



## 13th Annual BSGAR Meeting

2nd - 4th February 2011 • The Lowry Hotel, Manchester



Creative Conferences has had the pleasure of organising the BSGAR Annual Meetings since the inception of SIGGAR in 1999. We hope we'll see you next year in Cardiff.



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# Chairman's Welcome

## Contents

Meeting Programme	4-6
Social Events	7
Delegate List	8-11
Sponsors	12
Exhibition Floorplan	13
Synopsis of Speaker's Presentations	14-21
BSGAR 2012 Meeting	22

Dear Colleagues,

On behalf of the organising committee I have the privilege of welcoming you to the Lowry Hotel in Manchester for the 13th Annual Meeting of the British Society of Gastrointestinal and Abdominal Radiology.



The Committee has worked hard to develop this year's programme which I hope you agree contains a number of interesting, scientifically relevant topics again based on suggestions received following recent BSGAR meetings. No successful meeting occurs without a sustained effort from many people and I am profoundly grateful to everyone who has contributed to the event including importantly all the participating speakers and chairpersons.

In particular I would like to welcome Professor Celso Matos from The Hôpital Erasme-Université Libre de Bruxelles who will deliver the 2011 Richard Farrow memorial lecture as well as updating us on the latest developments in MRCP technique.

After due consideration we have kept the overall format of the meeting similar to last year's popular programme and thus the Committee very much look forward to greeting you at our opening BSGAR welcome reception as well as at the annual dinner.

I do hope that you enjoy the 13th BSGAR Annual Meeting which as always promises to deliver both excellent education combined with the usual BSGAR hospitality!

Dr Simon Jackson  
Chairman, BSGAR

"The Presentation Specialists"



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## Wednesday 2nd February 2011

18.30 - 20.00 Welcome Reception

## Thursday 3rd February 2011

08.30 - 08.55 Registration and Coffee

08.55 - 09.00 Welcome and Introduction  
Dr Simon Jackson, Chairman, BSGAR - Derriford Hospital, Plymouth

09.00 - 10.30 **Session: Multidisciplinary IBD Management**  
Chairman: Dr Andrea Phillips - Royal United Hospital, Bath

*Update - What's new for the GI radiologist?*

09.00 - 09.15 Medical Management  
Speaker: Dr Alistair Makin - Manchester Royal Infirmary

09.15 - 09.30 Surgical Management  
Speaker: Mr Jim Hill - Manchester Royal Infirmary

*Imaging markers of disease activity/severity:*

09.30 - 09.50 Assessment With US  
Speaker: Dr Anthony Higginson - Queen Alexander Hospital, Portsmouth

09.50 - 10.10 Role of MRI/CT  
Speaker: Dr Stuart Taylor - University College Hospital, London

10.10 - 10.30 Panel Discussion

10.30 - 11.15 Coffee and Exhibition

11.15 - 12.40 **Session: Developments in Abdominal Trauma Radiology**  
Chairman: Dr Simon Jackson - Derriford Hospital, Plymouth

11.15 - 11.35 Setting the Scene - Lessons from Afghanistan  
Speaker: Surg Cdr Ewan Armstrong - Derriford Hospital, Plymouth

11.35 - 11.55 Optimising Cross Sectional Imaging Algorithms  
Speaker: Lt Col Andrew West - University Hospital of Birmingham

## Thursday 3rd February 2011

11.55 - 12.15 Interventional Radiology - Where and When?  
Speaker: Dr Iain Robertson - Greater Glasgow and Clyde

12.15 - 12.40 Panel Discussion

12.40 - 14.00 Lunch and Exhibition

14.00 - 15.10 **Debate: "This House Supports Delegation of the Radiologists Role to Radiographers."**  
Chairman: Dr Hans-Ulrich Laasch - The Christie, Manchester  
*For:* Dr Clive Kay - Bradford Royal Infirmary  
Mrs Jane Smith - St James University Hospital, Leeds  
*Against:* Dr David Richardson - Royal Victoria Infirmary, Newcastle-Upon-Tyne  
Dr Peter Rodgers - Leicester Royal Infirmary

15.10 - 15.30 BSGAR Related National Trials and Audits - Members Update  
Speakers: Dr Stuart Taylor - University College Hospital, London  
Dr Andrew Lowe, Bradford Royal Infirmary

