What is claimed is:

1. A catheter for treating acute heart failure by applying electrical neuromodulation, the catheter comprising:

an elongate body having a first end and a second end, where the elongate body includes an elongate radial axis that extends through the first end and the second end of the elongate body, and where a first plane extends through the elongate radial axis;

at least two elongate stimulation members that extend from the elongate body, where each of the at least two elongate stimulation members curves into a first volume defined at least in part by the first plane;

at least one electrode on each of the at least two elongate stimulation members, where the at least one electrode forms an electrode array in the first volume;

conductive elements extending through each of the at least two elongate stimulation members, where the conductive elements conduct electrical current to combinations of two or more of the at least one electrode in the electrode array; and

an anchor member that extends from the elongate body into a second volume defined at least in part by the first plane and opposite the first volume, where the anchor member does not include an electrode.

2. The catheter of claim 1, further comprising:

a sensor; and

a sensor conductive element extending through the elongate body, where the sensor conductive element conducts electrical signals from the sensor.

3. The catheter of claim 2, wherein the sensor comprises at least one of a blood oxygen sensor, a pressure sensor, and an integrated circuit.

4. The catheter of claim 2 or 3, wherein the sensor comprises a pressure sensor.

5. The catheter of any one of claims 1 to 4, further comprising:

a structure extending between the at least two elongate stimulation members;

an additional electrode positioned on the structure, the additional electrode having a conductive element extending from the additional electrode through one of the elongate stimulation members, where the conductive element conducts electrical current to combinations of the additional electrode and at least one of the at least one electrode on each of the at least two elongate stimulation members.

6. The catheter of claim 5, wherein the structure comprises flexible strands that are connected to form a pattern of openings between the strands.

7. The catheter of claim 6, wherein the additional electrode is at a connection of the strands.

8. The catheter of claim 6, wherein the flexible strands comprise insulative material.

9. The catheter of any one of claims 1 to 8, where each of the at least two elongate stimulation members includes:

a stimulation member elongate body; and

a wire extending longitudinally through the elongate body and the stimulation member elongate body,

where pressure applied by the wire against the stimulation member elongate body at or near its distal end causes the wire to deflect thereby imparting the curve into each of the at least two elongate stimulation members into the first volume defined at least in part by the first plane.

10. The catheter of any one of claims 1 to 9, where the at least two elongate stimulation members curve only in the first volume, and the second volume contains no electrodes.

11. The catheter of any one of claims 1 to 10, where a second plane perpendicularly intersects the first plane along the elongate radial axis of the elongate body to divide the first volume into a first quadrant volume and a second quadrant volume, and where the at least two

elongate stimulation members include a first elongate stimulation member and a second elongate stimulation member, the first elongate stimulation member curving into the first quadrant volume and the second elongate stimulation member curving into the second quadrant volume.

12. The catheter of any one of claims 1 to 11, where the elongate body includes a first lumen that extends from the first end through the second end of the elongate body; and

a position gauge having an elongate gauge body with a first end and a bumper end distal to the first end, where:

the bumper end has a shape with a surface area no less than a surface area of the distal end of the elongate body taken perpendicularly to the elongate radial axis;

the elongate gauge body extends through the first lumen of the elongate body to position the bumper end beyond the second end of the elongate body; and

the first end of the position gauge extends from the first end of the elongate body, the elongate gauge body having a marking that indicates a length between the second end of the elongate body and the bumper end of the position gauge.

13. A catheter system comprising:

the catheter of any one of claims 1 to 12; and

a pulmonary artery catheter having a lumen, where the catheter extends through the lumen of the pulmonary artery catheter.

14. The catheter system of claim 13, wherein the pulmonary artery catheter includes:

an elongate pulmonary catheter body with a first end, a second end, a peripheral surface, and an interior surface, opposite the peripheral surface, that defines the lumen extending between the first end and the second end of the elongate catheter body;

an inflatable balloon on the peripheral surface of the elongate catheter body, the inflatable balloon having a balloon wall with an interior surface that along with a portion of the peripheral surface of the elongate catheter body defines a fluid tight volume; and

an inflation lumen extending through the elongate pulmonary catheter body, the inflation lumen having a first opening into the fluid tight volume of the inflatable balloon and a second opening proximal to the first opening to allow for a fluid to move in the fluid tight volume and inflate and deflate the balloon.

15. The catheter system of claim 14, wherein the pulmonary artery catheter includes:

a second inflatable balloon on the peripheral surface of the elongate catheter body, the second inflatable balloon having a balloon wall with an interior surface that along with a portion of the peripheral surface of the elongate catheter body defines a fluid tight volume; and

a second inflation lumen extending through the elongate pulmonary catheter body, the second inflation lumen having a first opening into the fluid tight volume of the second inflatable balloon and a second opening proximal to the first opening to allow for a fluid to move in the fluid tight volume and inflate and deflate the second balloon.