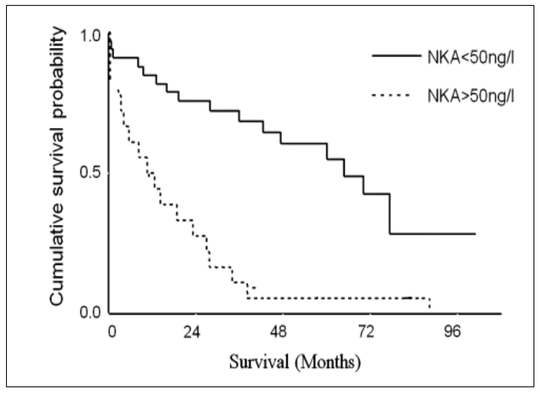
# Neurokinin A Levels Predict Survival in Patients with Well Differentiated Small Bowel Neuroendocrine Tumors

Anne E. Diebold BS [1,2], J. Philip Boudreaux MD[1,2], Yi-Zarn Wang DDS, MD[1,2], Lowell B. Anthony MD[2,3], Ann Porter Uhlhorn RN[2,4], Pamela Ryan BSN, RN[2,4], and Eugene A. Woltering MD[1, 2]

[1]Department of Surgery, Section of Surgical Endocrinology, The Louisiana State University Health Sciences Center, New Orleans, LA
[2]New Orleans Louisiana Neuroendocrine Tumor Specialists (NOLANETS), Ochsner-Kenner Medical Center, Kenner, LA
[3]Department of Medicine, Section of Hematology and Oncology, The Louisiana State University Health Sciences Center, New Orleans, LA
[4]Ochsner-Kenner Medical Center-Kenner, Kenner, LA

## BACKGROUND:

Recent European investigations demonstrate that persistently elevated (> 50 pg/ml) plasma neurokinin A (NKA) levels are associated with a poor short term survival in patients with midgut neuroendocrine tumors (NETS).




Kaplan-Meier survival curves for individuals with NKA values of less than 50pg/mL and those patients with NKA values greater than 50pg/mL as determined in Belfast. These are preliminary data from an ongoing trial by Dr. Ardill in Belfast.

Mamikunian P, Ardill JES, O'Dorisio TM, Krutzik SR, Vinik AI, Go VLW, Mamikunian GM, **Woltering EA.Validation** of Neurokinin A (NKA) Assays in the United States and Europe. Pancreas 40(7)1000-1005, 2011.

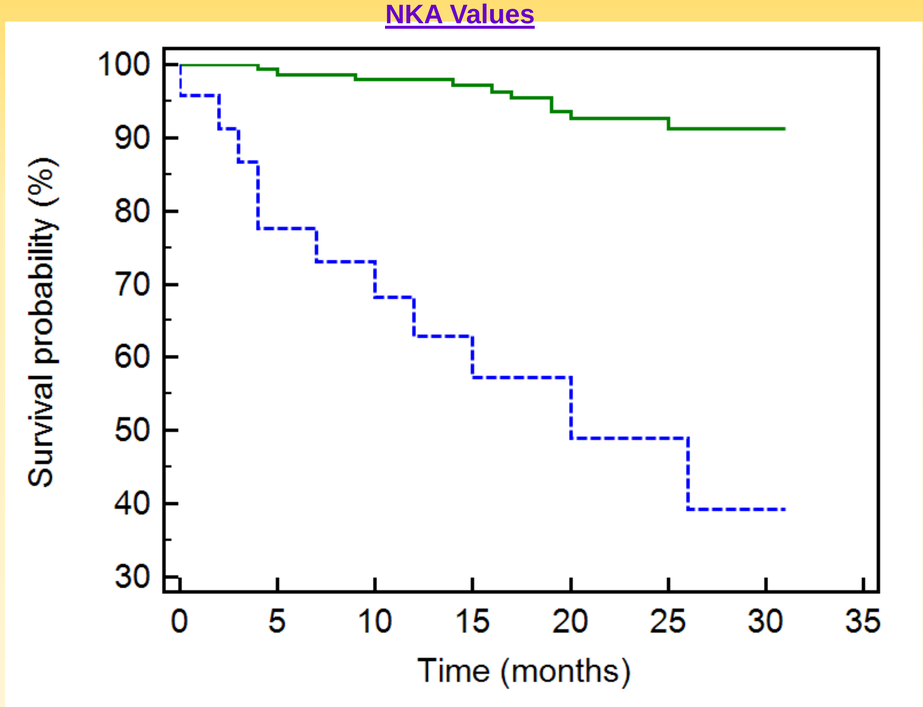
## HYPOTHESIS:

We hypothesized that US patients with persistently elevated NKA levels (> 50 pg/ml) will also have a poor short term survival.

## RESULTS:

Group one patients (n=145) have not yet reached their median survival and have six, twelve and twenty-four month survival rates of 99%, 98%, 93%, respectively. Thirteen of fourteen (93%) of group two patients are currently alive. Group three patients (n=24) have a median survival of 20 months, and six, twelve, and twenty-four month survival rates of 78%, 63%, and 49%, respectively. The difference in the median survival of Group 1 vs. Group 3 was highly statistically significant (p<.0001).

**Survival Curve of Patients with <50pg/ml NKA Values versus >50pg/ml NKA Values**




Survival from the date of first NKA assay in patients whose NKA levels never went over 50 pg/ml (n=145, 2 year survival= 93%)

Survival from the date patients NKA rose above 50pg/ml in patients whose NKA levels went over 50 pg/ml and remained consistently elevated (n=24, 2 year survival= 49%)

## METHODS:

Serial plasma NKA levels were collected from the charts of 183 patients with midgut NETS. Patients were grouped according to their NKA values, and median, six, twelve, and twenty-four month survival rates were calculated.

- **Group one:** NKA levels < 50pg/ml
- **Group two:** At one point had NKA levels >50 pg/ml but subsequently fell to < 50pg/ml
- **Group three:** NKA values currently >50pg/ml.

## CONCLUSION:

Patients with well-differentiated, midgut NETs with a NKA >50pg/ml require an immediate change of therapy in an effort to reduce their NKA levels to <50pg/ml. Patients whose NKA levels fall below the non-critical level (50pg/ml) after therapy should be followed closely.