15.30 - 16.15 Tea Break and Exhibition

16.15 - 17.00 **THE RICHARD FARROW MEMORIAL LECTURE**  
Chairman: Dr Ashley Guthrie - St James University Hospital, Leeds

Differentiating inflammatory from neoplastic disease of the pancreas  
Speaker: Prof Celso Matos - Hôpital Erasme-Université Libre de Bruxelles, Brussels

17.00 Meeting Ends

17.00 - 18.00 Annual General Meeting (BSGAR members only)

19.00 Meet at Reception of The Lowry for Coach Pick-up

19.30 Drinks Reception and Winter Barbeque at Great John Street Hotel

## Friday 4th February 2011

- 08.30 - 08.45 Coffee
- 08.45 - 09.50 **Session: Interesting Cases Presentation**  
Chairman: Dr Damian Tolan - Leeds General Infirmary
- 09.50 - 10.00 National Registries - Members Update  
Speaker: Dr Hans-Ulrich Laasch - The Christie, Manchester
- 10.00 - 11.00 **Session: Staging GI Tumours - Tips and Tricks**  
Chairman: Dr Andrew Lowe - Bradford Royal Infirmary
- 10.00 - 10.15 The Oesophagus/Stomach  
Speaker: Dr Brinder Mahon - University Hospital of Birmingham
- 10.15 - 10.30 The Solid Pancreatic Mass  
Speaker: Dr Maria Sheridan - St James University Hospital, Leeds
- 10.30 - 10.45 Anal Cancer  
Speaker: Dr Rohit Kochhar - The Christie, Manchester
- 10.45 - 11.00 Peritoneal Tumours  
Speaker: Dr Ben Taylor - The Christie, Manchester
- 11.00 - 11.30 Coffee and Exhibition
- 11.30 - 11.35 Prizes
- 11.35 - 13.15 **Session: Challenging Topics for the GI and Abdominal Radiologist**  
Chairman: Dr David Breen - University Hospital of Southampton
- 11.35 - 12.00 Liver DWI - The Prerequisites  
Speaker: Dr Ashley Guthrie - St James University Hospital, Leeds
- 12.00 - 12.25 Secretin Enhanced MRCP  
Speaker: Prof Celso Matos - Hôpital Erasme-Université Libre de Bruxelles, Brussels
- 12.25 - 12.50 The Incidental Splenic Mass  
Speaker: Dr Simon Freeman - Derriford Hospital, Portsmouth
- 12.50 - 13.15 The Difficult Pancreatic Biopsy  
Speaker: Dr Nick Carroll - Addenbrookes Hospital, Cambridge
- 13.15 - 13.20 Close of Meeting

## Social Events

### Wednesday 2nd February 2011

- 18.30 - 20.00 Welcome Reception  
The Library - first floor

### Thursday 3rd February 2011

- 19.00 Meet at Reception of The Lowry for Coach Pick-up transfer to The Great John Street Hotel
- 19.30 Drinks Reception at The Oyster Bar (pictured) and Winter Barbeque at Great John Street Hotel



