Primary Care Trust
**PE** Pulmonary embolism
**PEFR** Peak expiratory flow rate
**PEG** Percutaneous endoscopic gastrostomy
**PET** Positron emission tomography
**PIPJ** Proximal interphalangeal joint
**PR** Per rectum

**PRL** Prolactin
**PSA** Prostate-specific antigen
**PSC** Primary sclerosing cholangitis
**PSV** Public service vehicle
**PTHrP** Parathyroid hormone-related peptide
**PUVA** Psoralen ultraviolet A
**PVD** Peripheral vascular disease
**RA** Rheumatoid arthritis
**RAD** Right axis deviation
**RBBB** Right bundle branch block
**RR** Respiratory rate
**RV** Right ventricle
**RVH** Right ventricular hypertrophy
**Rx** Treatment
**SBP** Systolic blood pressure
**SCLC** Small cell lung cancer
**SIADH** Syndrome of inappropriate anti-diuretic hormone
**SLE** Systemic lupus erythematosus
**SOA** Swelling of ankles
**SSRI** Selective serotonin reuptake inhibitor
**SVCO** Superior vena cava obstruction
**$T_4$** Thyroxine
***T*°C** Temperature
**TB** Tuberculosis
**TIA** Transient ischaemic attack
**TIMI** Thrombolysis in myocardial infarction
**$T_L$CO** Carbon monoxide transfer factor
**TNM** Tumour nodes metastasis (staging)
**TOE** Transoesophageal echo
**TPA** Tissue plasminogen activator
**TPHA** *Treponema pallidum* haemagglutination assay
**TR** Tricuspid regurgitation
**TSAT** Transferrin saturation
**TSH** Thyroid stimulating hormone
**TTE** Transthoracic echo
**UC** Ulcerative colitis
**U&E** Urea and electrolytes
**UFH** Unfractionated heparin
**UIP** Usual interstitial pneumonia
**UTI** Urinary tract infection
**VATS** Video-assisted thorascopy
**VEGF** Vascular endothelial growth factor
**VSD** Ventricular septal defect
**WCC** White cell count

# Advice

## Preparation

Practice makes perfect; it makes the art of eliciting clinical signs second nature and allows you to concentrate on what the physical signs actually mean. Practice makes you fluent and professional and this will give you confidence under pressure. We strongly encourage you to see as many patients as possible in the weeks leading up to the exam. Practice under exam conditions with your peers, taking it in turns to be the examiner. This is often very instructive and an occasionally amusing way to revise! It also maintains your motivation as you see your performance improve. We also encourage you to seek as much help as possible from senior colleagues; many remember their MRCP exam vividly and are keen to assist you in gaining those four precious letters after your name.

## The day before

Check that you have your examination paperwork in order with your examination number as well as knowing where and what time you are needed: you don't want to get lost or be late! Also ensure that you have packed some identification (e.g. a passport) as you will need this to register on the day. Remember to take with you vital equipment with which you are familiar, particularly your stethoscope, although avoid weighing yourself down with cotton wool, pins, otoscope, etc. The necessary equipment will be provided for you on the day. Punctuality is important and reduces stress so we advise that you travel to your exam the day before, unless your exam centre is on your doorstep. Avoid last minute revision and try and relax: you will certainly know enough by now. Spend the evening doing something other than medicine and get an early night!

## On the day

Think carefully about your attire: first impressions count with both the examiners and – more importantly – the patients. Broadly speaking, exam dress policy is similar to that required of NHS employees. You should look smart and professional, but above all wear something that is comfortable! Shirts should be open collar (not low cut) and short sleeved to enable bare-below-the-elbow and effective hand sanitation. Remove watches/jewellery (wedding bands are permitted) and dangling necklaces/chains that could be distracting. Facial piercings other than ear studs are not recommended.

