technique. The median age was 65 years (range 42 to 80). Thirty-two patients were African American (46%) and 24 (34%) received pre-RT hormones. Forty-eight patients had a Gleason score of 7 (68%), and 11 (16%) had a Gleason score ≥ 8. Stage was T2b or less in 66 patients (94%). The median pre-radiation PSA level was 7 (range 1 - 56 ng/ml). Four patients (5.7%) were low risk; 49 (70%) intermediate risk and 17 (24.3%) high risk. The Houston definition of biochemical failure was used, i.e. nadir + 2 ng/ml = failure. Complications were graded according to the RTOG criteria. The median follow-up was 3.8 years (range 0.5 - 8).

Results: This analysis is limited to 55 patients who had at least 2 years of follow-up. Of these patients, the median percent follow-up (actual/potential) was 95%. Only 2 patients (4%) have experienced biochemical recurrence during the period of observation. At the time of last follow-up, 85% of patients (47%) were both alive and free of recurrence by the Houston definition. The maximum GU complications reported were grade 2, 44%, grade 3, 7% and grade 4, 0%. The maximum GI toxicity was grade 2, 13%, grade 3, 4% and Grade 4, 4%. As many of these effects were temporary, the complications reported at the time of last follow-up were recorded. The GU were: grade 2, 24%, grade 3, 2% and grade 4, 0%. For GI they were: grade 2, 5%, grade 3, 2% and grade 4, 4%. These were recto-vesicle fistulas requiring colostomy and ileostomy in both patients.

Conclusions: Both neutron irradiation and permanent brachytherapy have a high RBE and should be more effective in slow growing and hypoxic cancers such as prostate cancer. This novel combination of treatments resulted in a very high rate of disease control (95%) in primarily intermediate and high risk patients. In addition, the treatment was completed in only 11 visits making it logistically attractive to patients. The 2 severe complications thus far are concerning. However, further investigation in to maintaining the efficacy and reducing the toxicity of this treatment seems warranted.

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2271 Salvage Pd-103 Seed Implantation in the Treatment of Locally Recurrent Prostate Cancer Previously Treated With External Beam Radiation Therapy

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Purpose/Objective(s): Studies have shown that local failure rates following external radiation therapy range between 25–32%. In past years, treatment options for these patients were somewhat limited and included long-term hormone therapy as well as potentially morbid salvage prostatectomy.

Materials/Methods: This is a retrospective review of 65 consecutive men treated at 2 institutions with salvage Pd-103 prostate seed implants between May 1992 and June 2004. All men had previously been treated with external radiation with doses ranging from 6300cGy - 7380 cGy. All had biopsy proven disease in the prostate with negative CT scan and Bone scan staging studies. All men were treated with a Real-Time Intra-Operative Dosimetry Technique. 95% of men received short term neoadjuvant hormonal therapy with an LHRH agonist. Serial PSA levels were obtained at follow-up and treatment related toxicities were recorded according to the RTOG late toxicity grading scale. Biochemical failure was defined according to the ASTRO Consensus definition of 3 consecutive rises in PSA.

Results: The median follow-up from time from the implant was 38 months (range 11 - 125 months). 65% of men are free from biochemical relapse. Five patients required a TURP for persistent urinary obstruction. One patient developed hemorrhagic cystitis and one patient developed a recto-urethral fistula requiring a colostomy.

Conclusions: This large series demonstrates that brachytherapy is a potentially good salvage option for patients with locally recurrent prostate cancer following external beam radiation therapy. Using a Real-Time Intra-Operative Dosimetry Technique, Grade 3 and 4 late toxicity rates were low, documenting the safety of this procedure. Care must be made to limit the dose to the rectum.

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2272 A Pilot Study of Endorectal MRI and Spectroscopy Changes With Dutasteride in Patients With Low-Risk Prostate Cancer

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Background: Dihydrotestosterone (DHT), the active metabolite of testosterone, is converted by the enzyme, 5-α-reductase (5AR). Dutasteride, a second-generation 5AR inhibitor, has been approved in the treatment of BPH. Unlike LHRH agonists, dutasteride has less toxicity by preserving testosterone (T) levels - <5% risk of impotence and hot flashes.

Purpose/Objective(s): The objective of this pilot study is to evaluate the metabolic effects of dutasteride on patients with low-risk prostate cancer using endorectal MRI spectroscopy (MRSI).

Materials/Methods: This investigator-initiated prospective study was approved by the UCSF IRB. Target accrual was 10 patients. Patients with low-risk prostate cancer and either symptomatic BPH, or deemed to require pre-brachytherapy androgen suppression (AS) were eligible. In the latter group, dutasteride was used to achieve AS. All patients received 6 months of dutasteride 3.5mg daily and underwent baseline blood work, QOL indices and MRSI, which were repeated at 1-, 3- and 6-months after initiation of dutasteride. MRSI spectra were examined for detectable levels of metabolic signal (e.g. choline, creatine and citrate). The change in absolute levels and ratios of these metabolites were measured over time in all peripheral zone voxels.