## A

**Dr Kirsty Anderson**  
Freeman Hospital, Newcastle upon Tyne

**Surg Cdr Ewan Armstrong**  
Derriford Hospital, Portsmouth

**Dr Janice Ash-Miles**  
University Hospitals, Bristol

**Dr Sheila Augustine**  
Royal Albert Edward Infirmary, Wigan

**Dr Dina Awad**  
Royal Preston Hospital

## B

**Dr Clive Bartram**  
Princess Grace Hospital

**Dr Christine Baudouin**  
Freeman Hospital, Newcastle upon Tyne

**Dr Maggie Betts**  
John Radcliffe Hospital, Oxford

**Dr Sean Blake**  
Airedale NHS Trust

**Dr Tony Booth**  
Hinchingbrooke Hospital, Huntingdon

**Dr David Breen**  
University Hospital of Southampton

**Dr Robert Briggs**  
Huddersfield Royal Infirmary

**Dr John Brittenden**  
Mid Yorks NHS Trust

**Dr Ingrid Britton**  
University Hospital, North Staffs

**Dr David Bruce**  
University Hospitals of Leicester

**Dr John Brush**  
Western General Hospital

## B

**Dr Timothy Bryant**  
Southampton General Hospital

**Dr Simon Burbidge**  
Leeds General Infirmary

**Dr Hugh Burnett**  
Salford Royal Foundation Trust

**Dr Briony Burns**  
Western Sussex NHS Trust, Chichester

## C

**Dr Shona Campbell**  
University Hospitals of Leicester

**Dr Nick Carroll**  
Addenbrookes Hospital, Cambridge

**Dr Peter Chowdhury**  
Singleton Hospital, Swansea

**Dr D Christodoulou**  
Guys Hospital

**Dr Joanne Corkan**  
Wigan Royal Infirmary

**Dr Conor Corr**  
Wrexham Maelor Hospital

**Dr Nicholas Cross**  
Nevill Hall Hospital, Abergavenny

## D

**Dr S Desai**  
Royal Albert Edward Infirmary, Wigan

**Dr Rajpal Dhingra**  
Queens Medical Centre, Nottingham

**Dr Nick Dodds**  
Royal Cornwall Hospital

## E

**Dr Derek Edwards**  
The Christie Hospital, Manchester

## E

**Dr Julian Elford**  
Royal Hampshire County Hospital

**Dr Sarah Evans**  
Kingston Hospital

## F

**Dr Neil Fairlie**  
Northampton General Hospital  
NHS Trust

**Dr David Fleming**  
Royal Gwent Hospital, Newport

**Dr Simon Freeman**  
Derriford Hospital, Portsmouth

**Dr Roger Frost**  
Salisbury District Hospital

## G

**Dr John Garrett**  
Kent and Sussex Hospital, Kent

**Dr Stephen Glancy**  
Western General Hospital

**Dr Edmund Godfrey**  
Addenbrooke's Hospital, Cambridge

**Dr Catherine Grierson**  
Southampton General Hospital

**Dr Alan Grundy**  
St George's Hospital

**Dr Ashley Guthrie**  
St James University Hospital, Leeds

## H

**Professor Steve Halligan**  
University College Hospital

**Dr John Hancock**  
Royal Cornwall Hospital