## Examination

Use the preparatory time before each case wisely. When you enter the station remember to '**HIT**' it off with the examiners and patient:

- **H**and sanitization (if available),
- **I**ntroduce yourself to the patient and ask permission to examine them,
- **T**ake a step back once the patient is appropriately uncovered/positioned. As soon as you start touching the patient, focus becomes blinkered and you will miss vital clues to the case.

Remember to HIT it off and your nerves will settle, you'll be underway and the rest will follow fluently if you are well practised.

Rather like a driving test when looking in the rear-view mirror, be sure to convey to your examiner what you are doing. Similarly, your examiner will be expecting to see you do things in a certain order. Stick to this and examiner 'alarm bells' will remain silent. However, if you do forget to do something half way through the examination, or you have to go back to check a physical finding, do so. It's more important to be comprehensive and sure of the clinical findings, than simply being 'slick'.

Spend the last few moments of your examination time working out what is going on, what the diagnosis is and what you are going to say to the examiner. There's still time to check again. Most examinations can be completed by standing up and stating to the examiners a phrase like: 'To complete my examination I would like to check…' and then listing a few things you may have omitted and/or are important to the case.

## Presentation

Eye contact and direct, unambiguous presentation of the case conveys confidence and reassures examiners that you are on top of things. Avoid the phrases 'I'm not sure if it is…' and 'I think it is…'. Be definitive and avoid sitting on the fence but *above all be honest*. Don't make up clinical signs to fit a specific diagnosis but do not present clinical signs that are inconsistent with the diagnosis or differential diagnosis.

There are two ways to present the case:

- **state the diagnosis and support this with key positive and negative clinical findings** – if (and only if) you are confident you have nailed the diagnosis!
- **state the relevant positive and negative clinical signs (often easier in the order elicited) and then give the differential diagnosis** that is consistent with them – particularly if you are unsure of the diagnosis.

Where possible, a comment on the disease severity or disease activity should be made. Consider complications of the diagnosis and mention if these are present or not. Know when to stop presenting. Brevity can be an asset. It avoids you making mistakes and digging a hole for yourself! Wait for the examiners to ask a question; do not be preemptive – the examiners may follow up on what you say.

## Examiners

Prior to you examining the patient the examiners will have individually 'calibrated the case' to ensure that the clinical signs are present. This maintains the fairness and robustness of the exam and makes sure consistency exists between exam centre marking. There will be two examiners for every carousel station and usually one will lead the discussion with you. Both will have mark sheets and will mark you individually without collaboration. Contrary to popular belief they both want you to pass. They are there because they support the college training and progression of talented physicians of the future.

## Mistakes happen

If you do make a mistake and realize it, do not be afraid to correct yourself. To err is human and the examiners may overlook a minor *faux pas* if the rest of the case has gone well. It is not uncommon to think you have failed a case half way round the carousel and that your chances of passing PACES has been dealt a fatal blow. We are often our own harshest critics! *Do not write yourself off.* Frequently, all is not lost. Don't let your performance dip on the next cases because you are still reeling from the last. Put mistakes behind you, keep calm and carry on!

# Station 1
# Abdominal and Respiratory

## Clinical mark sheet

| Clinical skill | Satisfactory | Unsatisfactory |
|---|---|---|
| Physical examination | Correct, thorough, fluent, systematic, professional | Incorrect technique, omits, unsystematic, hesitant |
| Identifying physical signs | Identifies correct signs<br>Does not find signs that are not present | Misses important signs<br>Finds signs that are not present |
| Differential diagnosis | Constructs sensible differential diagnosis | Poor differential, fails to consider the correct diagnosis |
| Clinical judgement | Sensible and appropriate management plan | Inappropriate management<br>Unfamiliar with management |
| Maintaining patient welfare | Respectful, sensitive<br>Ensures comfort, safety and dignity | Causes physical or emotional discomfort<br>Jeopardises patient safety |

*Cases for PACES*, Third Edition. Stephen Hoole, Andrew Fry and Rachel Davies.

