
CONSENSUS CONFERENCE ON PROSTATE IMAGING

JANUARY 12–13, 2009
POOKS HILL MARRIOTT, BETHESTA, MD

AGENDA

PRIORITY GOALS:

1. **Detection of Clinically Relevant Early Cancer.** Define Target for Imaging: Anatomic and Biologic Parameters of Prostate Cancer that are essential/critical to visualize/quantify and Develop Technical Specifications for Imaging
2. **Outline Strategy for Assessment of Aggressiveness of Prostate Cancer,** with specific focus on the detection of lethal phenotype
3. **Map out Strategy to Decrease Unnecessary Biopsies/Improve Cancer Yield** to improve localization, prognostication and screening of relevant disease
4. **Evaluate How Advanced Imaging/Diagnostics Will Impact Every Aspect of Patient Care**

JANUARY 12, 2009

- 8 – 8:10 AM **STATEMENT OF PURPOSE:
FOLLOWING THE MODEL OF BREAST CANCER IMAGING**
Faina Shtern, M.D., President of AdMeTech
- 8:10 AM **CLINICAL CHALLENGES IN PROSTATE CANCER CARE: POTENTIAL
ROLE OF IMPROVED DIAGNOSTICS**

Over view:
Theodore DeWeese, M.D., Professor & Chair, Department of Radiation
Oncology, Johns Hopkins University

Comments:
James Brooks, M.D., Associate Professor, Department of Urology,
Stanford University
- 8:30 AM **PROSTATE CANCER IMAGING: CURRENT STATE OF THE ART AND
FUTURE VISION**

General Overview & MRI: Hedi Hricak, M.D. Ph.D., Professor & Chair,
Department of Radiology, Memorial Sloan Kettering (15 minutes)

Ultrasound Perspective: Ethan Halpern, M.D., Director, Jefferson
Prostate Diagnostic Center, Thomas Jefferson University (10 minutes)

Nuclear Medicine/PET: Richard Wahl, M.D., Professor & Chief of
Nuclear Medicine, Johns Hopkins Medical School (10 minutes)

Molecular Imaging: Martin Pomper, M.D., Ph.D., Professor of Radiology,
Johns Hopkins University (10 minutes)

Industrial Perspective: Robert Honigberg, M.D., Chief Medical Officer,
GE Healthcare (10 minutes)
- 9:25 – 9:40 AM **PERSPECTIVE FROM FDA**
Daniel G. Schultz, M.D., Director, FDA's Center for Radiologic Devices and
Radiological Health
- 9:40 – 9:55 AM **PERSPECTIVE FROM NIBIB**
William Heetderks, M.D., PH.D., Director of Extramural Science
Programs, National Institute of Bioimaging and Bioengineering

9:55 – 10:55 AM **PANEL #1: RISK ASSESSMENT/STRATIFICATION & SCREENING**

Moderators: Jelle Barentsz & Angelo De Marzo

Discussion: Imaging for Screening vs. Diagnosis?

Panel Members: Hedvig Hricak, Ethan Halpern, Richard Wahl, Martin Pomper, Mitchell Schnall, Anwar Padhani

10:55 – 11:10 AM COFFEE BREAK

11:10 AM -
12:30 PM **PANEL #2: MAP OUT STRATEGY TO DECREASE UNNECESSARY BIOPSIES/ INCREASE CANCER YIELD TO IMPROVE LOCALIZATION, PROGNOSTICATION AND SCREENING OF RELEVANT DISEASE**

Moderators: Clare Tempany & Cynthia Menard

Lead Speaker: Clare Tempany

Panel Members: Angelo De Marzo, Thomas Wheeler, Bradford Wood, Thomas Hambrock

STATEMENT OF NEED: Define and develop a system for improved cost-effective imaging to eliminate/reduce unnecessary biopsies and improve biopsy yield by:

- 1) Identifying patients who have abnormalities that require follow up with imaging only vs those who require biopsies;
- 2) Improving Differentiation of Cancer from Benign Disease (e.g., BPH and Inflammation/prostatitis)
- 3) Developing and testing more specific imaging tools and accurate localization for and guidance of biopsy, including advanced multi-modality registration;
- 4) Evaluate biopsy yield for image-guided biopsy vs saturation biopsy (plus current nomograms);
- 5) Develop improved biopsy technique and prove its accuracy
- 6) Develop standards for image-guided biopsy technique, including level of precision;
- 7) Study post-biopsy changes, including inflammation – and their impact on detection of small lesions;
- 8) Any other issues?

12:30 – 1:15 PM **LUNCH (on your own)**

1:15 – 3 PM

PANEL #3: EARLY DIAGNOSIS OF LOCALIZED CLINICALLY RELEVANT PROSTATE CANCER

Moderators: Thomas Wheeler, Angelo De Marzo & Ethan Halpern, Martin Leach

STATEMENT OF NEED: Define Target for Imaging: Anatomic and Biologic Parameters of Prostate Cancer that are essential/critical to visualize/quantify for differentiation of significant from insignificant/indolent prostate cancer

Moderators/Lead Speakers: Thomas Wheeler, Angelo De Marzo

Comments: Ted DeWeese, Allan Pollack, James Brooks, Cynthia Menard

EMERGING AND POTENTIAL TECHNOLOGIC SOLUTIONS

Moderators: Ethan Halpern, Martin Leach

Discussion Leaders:

MRI/MRS: Hedvig Hricak, Jelle Barentsz, Clare Tempany, Martin Leach, Anwar Padhani, Arend Heerschap

Ultrasound: Ethan Halpern and Henkjan Huisman

Nuclear Medicine/PET & Molecular Imaging: Richard Wahl and Martin Pomper

Optical: Brian Wilson

- 1) Develop and test imaging tools to identify clinically significant prostate cancer:**
 - a. Per target definition above
 - b. Emphasize detection of lethal/aggressive tumor phenotype
 - c. Develop databases of patient data, including the current state of the art diagnostics and imaging for retrospective data analysis that may assist with the design of prospective clinical trials
 - i. Use such resources as SPORIS and NIH-supported clinical trials?
- 2) Study the value of negative predictive value of imaging tools in reducing probability of cancer and/or aggressive cancer with Gleason 7 or higher?**

3) Study the value of imaging tools in identifying patients with Grade 6 or less Gleason who need to be treated vs those who do not – and their complimentary value to enhance current nomogrAMs?

4) Any other issues?

3 - 6 PM

PANEL #4: ACCURATE DIAGNOSIS AND PRE-TREATMENT

STATEMENT OF NEED:

Moderators: Ted DeWeese, James Brooks and Andrew Lee

Lead Speaker: Ted DeWeese

Comments: James Brooks

Discussion Leaders: Thomas Wheeler, Angelo De Marzo, Allan Pollack, Cynthia Menard

1) Accurate Anatomic Characterization:

- a. Location (Transitional Zone, Anterior, Peripheral, Apex)
- b. Size, Extent/Tumor Volume (Absolute and Relative)
- c. Staging Using High Precision Imaging, including Image-Guided Miniaturized Probes for In Vivo Histology and Biology:
 - i. Capsular Penetration
 - ii. NV Bundle Infiltration
 - iii. Seminal Vesicles Involvement
 - iv. Lymph Nodes Involvement
 - v. Peri-Prostatic Anatomy, including Bladder Neck, Membranous Urethra, Pelvic floor musculature?
 - vi. Lymphovascular invasion
 - vii. Extra-prostatic expansion
 - viii. Seminal vesicles
 - ix. Reactive stroma
 - x. Micro-vessel density
 - xi. Intraductal CG
 - xii. Other?