**Dr Ian Harris**  
Lancashire Teaching Hospital  
NHS Trust

## H

**Dr Keith Harris**  
Leeds General Infirmary

**Dr Stephen Hayward**  
Royal United Hospital, Bath

**Dr Eryl Hicks**  
Royal Glamorgan Hospital

**Dr A. Higginson**  
Queen Alexander Hospital, Portsmouth

**Dr Jim Hill**  
Manchester Royal Infirmary

**Dr Rob Holmes**  
Royal Victoria Infirmary, Newcastle

**Dr Fuad Hussain**  
Royal Surrey County Hospital

**Dr Rachel Hyland**  
Leeds General Infirmary

## J

**Dr Simon Jackson**  
Derriford Hospital, Portsmouth

**Dr Yatin Jain**  
North Manchester General Hospital

**Dr J Craig Jobling**  
Nottingham University Hospital

**Jackie Johnson**  
Salford Royal

## K

**Dr Mathew Kaduthodil**  
Bradford Royal Infirmary

**Dr M Kamal**  
Lincoln County Hospital

**Professor Sung-Gwon Kang**  
Seoul National University  
Medical College

**Dina Kasir**  
Salford Royal

## K

**Dr Clive Kay**  
Bradford Royal Infirmary

**Dr Rohit Kochhar**  
The Christie, Manchester

## L

**Dr Hans-Ulrich Laasch**  
The Christie, Manchester

**Dr Amanda Law**  
Royal Bolton Hospital

**Dr Kathryn Lawrence**  
Dorset County Hospital

**Dr Stephen Lee**  
Manchester Royal Infirmary

**Dr Amanda Liddicoat**  
Royal Cornwall Hospital

**Dr. Andy Lowe**  
Bradford Royal Infirmary

## M

**Dr Peter Maclean**  
Western General Hospital

**Dr Jenny MacPherson**  
North Devon District Hospital

**Dr Brin Mahon**  
University Hospital of Birmingham

**Dr A Makin**  
Manchester Royal Infirmary

**Dr Richard Mannion**  
York DGH

**Dr Michele Marshall**  
St Mark's Hospital

**Dr Giles Maskell**  
Royal Cornwall Hospital

**Prof Celso Matos**  
Hôpital Erasme-Universite  
Libre de Bruxelles, Brussels

## M

**Dr Rod Mawhinney**  
Harrogate Foundation Trust

**Dr Alan McCulloch**  
Ninewells Hospital, Dundee

**Dr Shaun McGee**  
Salisbury District Hospital

**Rajiv Menezes**  
Southport and Ormskirk NHS Trust

**Danielle Murphy**  
Salford Royal

## O

**Dr Sarah O'Shea**  
Manchester Royal Infirmary

## P

**Dr Delia Peppercorn**  
North Hampshire Hospital

**Dr Dan Petty**  
York DGH

**Dr Andrea Phillips**  
Royal United Hospital, Bath

**Dr Kate Potter**  
Royal Surrey County Hospital

**Dr Deepak Prasad**  
Bradford Royal Infirmary

**Dr Samad Punekar**  
Bradford Royal Infirmary

## R

**Dr Sridharan Ramachandran**  
Wigan Infirmary

**Dr Catherine Ramsey**  
West Middlesex University Hospital

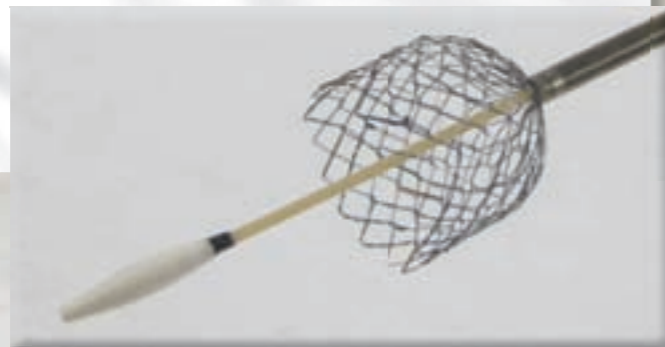
**Dr Rubeena Razzaq**  
Royal Bolton Hospital

