CLAIMS

What is claimed is:

1. A mattress assembly comprising:

a lower portion for the support of a patient's legs;

an upper portion for the support of the patient's torso, the upper portion including an enclosure defining an interior space and a compressible material within the interior space; and

an evacuation assembly including a vacuum pump communicating with the interior space and operable to evacuate the interior space and compress the compressible material such that the upper portion of the mattress supporting the patient's torso is lowered with respect to the lower portion of the mattress supporting the patient's legs, and such that the upper portion of the mattress becomes stiffer to facilitate CPR on the patient.

2. The mattress assembly of claim 1, wherein the compressible material includes at least one foam structure.

3. The mattress assembly of claim 2, wherein the evacuation assembly includes a plurality of tubes within the at least one foam structure, the plurality of tubes communicating with the vacuum pump such that air is evacuated from the interior space through the plurality of tubes under the influence of the vacuum pump.

4. The mattress assembly of claim 3, wherein the evacuation assembly further includes a manifold communicating between the vacuum pump and the plurality of tubes to distribute suction from the vacuum pump substantially evenly to the plurality of tubes.

5. The mattress assembly of claim 3, wherein the at least one foam structure includes open channels in which the plurality of tubes are received.

6. The mattress assembly of claim 5, wherein the open channels open downwardly.

7. The mattress assembly of claim 5, wherein the open channels open upwardly.

8. The mattress assembly of claim 7, wherein the at least one foam structure includes a first foam structure defining the upwardly-opening channels and a second foam structure extending across the open channels.

9. The mattress assembly of claim 8, wherein the second foam structure has greater compressibility than the first foam structure.

10. The mattress assembly of claim 8, wherein the second foam structure includes a memory foam.

11. The mattress assembly of claim 1, wherein the mattress includes outer surfaces defining a mattress envelope; and wherein substantially the entire evacuation assembly is contained within the mattress envelope.

12. The mattress assembly of claim 1, further comprising: a mattress frame extending around the upper and lower portions; wherein an outer surface of the mattress frame defines a mattress envelope; and wherein the mattress frame includes a cut out in which the vacuum pump is received.

13. The mattress of claim 12, wherein the mattress frame resists deflection during evacuation of the interior space to resist a patient rolling off the mattress.

14. The mattress assembly of claim 12, wherein the evacuation assembly includes a connecting conduit communicating between the vacuum pump and the interior space; wherein the mattress frame includes a perimeter channel; and wherein the connecting conduit is received in the perimeter channel.

15. The mattress assembly of claim 14, wherein the cut out is in an end portion of the mattress frame; wherein the perimeter channel extends along the end portion of the mattress frame, around a corner of the mattress frame, and along a side portion of the mattress frame; and wherein the connecting conduit is substantially L-shaped to follow the perimeter channel around the corner of the mattress frame.

16. The mattress assembly of claim 12, wherein the evacuation assembly includes a transportable power source within the mattress frame and within the mattress envelop, the transportable power source being movable with the mattress assembly and providing power to the vacuum pump.

17. The mattress assembly of claim 1, further comprising: a control system including a monitor to generate a signal in response to detecting conditions consistent with cardiac arrest in

the patient; and a controller initiating operation of the vacuum pump in response to receiving the signal from the monitor.

18. The mattress assembly of claim 1, wherein the evacuation assembly includes a T-shaped joint communicating between the vacuum pump and the interior space; wherein the T-shaped joint facilitates communicating an airflow source in addition to the vacuum pump with the interior space; and wherein the airflow source provide at least one of atmospheric air and forced air to the interior space to assist at least one of evacuation and inflation of the compressible material.

19. The mattress assembly of claim 1, wherein the lower portion includes a fluid bladder fluidly connected to the enclosure; and wherein evacuated fluid from the enclosure is used to inflate the fluid bladder to raise the patient's legs.

20. A method for operating a control system for a mattress assembly having a lower portion adapted to support a patient's legs and an upper portion adapted to support the patient's torso, the method comprising:

providing a compressible material within the upper portion;

enclosing the compressible material within an interior space of an enclosure;

placing a vacuum pump in communication with the interior space;

monitoring the cardiac condition of the patient supported by the mattress;

generating a signal in response to detecting conditions consistent with cardiac arrest in the patient; and

initiating an alarm and operating the vacuum pump in response to the signal, the vacuum pump evacuating the interior space of the enclosure and compressing the compressible material to stiffen the upper portion of the mattress assembly and facilitate CPR on the patient.

21. The method of claim 20, further comprising: supporting the mattress assembly with a bed; and flattening the bed in response to the signal.

22. The method of claim 20, further comprising: providing a controller; and receiving the signal with the controller; wherein initiating an alarm and operating the vacuum pump are performed by the controller in response to receiving the signal.

23. A method of retro-fitting an evacuation assembly to a known mattress, the method comprising:

providing a mattress for supporting a patient;

creating a cavity in the mattress;

providing a compressible material;

containing the compressible material in an enclosure;

installing the compressible material and enclosure in the cavity; and

communicating a vacuum pump with the enclosure;

wherein the vacuum pump may be actuated to evacuate the enclosure and compress the compressible material to stiffen the mattress and facilitate CPR on the patient.

24. The method of claim 23, wherein the mattress includes a thin portion that remains over the cavity between the enclosure and the patient.

25. The method of claim 23, further comprising: supporting the mattress assembly with a bed; and providing a power source transportable with the bed, wherein the power source supplies power to the vacuum pump.

26. The method of claim 23, further comprising: providing a plurality of tubes within the enclosure; and fluidly coupling the tubes to the vacuum pump.

27. The method of claim 26, further comprising: providing a manifold in fluid communication between the vacuum pump and the plurality of tubes; providing a T-shaped joint in fluid communication between the vacuum pump and the manifold; connecting an alternative airflow source to the T-shaped joint; and using the alternative airflow source to facilitate inflating the enclosure through the T-shaped joint with one of atmospheric air and forced air.

28. The method of claim 26, further comprising: providing channels in the compressible material and installing the plurality of tubes recessed within respective channels of the compressible material.

29. The method of claim 26, further comprising: containing the evacuation assembly and vacuum pump within an envelope of the mattress.