Results: Preliminary results are available for 6 patients, 4 of whom have completed the study. Baseline mean characteristics: age 60y (57–78), PSA 5.0 ng/mL (2.3–8.7), T 317 ng/dl (170–500), DHT 32 ng/dl (18–50), IPSS 11/35 (8–15), IIEF-5 19/25 (5–25) and gland volume 55cc (29–76). All had Gleason 3+3 disease and clinical stage T1c. After 6-months, there was a

significant difference in PSA (2.7; p=0.05), T (451; p=0.025) and DHT (2.2; p=0.009). No difference was seen in IPSS (5; p=0.08) and IIEF-5 (19; p=0.72). An early response was seen in 2 patients where citrate levels dropped by 25% and 50% at 3- and 6-months from baseline. Metabolic atrophy also increased by 22%. The other 2 patients had a delayed response - 22% reduction in citrate at 6-months. Comparing baseline with 6-months, a trend was seen in the reduction of the spatial extent (8.2 vs 6.8) and aggressiveness index (3.9 vs 3.2) of the abnormal voxels.

Conclusions: As expected, these preliminary data show that dutasteride significantly reduces DHT and PSA at 6 months, without affecting QOL indices. MRSI results suggest that dutasteride exert similar metabolic changes (i.e. decreased citrate levels) as seen with LHRH agonists. This study provides proof of principle that MRSI may be useful for documenting prostatic responses to systemic agents. Longer follow-up is needed to determine the durability of responses to dutasteride.

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2273 A Phase II Trial of Neoadjuvant Docetaxel and Estramustine Followed by Radical Prostatectomy or Radiation Therapy for Patients With High-Risk Prostate Cancer

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Purpose/Objective(s): Despite aggressive therapy local therapy, biochemical failure rates in patients (pts) with high-risk prostate cancer (CaP) continues to be high. Neoadjuvant chemotherapy (CTX) for these pts remains investigational. We report the interim results of a phase II trial of weekly neoadjuvant docetaxel (D) and estramustine (E) followed by radical prostatectomy (RP) or radiation therapy (XRT) in pts with high-risk CaP treated at the University of North Carolina.

Materials/Methods: Eligibility criteria were clinical T3, biopsy Gleason (bGl) 8–10, or bGl 7 and PSA >=10 ng/mL. Three cycles of D (36 mg/m2) days 2, 9, 16 and E (140 mg TID) on days 1–3 q28 days were administered followed by either XRT or RP. Of the ten pts who received XRT, two received 72 Gy, one received 74 Gy, 5 received >= 77 Gy, and two received 45 Gy followed by a permanent seed implant boost.

Results: To date, 20 pts have been enrolled, and 19 are evaluable (one pt died during the first cycle of CTX from an unknown cause). Median follow-up since the initiation of chemotherapy is 26 months. Pts had the following characteristics prior to CTX: median age 64 y/o, median PSA 32.6 (range 2.1- 150), T1: 8, T2: 9, T3: 2, bGl 7 in 8, and bGl 8 in 11. Nineteen pts have completed CTX and local therapy. Following CTX, nine pts underwent RP, and ten received XRT. CTX was well tolerated. Grade III toxicity occurred 11 times during in a total of 9 patients during CTX. The most common toxicities were grade III dyspnea (3 pts) and grade III fatigue (2 pts). All pts had a PSA response to chemotherapy, with a median nadir of 1.72 ng/mL. All 9 pts who underwent RP had residual disease in the pathologic specimen. To date, 7 of the 9 patients (78%) who underwent RP have experienced a biochemical relapse, while 3 of the 10 patients (30%) who received radiotherapy have met the ASTRO definition of biochemical failure.

Conclusions: Neoadjuvant chemotherapy appears to be well tolerated, and does not appear to affect acute toxicity rates secondary to XRT or RP. Based on our preliminary results, neoadjuvant chemotherapy for pts with high-risk CaP is worthy of further study. Supported by Aventis.

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2274 The Impact of Body Mass Index on Cause-Specific Biochemical and Overall Survival Following Permanent Prostate Brachytherapy

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Purpose/Objective(s): Obesity has been associated with decreased biochemical and cause-specific survival following radical prostatectomy. In this study, we evaluated the impact of body mass index (BMI) on cause-specific, biochemical progression-free and overall survival following prostate brachytherapy.

Materials/Methods: From April 1995 through March 2003, 1,093 consecutive patients underwent brachytherapy for clinical T1b-T3a (2002 AJCC) prostate cancer. All patients underwent brachytherapy more than three years prior to analysis. The median follow up was 5.6 years. Evaluated BMI subgroups were < 25 (n=258), 25.0 to 29.9 (n=547), 30.0 to 34.9 (n=214) and ≥ 35 (n=74) kg/m2. Four-hundred and thirty (39.9%) and 589 (53.9%) of the patients received androgen deprivation therapy or supplemental external beam radiation therapy, respectively. Multiple clinical, treatment and dosimetric parameters were evaluated as predictors of cause-specific, biochemical progression-free and overall survival.

Results: The 10 year cause-specific, biochemical progression-free and overall survival rates for the entire cohort were 97.5%, 95.6% and 79.6% respectively. BMI did not impact cause-specific or biochemical progression-free survival for any of the BMI cohorts. However, overall survival was statistically lower in patients with a pre-treatment BMI < 25 kg/m2 compared to the other three BMI cohorts ($p = 0.014$). A Cox linear regression analysis demonstrated that Gleason score was the best predictor of cause- specific survival while percent-positive biopsies, risk group and V100 predicted for biochemical progression-free survival. Patient age and tobacco use were the strongest predictors of overall survival. One-hundred and twenty-eight patients have died with 100 of the deaths the result of cardiovascular disease (65) and second malignancies (35). To date, 12 patients have died of metastatic prostate cancer.