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- ◆ Oesophageal



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## Delegate List

### R

**Lisa Renaut**  
Salford Royal

**Dr Ian Renwick**  
Scarborough Hospital

**Dr Paul Rice**  
Cragavon Area Hospital, Co Armagh

**Dr David Richardson**  
Royal Victoria Infirmary  
Newcastle-Upon-Tyne

**Dr Huw Roach**  
University Hospitals Bristol

**Dr Ashley Roberts**  
University Hospital of Wales, Cardiff

**Dr Catherine Roberts**  
Huddersfield Royal Infirmary

**Dr Ian Robertson**  
Glasgow Royal Infirmary

**Dr Lili Robinson**  
Leicester Royal Infirmary

**Dr Mark Robinson**  
Royal Gwent Hospital, Newport

**Dr Peter Rodgers**  
Leicester Royal Infirmary

**Dr V. Rudlingam**  
University Hospital South Manchester

### S

**Dr Milan Sapundaeski**  
Fairfield Hospital, Bury

**Dr John Scott**  
Freeman Hospital, Newcastle

**Dr David Scullion**  
Harrogate DGH

**Dr Rishi Sethi**  
Manchester Royal Infirmary

### S

**Dr Vikas Shah**  
Charing Cross Hospital, London

**Dr Maria Sheridan**  
St James University Hospital, Leeds

**Dr Tony Sheridan**  
Warrington Hospital

**Dr John Shirley**  
Plymouth Hospital

**Dr Phil Shorvon**  
Central Middlesex Hospital

**Dr Andrew Slater**  
John Radcliffe Hospital, Oxford

**Dr David Steele**  
Wishaw General Hospital

**Dr Rob Stockwell**  
Chorley and South Ribble DGH

**Dr Madeline Strugnell**  
Royal Cornwall Hospital

**Dr S.A.Sukumar**  
University Hospital of South  
Manchester

### T

**Dr Eddie Tam**  
North Manchester General

**Dr Ben Taylor**  
The Christie, Manchester

**Dr S Taylor**  
University College Hospital, London

**Dr Sue Tebby-Lees**  
East Cheshire NHS Trust

**Dr A.M.Thompson**  
Downe Hospital, Northern Ireland

**Dr Andrew Thrower**  
North Hampshire Hospital

### T

**Dr Damian Tolan**  
Leeds General Infirmary

**Dr Carolyn Tweed**  
Northern General Hospital, Sheffield

### U

**Dr Ken Uzoka**  
Pennine Acute NHS Trust

### V

**Dr Kevin Vallance**  
George Elliott Hospital, Nuneaton

**Dr Ragu Vinayagam**  
Sheffield Teaching Hospitals

**Dr Vivek Vohra**  
Bedford Hospital

**Dr Alireza Vosough**  
Aberdeen Royal Infirmary

### W

**Dr Sharan Wadhvani**  
Manchester Radiology Training Scheme

**Lt Col Andrew West**  
University Hospital of Birmingham

**Dr Mark White**  
Airedale NHS Foundation Trust

**Dr Siobhan Whitley**  
Cambridge University Hospitals

**Dr Luke Williams**  
Hope Hospital Salford

**Dr Peter Wylie**  
Royal Free Hospital

### Z

**Dr Ian Zealley**  
Ninewells Hospital Dundee

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Bayer have kindly agreed to sponsor the course dinner.


### Exhibitor Attendees

<p><b>Bayer</b> Steven Broadhurst Nicole Farmer Suzanne Jarvis</p> <p><b>Bracco</b> Debbie Hallam Liz Hodge</p> <p><b>BVM</b> Alan Atkinson Eddie Mahon</p> <p><b>Covidien</b> Richard Waddington</p>	<p><b>Cook Medical</b> Gill Ashworth Coleen Jones Phillip Pickles</p> <p><b>Guerbet</b> Noel Powell Barbara Suggitt</p> <p><b>Hitachi Medical Systems</b> Stephen Brookes Jonathan Clode Kurt Lauriers</p>	<p><b>Keymed</b> Michael Harwood</p> <p><b>Manatech</b> Chris Bolter Andrew Maxwell</p> <p><b>Medicsight</b> Dylan Griffiths</p> <p><b>Novartis</b> Howard Caseley Sean Graham Ian Lloyd</p>	<p><b>Sanochemia Diagnostics</b> Denis Underwood</p> <p><b>UK Medical</b> Robert Bardsley Paul O'Brien Prof K Volonec</p> <p><b>Vygon</b> Graham Milward Irwm Javed</p>
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### Exhibitor Key

- |               |                |
|---------------|----------------|
| 1. BAYER      | 9. KEYMED      |
| 2. BAYER      | 10. UK MEDICAL |
| 3. MEDICSIGHT | 11. MANATECH   |
| 4. VYGON      | 12. COVIDIEN   |
| 5. HITACHI    | 13. COOK       |
| 6. BRACCO     | 14. BVM        |
| 7. SANOCHEMIA | 15. GUERBET    |
| 8. NOVARTIS   |                |



## THE DIFFICULT PANCREATIC BIOPSY

12.50 - 13.15 Friday 4th February

Dr Nick Carroll - Cambridge University Hospitals NHS Foundation Trust

### Pancreatic biopsy

- Why bother?
- Which method
- What makes it difficult
  - Location
  - Tissue
  - Lesion visibility
  - Access
  - CBD Stent
  - Chronic pancreatitis
- Processing/analysis of material
- Cytology v histology
- What makes it difficult for cytologist/histopathologist

### C.P and stenting

- CP can cause cellular atypia closely mimicking well-differentiated pancreatic adenocarcinoma and can make the diagnosis difficult
- The presence of CP lowers the sensitivity, PPV, and accuracy of EUS-FNA for a pancreatic cancer diagnosis only in the subset patients with obstructive jaundice and who have a biliary stent in place at the time of EUS-FNA.

## THE INCIDENTAL SPLENIC LESION

12.25 - 12.50 Friday 4th February

Dr Simon Freeman - Derriford Hospital, Portsmouth

- The spleen has been named “the forgotten organ” because:
  - Focal lesions of the spleen are relatively rare
  - Splenic pathology is frequently clinically silent
- Incidental splenic lesions will however regularly be encountered by abdominal radiologists
- Benign splenic lesions are slightly more common than malignant lesions
- Splenic lesions are often difficult to characterise based purely on their imaging appearances, however correlation with clinical findings and laboratory data frequently allows a presumptive diagnosis to be made

### This talk will:

- Review normal splenic variants that may be confused with disease
- Illustrate a variety of benign and malignant focal splenic lesions
- Discuss an approach to diagnosis of an incidental splenic lesion that will emphasise the value of conventional and microbubble contrast enhanced ultrasound
- Review the indications, technique and safety of targeted splenic biopsy comparing fine needle aspiration with core biopsy