2) Aggressiveness/Biology:

- a. Hypoxia
- b. Inflammation
- c. Metabolic Markers

- d. Vascular Density
- e. Prostate-cancer specific molecular/genetic/proteomic markers, with emphasis on multi-disciplinary research to identify lethal tumor phenotypes
- f. Cell proliferation
- g. Apoptosis
- h. Histologic Parameters:
 - i. Reactive stroma
 - ii. Micro-vessel density
 - iii. Intraductal CG
 - iv. Other?

EMERGING AND POTENTIAL TECHNOLOGIC SOLUTIONS:

Moderators: Anwar Padhani, Arend Heershap and Henkjan Huisman

Discussion Leaders:

MRI/MRS: Hedvig Hricak, Jelle Barentsz, Clare Tempany, Martin Leach

Ultrasound: Ethan Halpern

Nuclear Medicine/PET & Molecular Imaging: Richard Wahl, Martin Pomper

Optical: Brian Wilson

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JANUARY 13, 2009

8 – 9 AM

PANEL #5:

**POST-TREATMENT MONITORING/RESPONSE TO TREATMENT &
STATEMENT OF NEED**

Moderators: Allan Pollack, Cynthia Menard, Andrew Lee

Lead Speaker: Allan Pollack

Comments: James Brooks

EMERGING AND POTENTIAL TECHNOLOGIC SOLUTIONS

Moderator: Richard Wahl

Discussion Leaders: Jelle Barentsz, Ethan Halpern, Brian Wilson

**STATEMENT OF NEED: POST-TREATMENT
MONITORING/RESPONSE TO TREATMENT**

- a. Anatomic Accuracy, including evaluation of peri-prostatic anatomy to predict potency and urinary control (including Bladder Neck, Membranous Urethra, and Pelvic floor musculature)
- b. Image-Guided Biopsy (to treat before the rise of PSA?)
- c. Residual/Recurrent Disease: To determine aggression/progression
 - i. % Tumor Volume
 - ii. Extra-Prostatic Disease? – Lymph node involvement (e.g. slow rising PSA)
 - iii. Post-surgery changes (not an imaging problem – it is currently followed with PSA)
 - iv. Post-radiation changes:
 1. Cystitis, proctatitis
 2. Identification of dying cells & cell death vs viable recurrent/residual disease
 3. Imaging of patients with biochemical failure

- v. Aggressiveness/Biology:
 - 1. Cellular Index
 - 2. Molecular Markers?
 - 3. Vascularity
 - 4. Inflammation
 - 5. Apoptosis
 - 6. Metabolic markers?
 - 7. Other?

RECOMMENDATIONS/DISCUSSION:

- 9:00 AM **PANEL #1: RISK ASSESSMENT/STRATIFICATION & SCREENING**
- Presentation of Recommendations/Discussion Leaders: Jelle Barentsz & Anwar Padhani
- 9:45 AM COFFEE BREAK
- 10:15 AM **PANEL #2: MAP OUT STRATEGY FOR INCREASED CANCER YIELD FOR PROSTATE BIOPSIES**
- Presentation of Recommendations/Discussion Leaders: Clare Tempany & Cynthia Menard
- 11:00 AM **PANEL #3: EARLY DIAGNOSIS OF LOCALIZED CLINICALLY RELEVANT PROSTATE CANCER**
- Presentation of Recommendations/Discussion Leaders: Thomas Wheeler, Ethan Halpern & Martin Leach
- 11: 45 AM **PANEL #4: ACCURATE DIAGNOSIS AND PRE-TREATMENT**
- Presentation of Recommendations/Discussion Leaders: Ted DeWeese, James Brooks, Andrew Lee,
- Anwar Padhani, Henkjan Huisman, Arend Heershap
- 12:30 PM **PANEL #5: TREATMENT MONITORING**
- Presentation of Recommendations/Discussion Leaders: Richard Wahl, Allan Pollack
- 1:30 PM Lunch (*on your own*)
- 2:30 – 5:00 PM **GENERAL DISCUSSION/NEXT STEPS**