same H1N1 and B viruses were used for neutralizing antibody (neut) tests but A/Moscow/10/99 (H3N2) (antigenically similar to A/Panama/H3N2 virus) was used in influenza A/H3N2 tests.

Results: See the table. All outpatient clinic NHL patients were screened and those who had not received chemotherapy in <3 months and rituximab in <6 months were considered. Splenctomized patients and those receiving systemic corticosteroids were excluded. There were no serous adverse reactions noted in any of the 27 enrollees during a 6-month period following vaccination. Among influenza A/H1N1 and A/H3N2, higher doses were associated with increased strain-specific protective neutralizing antibody titers. Whereas, this beneficial effect was not seen in patients receiving higher doses of influenza B vaccine.

Vaccine	Dose	A/H3[a]		A/H1[a]		B[a]	
		Rise[b]/ No. (%)	GMT[c]	Rise[b]/ No. (%)	GMT[c]	Rise[b]/ No. (%)	GMT[c]
Standard	15	0/4 (0)	6.6	2/5 (40)	3.3	2/5 (40)	1.8
rHA0	15	1/5 (20)	7.9	0/4 (0)	2.8	1/6 (17)	2.5
rHA0	45	2/5 (40)	7.9	1/4 (25)	2.8	0/5 (0)	1.4
rHA0	135	3/5 (60)	11.5	2/3 (67)	4.0	2/4 (50)	2.7

[a]A/H3 = 4.5–7.5; A/H1 = <1–4; B = <1–2 $\log_2$.
[b]Rise: no. of enrollees with antibody rise = four-fold or greater.
[c]Highest GMT ($\log_2$) 4 or 8 weeks post-vaccination.

Conclusions: These preliminary results indicate a potential rHA0 dose-escalation benefit for neutralizing antibody response against influenza A virus.

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Efficacy of High-Dose (100 mg daily) Caspofungin (HD-CASP) Combination Antifungal Therapy in Cancer Patients with Invasive Fungal Infections (IFIs): Case-Controlled Observational Analysis During 2002–2004

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Background: Pneumocandins exert concentration-dependent antifungal effect, therefore we sought to evaluate efficacy (complete or partial response, C-PR) of HD-CASP therapy in patients with systemic mycosis.

Methods: IRB approval was obtained to review the charts of 97 patients with probable and proven IFIs. Conventional-dose (CD) CASP was 70 mg followed by 50 mg daily. Fisher exact or chi-square test and student's t-test or Wilcoxon rank sums test were used to assess categorical and continuous variables, respectively.

Results: Among evaluated Cases (n = 34) and controls (n = 63) there were not statistically significant differences between the two groups respect to the patients characteristics such as age, acute or chronic leukemia, BMT, GVHD, relapsed or refractory cancer, co morbidities including DM, COPD, CAD, CHF, ARF, hepatic dysfunction, APACHE-II score, >600 prednisone equivalent dose prior or during CASP therapy, neutropenia prior and during therapy, antifungal prophylaxis, probable and proven IFI and combination antifungal therapy. Logistic regression multivariate 4-weeks assessment showed no difference in response in HD- and CD-CASP treatment groups, however, 12 weeks assessment showed a significantly improved probability of favorable treatment response in patients who had received HD-CASP (OR 3.066, 95% CI 1.092–8.61, P = 0.00335).

Parameter	Cases (%)	Controls (%)	P value
Lung IFI	24 (71)	58 (92)	0.005
Disseminated IFI	10 (29)	5 (8)	<0.05
Non-Aspergillus lung IFI	7 (21)	4 (6)	<0.05
Prior antifungal therapy	24 (71)	21 (33)	0.0004
CASP therapy days[a]	12.5 (74)	29 (138)	0.0024
C-PR [4-week]	10 (29)	14 (22)	0.1
C-PR [12-week]	15 (44)	18 (29)	0.1

[a]Give as median (range).

Conclusions: Despite presence of unfavorable predictors patients receiving HD-CASP had improved probability of infection resolution.

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Changing Trends of Bacteremia in Patients with Cancer: Analysis of 2080 Quantitative Blood Cultures During 1998 and 2004

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Background: The severity of bacterial bloodstream infections (BSI) appears to be related to quantitative bacterial levels (organism load), especially in neutropenic cancer patients. We sought to determine the trends in quantitative patterns of BSI caused by various bacteria in patients receiving care at our comprehensive cancer center.