## STAGING OF ANAL TUMOURS - TIPS AND TRICKS

10.30 - 10.45 Friday 4th February

Dr Rohit Kochhar - The Christie, Manchester

### Introduction

- Anal cancer is an uncommon malignancy
  - 1.5% of all GI cancers
  - 800 new cases in the UK per year
- The primary tumour size, location and depth of penetration at presentation are the most important prognostic factors
- Anal sphincter preservation with radiochemotherapy (CRT) is the standard of treatment for most patients with anal cancers
- Anal cancer is characterised by a high-risk of local relapse: 25 to 30% of cases relapse and require radical salvage surgery

### Conclusion

- MRI including DWI has a key role to play both in primary staging and post treatment assessment
- Response assessment after treatment of primary anal cancer with CRT is particularly challenging and involves
  - correlation with pretreatment MRI
  - recognition of serial changes related to treatment effect on MRI
  - need for EUA and identification of recurrence
  - eligibility for salvage
- Post therapy FDG PET CT response is a better outcome predictor than pretreatment tumour size or nodal status
- Imaging and treatment of anal cancer requires specialist multi-disciplinary care and should be centralised

## ROLE OF MRI/CT

09.50 - 10.10 Thursday 3rd February

Dr Stuart Taylor - University College Hospital, London

### Crohn's disease activity on MRI & CT

- Wall thickness (MRI & CT)
- Increased mural signal
- Layered enhancement (MRI and CT)
- Absolute enhancement - complex relationship
- Ulceration
  - ? Comb sign
  - Lymph node enhancement

### Imaging markers of disease activity - Role of CT/MRI

- Learning objectives
  - To briefly describe the subtypes of Crohn's disease
  - To present MRI and CT protocols optimised to Crohn's disease
  - To discuss the literature pertaining to the assessment of disease activity and highlight weakness or inconsistencies
  - To present validated markers of disease activity on CT and MRI

## STAGING PANCREATIC ADENOCARCINOMA – LEARNING POINTS

10.15 - 10.30 Friday 4th February

Dr Maria Sheridan - St James University Hospital, Leeds

1. Describe TNM staging and other clinical systems that inform patient management
2. Revise absolute and relative criteria for non – resectability
3. Discuss borderline resectability

- **Locally invasive (AJCC stage III)**

- Peripancreatic structures (small bowel mesentery & transverse mesocolon)
- Peripancreatic veins (SMV, PV, SV)
- Peripancreatic arteries (HA, CA, SMA)

- **Metastatic disease (AJCC stage IV)**

- Liver
- Distant lymph node (beyond surgical resection planes)
- Peritoneum
- Lungs & bone

### Borderline Resectability

- Vascular resection
  - Severe unilateral invasion of SMV/PV
  - Tumour abutment on SMA
  - Gastroduodenal artery involvement upto HA
  - Limited IVC involvement
  - Short segment SMV occlusion (proximal & distal patency)

## STAGING PERITONEAL TUMOURS –TIPS AND TRICKS

10.45 - 11.00 Friday 4th February

Dr Ben Taylor - The Christie, Manchester

- CT is accurate in the majority of patients, but CE-MRI has a higher sensitivity for detection of small deposits. DW-MRI may further increase sensitivity.
- CT tumour detection is optimal with oral contrast – but beware calcified deposits.
- The most common sites of involvement are the greater momentum, Pouch of Douglas, sigmoid mesentery, paracolic gutters and subphrenic spaces, but the supracolic momentum, gastrohepatic ligament and small bowel mesentery are important review areas.
- Overall tumour volume is predictive of operability, but infiltration of the small bowel and mesentery are the most important individual factors.
- Pseudomyxoma peritonei (PMP) typically presents with mixed solid and low density (mucinous) peritoneal deposits, with scalloping of the liver being a characteristic feature. The condition usually arises from an appendiceal mucinous tumour, which may be visible as a tubular cystic structure, often with wall calcifications.
- Levy AD, Shaw JC, Sobin LH. Secondary tumors and tumorlike lesions of the peritoneal cavity: imaging features with pathologic correlation. *Radiographics*. 2009 Mar-Apr;29(2):347-73. Review.
- Coakley FV, Choi PH, Gougoutas CA, Pothuri B, Venkatraman E, Chi D, Bergman A, Hricak H. Peritoneal metastases: detection with spiral CT in patients with ovarian cancer. *Radiology*. 2002 May;223(2):495-9.
- Qayyum A, Coakley FV, Westphalen AC, Hricak H, Okuno WT, Powell B. Role of CT and MR imaging in predicting optimal cytoreduction of newly diagnosed primary epithelial ovarian cancer. *Gynecol Oncol*. 2005 Feb;96(2):301-6.
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- Kyriazi S, Collins DJ, Morgan VA, Giles SL, deSouza NM. Diffusion-weighted imaging of peritoneal disease for noninvasive staging of advanced ovarian cancer. *Radiographics*. 2010 Sep;30(5):1269-85.