# Chronic liver disease and hepatomegaly

*This man complains of weight loss and abdominal discomfort. His GP has referred him to you for a further opinion. Please examine his abdomen.*

## Clinical signs

### SIGNS OF CHRONIC LIVER DISEASE

- **General:** cachexia, icterus (also in acute), excoriation and bruising
- **Hands:** leuconychia, clubbing, Dupuytren's contractures and palmar erythema
- **Face:** xanthelasma, parotid swelling and fetor hepaticus
- **Chest and abdomen:** spider naevi and caput medusa, reduced body hair, gynaecomastia and testicular atrophy (in males)

### SIGNS OF HEPATOMEGALY

- Palpation and percussion:
  - Mass in the right upper quadrant that moves with respiration, that you are not able to get above and is dull to percussion
  - Estimate size (finger breadths below the diaphragm)
  - Smooth or craggy/nodular (malignancy/cirrhosis)
  - Pulsatile (TR in CCF)
- Auscultation
  - Bruit over liver (hepatocellular carcinoma)

### EVIDENCE OF AN UNDERLYING CAUSE OF HEPATOMEGALY

| | |
|---|---|
| • Tattoos and needle marks | Infectious hepatitis |
| • Slate-grey pigmentation | Haemochromatosis |
| • Cachexia | Malignancy |
| • Mid-line sternotomy scar | CCF |

### EVIDENCE OF TREATMENT

- Ascitic drain/tap sites
- Surgical scars

### EVIDENCE OF DECOMPENSATION

- **A**scites: shifting dullness
- **A**sterixis: 'liver flap'
- **A**ltered consciousness: encephalopathy

## Discussion

### CAUSES OF HEPATOMEGALY

The **big three:**
**Cirrhosis** (alcoholic)
**Carcinoma** (secondaries)
**Congestive cardiac failure**
Plus: **I**nfectious (HBV and HCV)
**I**mmune (PBC, PSC and AIH)
**I**nfiltrative (amyloid and myeloproliferative disorders)

### INVESTIGATIONS

- Bloods: FBC, clotting, U&E, LFT and glucose
- Ultrasound scan of abdomen
- Tap ascites (if present)

### IF CIRRHOTIC

- Liver screen bloods:
  - Autoantibodies and immunoglobulins (PBC, PSC and AIH)
  - Hepatitis B and C serology
  - Ferritin (haemochromatosis)
  - Caeruloplasmin (Wilson's disease)
  - α-1 antitrypsin
  - Autoantibodies and immunoglobulins (PBC)
  - AFP (hepatocellular carcinoma)
- Hepatic synthetic function: INR (acute) and albumin (chronic)
- Liver biopsy (diagnosis and staging)
- ERCP (diagnose/exclude PSC)

### IF MALIGNANCY

- Imaging: CXR and CT abdomen/chest
- Colonoscopy/gastroscopy
- Biopsy

### COMPLICATIONS OF CIRRHOSIS

- Variceal haemorrhage due to portal hypertension
- Hepatic encephalopathy
- Spontaneous bacterial peritonitis

### CHILD-PUGH CLASSIFICATION OF CIRRHOSIS

Prognostic score based on bilirubin/albumin/INR/ascites/encephalopathy

| | Score | 1 year survival |
|---|---|---|
| **A:** | 5–6 | 100% |
| **B:** | 7–9 | 81% |
| **C:** | 10–15 | 45% |

### CAUSES OF ASCITES

- **C**irrhosis (80%)
- **C**arcinomatosis
- **C**CF

### TREATMENT OF ASCITES IN CIRRHOTICS

- Abstinence from alcohol
- Salt restriction
- Diuretics (aim: 1 kg weight loss/day)
- Liver transplantation

### CAUSES OF PALMAR ERYTHEMA

- Cirrhosis
- Hyperthyroidism
- Rheumatoid arthritis
- Pregnancy
- Polycythaemia