were investigated, Pd-103, I-125, Yb-169, 50kVp x-rays, and 6 MV x-rays. The results are compared to recently published data calculated with the same approach when using gold nanoparticles.
Results: For BiN concentrations ranging from 7–140 mg/g, EDEF values of 1.33–7.52, 1.31–7.25, 1.04–1.84, 1.27–6.48, and 1.28–6.67, where calculated for Pd-103, I-125, Yb-169, 50 kVp, and 6 MV, respectively. Apart from the results for Pd-103, the calculated EDEFs predict higher dose enhancement due to photo-electrons when using BiNs as compared to when using gold nanoparticles.
Conclusions: The results predict that significant dose enhancement to tumour endothelial cells may be achieved by applying tumour vasculature-targeted BiNs as adjuvants to radiotherapy. BiNs may provide a low cost alternative to the potential use of gold nanoparticles for vascular dose painting or as radiosensitizers during radiotherapy.

Table: Endothelial dose enhancement due to photo electrons for various radiotherapy sources

	EDEF due to photoelectrons from					
	Bismuth nanoparticles			Gold nanoparticles		
	7 mg/g	30 mg/g	140 mg/g	7 mg/g	30 mg/g	140 mg/g
Pd-103	1.33	3.00	7.52	1.42	2.81	9.46
I-125	1.31	2.34	7.25	1.26	2.10	6.12
Yb-169	1.04	1.18	1.84	1.03	1.15	1.68
50 kVp	1.27	2.17	6.48	1.25	2.08	6.05
6 MV	1.28	2.21	6.67	1.20	1.70	4.4

2153 ORAL

Impact of Electronic Treatment Scheduling and Web Based Communication Technology on Systemic Therapy Delivery at the Sunnybrook Odette Cancer Center, Toronto, Canada

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Background: The Odette Cancer Centre (OCC) is the sixth largest cancer institution in North America and currently manages over 18,000 chemotherapy patient visits per year. Current barriers to efficient and effective delivery of chemotherapy included scheduling inefficiencies and staff communication. These issues were addressed via two distinct mechanisms:(1) chemotherapy scheduling tool and (2) electronic communication tool for nurses and pharmacy staff.
Methods: An electronic Chemotherapy Appointment Reservation Manager (CHARM) was developed in house. CHARM is configured to calculate treatment times based on the pharmacist chemotherapy prep, nursing time and time for drug administration. In addition a new electronic web based communication tool was developed and implemented to facilitate communication between nursing and pharmacy staff. Data were prospectively collected for 2-week intervals in both 2009 and 2010 to assess the effect of both new programs. A flow-time analysis, patient and staff satisfaction surveys were conducted comparing the two time frames.
Results: For 2009, data was collected for 381 of 796 total patients treated in the two-week period (47.9%). For 2010, data was collected for 602 of 836 total patients. An increase in year-to-year volume of 5%,was noted.
Thirty-six percent of patients started chemotherapy +/− 30 min of their scheduled time in both 2009 and 2010. However, the number of patients treated >30 mins after their scheduled appointments increased from 68 (20.7%) to 357 (71.1%). Patients receiving treatment in the correct bed assignment decreased from 45% in 2009 to 30% in 2010.
The distribution of patient arrival times was skewed with 58.1% of patients scheduled to arrive prior to 10am, 23.4% between 10−12 and only 18.4% after 12. In 2010, 69.3% of patients arrived earlier than their scheduled appointment by more than 30 minutes, with a mean arrival time of 117 minutes earlier than scheduled. Seven percent of patients arrived greater than 30 minutes late, with a mean arrival time of 49 mins late.

Time from patient registration on arrival to:	2009 (min)	2010 (min)
Patient on chemotherapy unit	33	43
Nursing approval for administration	80	85
Pharmacy approval of administration	89	94
Patient arrival in chemotherapy chair	110	137
Chemotherapy prepared	114	132
Initiation of chemotherapy	125	173

In 2010, a reduction in phone calls (for chemotherapy approval) between the nurses and pharmacy of 89% was observed. The number of chemotherapy order clarifications was similarly reduced by 91%. Nurses were more likely to agree or strongly agree that communication positively impacted on chemotherapy administration after implementation of the communication tool (80% vs. 37%).
Conclusions: Despite the implementation of CHARM, there was little change in patient flow. Possible explanations include increased patient volumes without infrastructure increases and suboptimal patient arrival patterns. To realize the full potential of the new reservation management system, adherence and redistribution of scheduled appointment times will be necessary along with proper chair placement. The online communication tool has resulted in improved flow in the chemotherapy unit as well as increased nursing satisfaction.

2154 ORAL

Survey of UK Cancer Patients, Exploring Their Internet Usage and Potential for Text Messaging Communication With Their Hospital

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Background: The aim of the survey was to explore cancer patients' use of the internet and elicit their opinion regarding communication with the hospital via electronic methods.
Methods: A questionnaire was developed consisting of four questions:
1. Do you (or a carer) access the internet?
2. Would you (or a carer) be prepared to enter details about your side effects from treatment through a dedicated and secure website?
3. Do you (or a carer) have/use a mobile telephone, specifically to send/receive text messages?
4. Would you (or a carer) be prepared to allow the hospital to sent you text messages relating to your treatment?

Data was collected from 445 patients attending Northampton General Hospital for chemotherapy and/or radiotherapy during February 2011 − both by direct questioning & paper questionnaire.
Results: Answers to questions:
Q1. 322 (72%) patients have access to the internet.
Q2. 296 (67%) of those questioned would be prepared to record toxicities via website (92% of those who access the internet).
Q3. 351 (79%) have or use a mobile phone for accessing text messages.
Q4. 326 (73%) would be prepared to allow our hospital to communicate via text messages with regard to their treatment (93% of those with mobile phones).

Data relating to variation with age shows that up to 70 years old the majority of our patients (up to 85% in those patients in their 4th decade) would be willing to use these types of technology to communicate with our hospital. In those aged over 70 this proportion falls but is still >40%.
Conclusions: This study supports the hypothesis that UK patients support the introduction of electronic communications between a hospital and oncology patients receiving treatment. Under 70 years old the majority of individuals supported the use of both types of communication. Those over 70 years old were less enthusiastic but were more in favour of the use of text messages than the internet. We believe that the introduction of an electronic system to communicate with our patients, via the internet and/or text messaging, would enhance the patient's experience adding support to this type of initiative.

2155 ORAL

Tele Oncology Clinics in Rural Australia: a Cost-effective Cancer Care Model

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Background: Cost benefit studies in telemedicine are often incomplete and compare establishment costs with outpatient costs only. While some studies reported marginal benefit, others found no savings. We conducted a comprehensive cost benefit analysis of tele oncology clinics at Townsville Cancer Centre (TCC) and its rural centres in North Queensland, Australia.
Methods: Data on teleoncology clinics between March 2007 and November 2010 was gathered from the Oncology Information Management system. Patient travel expense information was provided by the QLD Health patient travel office. A model proposed by Dr B L Crowe (Health Informatics Society of Australia) was used for the calculation. Factors used are shown in the table.