## LIVER DWI - THE PREREQUISITES

11.35 - 12.00 Friday 4th February

Dr Ashley Guthrie, St James's University Hospital Leeds

- With DWI contrast is generated by differences in the random (Brownian) motion of protons
- This motion becomes "restricted" by the presence of macromolecules, cell and organelle membranes
- The greater the motion - the lesser the restriction - the smaller the signal
- An old concept but to produce abdominal images of acceptable quality this has required the development of hardware eg parallel imaging, to eliminate other sources of motion
- Diffusion gradients are modified (b values) to vary the sensitivity to diffusion motion, if at least 3 values are generated the apparent diffusion coefficient (ADC) can be calculated
- ADC is an index of signal intensity: b value and can produce an image (map). Diffusion restriction reduces signal on the ADC map ie the converse of the DWI images
- The sequence is T2 weighted – tissues with long T2 times (bright on T2) demonstrate high signal intensity on DWI - "T2 shine through"
- Mistaking high T2 signal for DWI restriction can be overcome by the use of ADC maps and conventional T2 images
- A major clinical role is the detection of lesions particularly those less than 1cm in diameter in the non-cirrhotic liver
- Cysts can be differentiated from solid lesions, but characterization of other lesions is limited
- DWI should be seen as an adjunct rather than replacement for contrast agents
- DWI can also be used to detect responses of metastases to chemotherapy prior to changes in size, and to some extent assessing parenchymal liver disease

### References

- 1) Koh DM, Collins DJ. Diffusion weighted MRI in the body: Applications and Challenges in Oncology. AJR. 2007. 188:1622-1635.
- 2) Coenegrachts K, Matos C, Ter Beek L, et al. Focal liver lesion detection and characterization: comparison of non-contrast enhanced and SPIO-enhanced diffusion-weighted single-shot spin echo echo planar and turbo spin echo T2-weighted imaging. European Journal of Radiology. 2009. 72(3):432-439.
- 3) Low RN, Gurney J. Diffusion-weighted MRI (DWI) in the oncology patient: value of breathhold DWI compared to unenhanced and gadolinium-enhanced MRI. Journal of Magnetic Resonance Imaging. 2007. 25:848-858.
- 4) Sandrasegaran K, Akisik FM, Lin C, Tahir B, Rajan J, Saxena R, Aisen A. Value of Diffusion-Weighted MRI for Assessing Liver Fibrosis and Cirrhosis AJR 2009; 193:1556-1560

## INTERVENTIONAL RADIOLOGY - WHERE AND WHEN?

11.55 - 12.15 Thursday 3rd February


Dr Iain Robertson, Greater Glasgow and Clyde

- Current services not fit for purpose
- Significant variation in care from 5 unexpected survivors to 8 unexpected deaths
- Lack of effective access to CT & IR
- New national trauma guidelines, CT in ATLS
- Designated major trauma centres & networks
- CT within 30 minutes; IR in 60 minutes
- IR in trauma: preserve or occlude vessels
- Technical challenges: poor coagulation - use different agents eg glue
- Technical challenges: speed
- Damage control IR
- How to assess quality in trauma IR
- Increasing scrutiny for diagnostic and interventional radiology

### MEDIC CO<sub>2</sub> LON

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- ☑ Per-patient CAD sensitivities were 93.8% and 96.5% at 6 and 10mm polyp size thresholds, respectively.<sup>1</sup>
- ☑ Per-polyp CAD sensitivities were 90.1% and 96.0% at 6 and 10mm threshold sizes, respectively.<sup>1</sup> Average of 4.7 CAD false-positives per image series (30/1461).<sup>1</sup>
- ☑ CAD marked an additional 15 polyps of 6 mm or larger, missed by an expert but found at a subsequent colonoscopy.<sup>1</sup>

