CLAIMS

What is claimed is:

1. A wound-healing system, comprising:

a wound dressing including a slot therein configured to accommodate a catheter tube of a catheter assembly while the catheter tube is disposed in a percutaneous insertion site of a patient; the wound dressing being configured as an electrode for placement around a wound associated with a percutaneous insertion site of a patient;

a catheter-stabilization device including:

an anchor pad configured to adhere to skin of the patient proximate the insertion site, and

a retainer coupled to the anchor pad configured to stabilize a catheter assembly while a catheter tube of the catheter assembly is disposed in the insertion site; and

an electrical-stimulation means for applying electrical stimulation to heal or protect the wound, the electrical-stimulation means including:

an electrical power source, and

an external circuit between the catheter-stabilization device and the wound dressing for applying the electrical stimulation.

2. The wound-healing system of claim 1, further comprising an adhesive bandage configured for placement over a combination of the wound dressing, the catheter-stabilization device, and the catheter assembly to adhere the combination to the patient for further stabilization.

3. The wound-healing system of either claim 1 or 2, wherein the wound dressing includes an electrically conductive body, the body including a matrix of a naturally occurring polymer, a synthetic polymer, or a composite thereof having a metal, a salt, a conducting polymer, or a conducting allotrope of carbon dispersed therein.

4. The wound-healing system of claim 3, wherein the body of the wound dressing includes an electrically conductive hydrogel.

5. The wound-healing system of either claim 1 or 2, wherein the wound dressing includes a body, the body including a matrix of a naturally occurring polymer, a synthetic polymer, or a composite thereof configured to become electrically conductive when at least partially saturated with a bodily fluid.

6. The wound-healing system of any claim of claims 3-5, wherein the wound dressing includes an antimicrobial agent.

7. The wound-healing system of any claim of claims 1-6, wherein the external circuit includes a pair of electrical leads extending from the catheter-stabilization device for connecting with the wound dressing, the electrical leads constructed from coated metal wiring, electrically conductive paint, or a combination thereof.

8. The wound-healing system of any claim of claims 1-7, wherein the electrical-stimulation means includes an integrated circuit disposed in a body of the retainer or a wing or cover of the retainer for locking a portion of the catheter assembly in the retainer, the integrated circuit including at least a power circuit coupled to the external circuit configured to convey electrical power from the electrical power source to the wound dressing and a control circuit configured to modulate how the electrical power is delivered to the wound dressing.

9. The wound-healing system of claim 8, wherein the integrated circuit is configured to modulate the electrical power such that a low-intensity current between 200 and 1000 mA having a particular polarity is continuously delivered to the wound dressing for more than 1 s at a time.

10. The wound-healing system of claim 8, wherein the integrated circuit is configured to modulate the electrical power such that a high-voltage current between 50 and 150 V having an alternating polarity or a particular polarity is delivered to the wound dressing in 1-ms pulses.

11. The wound-healing system of any claim of claims 8-10, wherein the integrated circuit includes biofeedback logic configured to detect changes in impedance through the skin of the patient or the wound dressing and modulate how the electrical power is delivered to the wound dressing.

12. The wound-healing system of any claim of claims 1-11, wherein the electrical power source is a battery, the battery being either rechargeable or replaceable.

13. The wound-healing system of claim 12, wherein the battery is rechargeable, the retainer including a port for charging the rechargeable battery.

14. The wound-healing system of any claim of claims 1-13, wherein the retainer includes one or more light-emitting diodes ("LEDs") configured to indicate when the electrical-stimulation means is active.

15. The wound-healing system of any claim of claims 1-14, further comprising a controller configured to communicatively connect to the catheter-stabilization device and allow a user thereof to modulate how the electrical power is delivered to the wound dressing.