Methods: A retrospective analysis of all consecutive blood cultures processed by Dupont Isolator 10 System during 1998 and during 2004. Only one blood culture per patient per organism was included. Quantitative bacteremia was

graded as follows: low-grade (<10 colony forming units/milliliter (CFU/ml) and intermediate-grade (11–100 CFU/ml) are grouped in low-bacterial load; moderate-grade (101–500 CFU/ml), and high-grade (>500 CFU/ml) are considered as high-bacterial load.

Results: During 1998, 73% of 1055 and 2004, 82% of 1025 BSI were caused by Gram-positive bacteria (GPB) with the most frequent being coagulase-negative staphylococcus (CoNS), 33% and 50% and *Staphylococcus aureus*, 9% and 6%, respectively. In Gram-negative bacterial (GNB) BSI, *Enterobacteriacae* were common (73%, and 56%) followed by non-fermentative (NF)-GNB (37% and 44%); *Escherichia coli* (24% and 24%) and *Pseudomonas areuginosa* (17% and 19%) being the most common GNB species isolated during 1998 and 2004, respectively. A significant increase in the number of *Stenotrophomonas maltophilia* bloodstream infection was noted during 6-year study interval (6% in 1998 vs. 16% in 2004; $P < 0.01$). Compared with GPB infections a significant proportion of GNB bacteremia were high-grade (18% vs. 39% in 1998, and 7% vs. 44% in 2004; $P < 0.001$). In contrast to 1998, in 2004 the non-Pseudomonas NF-GNB including *S. maltophilia* and *Acinetobacter* species were significantly associated with high-bacterial load compared to *P. aeruginosa* infection (47% vs. 23%; $P = 0.05$). Similarly, the high-bacterial load associated with *S. aureus* (50%) and *Streptococucs* species (35%) vs. CoNS (13%; $P < 0.0001$) during 1998 was not noted during 2004 (22% *S. aureus*, 20% *Streptococcus* species vs. 21% CoNS; $P > 0.5$). This was due to a significant increase in CoNS high-bacterial load BSI in 2004 (21% vs. 13% in 1998; $P < 0.01$). There was also an interval increase in *Corynebacterium* species high-bacterial load infections in 2004 compare to 1998 (18% vs. 5%; $P < 0.01$).

Conclusions: A high proportion of GNB were associated with high-bacterial load BSI compared to GPB infections. In 2004, a significant increase in the *S. maltophilia* bacteremia was accompanied by a concomitant rise in the high-bacterial load BSI, which may pose a serious challenge in successful therapy in immunosuppressed cancer patients with often difficult-to-treat systemic GNB infection.

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Prospective Evaluation of Galactomannan Enzyme Immunoassay (GM-EIA) and (1-3) B-D-Glucan (BG) for the Diagnosis of Invasive Fungal Infections in Patients with Hematological Malignancy

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Background: Invasive fungal infection (IFI) remains a major cause of morbidity and mortality in cancer patients. This is due in part to under diagnosis. Previous studies have reported GM-EIA and BG may be useful diagnostic tools but the sensitivity is variable. We studied the performance of both tests.

Methods: Between October 2002 and March 2005, 70 patients were prospectively followed for 12 weeks. A total of 600 samples were tested in 4 groups of patients: invasive *aspergillosis* (IA), other mold (Fusarium, zygomycosis, etc.), candidemia, and control patients (solid tumors with no radiological, microbiological or clinical evidence of IA). Blood samples were obtained twice on week one and once every other week for a total of 12 weeks. Clinical characteristics, including antimicrobial therapy, were obtained on all patients. Testing was performed with serial serum samples according to the manufacturer's specifications. An index cut-off for positivity was 0.5 for GM-EIA and a serum BG level of $\geqslant 80$ pg/ml was chosen.

Results: Sensitivity (Sens), specificity (Spec), positive predictive value (PPV) and negative predictive value (NPV) of the two assays performed on 600 samples are compared in the table.

IFI	Assay	Sens	Spec	PPV	NPV
Aspergillosis	GM-EIA	0.36	1.00	1.00	0.60
	BG	0.68	0.76	0.75	0.70
Other mold	GM-EIA	0.08	1.00	1.00	0.66
	BG	0.75	0.76	0.64	0.84
Candidemia	GM-EIA	0.08	0.95	.50	0.65
	BG	0.67	0.76	0.62	0.80

Conclusion: BG has better sensitivity than GM-EIA in the diagnosis of hematologic patients with IA, candidemia and other mold infections. GM might be more specific for IA.