1. Lawrence EM, Pickhardt PJ, Kim DH, Robbins JB. Colorectal Polyps: Stand-alone Performance of Computer-aided Detection in a Large Asymptomatic Screening Population. Radiology (2010) 256, 791-798



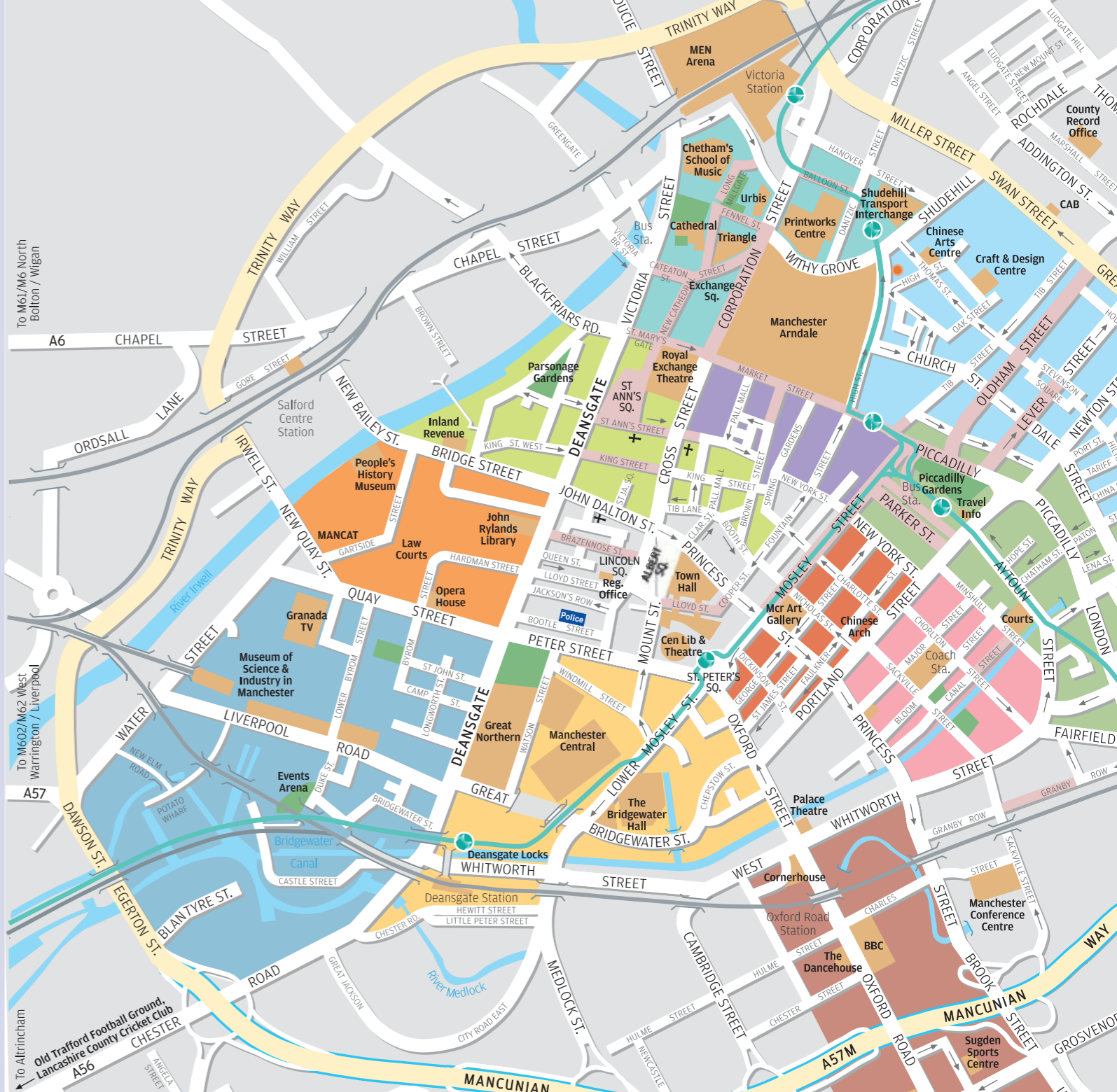
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BSGAR Stand 3

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Wednesday 1st February - Friday 3rd February 2012

CME certificates will only be supplied once your evaluation form has been handed in to Creative Conferences on Friday





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