A. Study Purpose and rationale:

Necrotizing enterocolitis (NEC) is the most common acquired gastrointestinal emergency in premature infants and a leading cause of death in the neonatal intensive care unit.1 Despite advances in intensive care, mortality from NEC is up to 30%, causing over 800 deaths a year in the USA, and is on the rise given the increased initial survival of extremely premature infants.2–4 Surviving patients with NEC have significant morbidity, including parenteral nutrition dependence, feeding problems, bowel obstruction, short bowel syndrome, failure to thrive and neurosensory impairment.5 6 Although the pathogenesis of NEC and its associated complications remain undefined, a deregulated inflammatory response by the neonatal intestine to luminal bacteria is a unifying hypothesis.7–9

Intestinal pathology specimens of NEC infants is marked by increased macrophage/mononuclear infiltration. Because intestinal macrophages are derived exclusively through *in situ* differentiation of circulating monocytes that are recruited to the intestinal mucosa, we hypothesize that increased recruitment of these monocytes to the gut mucosa during NEC would cause an acute drop in peripheral blood monocyte counts. A recent study has shown a linear increase in peripheral monocyte and eosinophil count in first 4 weeks of like with a reference range of monocyte from 300 to 3300 microl (mean 1400 microl).This study excluded neonates with diagnosis of NEC. So any drop in monocyte count seen in these infants can act as a good clinical predictor of NEC.

Study design and Statistical analysis
It will be a retrospective chart review of all VLBW infants treated at our NICU who developed NEC (Bell stages II or III) and those with feeding intolerance who were treated briefly as suspect NEC but never developed pathognomonic radiological signs. Total leukocyte count, Total neutrophil count and Total monocyte count will be retrieved prior to, at the time of onset of NEC (abdominal symptoms), and on subsequent days.

Outcome: Drop in the percentage of Monocyte count at the time of onset of NEC symptoms as compared to a week earlier.

Using the t-test for 80% power and type 1 error of 5%, number needed in each group to show a drop of monocyte count by 25-30% will be 20.If showing a drop of only 10% the numbers needed will be 100.
On the other hand we suspect 50% drop which we have seen clinically numbers needed will be less than 10!So if our hypothesis is correct results can be seen in a very small number.

C.Study Procedure:This is a retrospective chart review study,so all investigations had already been done.No additional investigations or drug administration are required for this study.

D.Study drugs or devices
N/A

E.Study Questionnaires
N/A

F.Study objects:All Low birth weight babies who were diagnosed with suspected NEC and confirmed NEC will be included.

G.Recruitment:N/A

H.Confidentiality of study data:All study data will be kept in password protected computer and file.Each participant will be identified by a randomly generated number and all identifying data will be securely discarded once the study is over.

I.Location of study New York Presbyterian Hospital -Columbia university Medical center.

J.Potential Risks

K.Potential benefits:Drop in Monocyte count can act as a clinical predictor of development of fulminant NEC.More aggressive management can be planned from the very beginning for these infants.

L.Alternative Therapy
N/A

M.Compensation and cost to subjects
N/A

N.Minors and Research subjects: N/A

O.Radiation and radioactive substances
N/A

References:

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