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CORTICAL DYNAMICS COMPLETES FUNCTIONALITY TRIAL

Cortical Dynamics Limited, an investee company of BPH Corporate Limited [ASX: BPH], has completed an in-house end-to-end trial of the components of the Brain Anaesthesia Response (BAR) Monitor system. The trial occurred as part of the scheduled plan to verify the latest BAR Monitor prototypes.

The BAR Monitor generates measures of brain activity to assist medical professionals to monitor the depth of anaesthesia of patients undergoing surgery or being held in a coma. The Cortical Dynamics team, lead by Professor David Liley, have completed a number of improvements to the BAR Monitor System. These improvements have:

- significantly improved the robustness of the system;
- improved fidelity of the input signals;
- increased the quality of the data collected; and
- enabled the BAR Monitor to detect a wide range of anaesthetic drug effects.

Developments such as these will allow for a full suite of testing and calibration trials to occur prior to full production and distribution of the monitors (full technical details are attached).

The next test and calibration trial will take place in the third quarter of 2010. This will consist of healthy subjects participating in a single-dose benzodiazepine trial which will be undertaken at Swinburne University of Technology.

Brain Anaesthesia Response (BAR) Monitoring System Technical Information

The BAR monitoring system utilises a number of innovative developments to the understanding of the physiological aspects of how the rhythmic electrical activity produced by the brain, the electroencephalogram (EEG), can be better used to monitor brain function. The approach used is fundamentally different from all other devices currently available in the market in that its underlying algorithm produces EEG indexes which are directly related to the physiological state of the patient. This is in stark contrast to other systems on the market which produces EEG indexes based on statistical approaches that depend on the trial-and-error identification of anaesthetic induced EEG regularities in patients undergoing a variety of operative procedures. The BAR system also provides much greater sensitivity to anaesthetic drug effect enabling the monitoring of a wider range of anaesthetic agents, some of which are not properly detected by the competing technologies.

The BAR Monitor consists of a forehead electrode sensor, a Data Acquisition Module (DAM), and a graphical user interface (GUI). The end-to-end testing of the functionality of these components was accomplished by recording and analysing the electroencephalogram (EEG) of five healthy participants. EEG

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recorded using the BAR Monitor was found to be comparable to that recorded using a state of the art research-grade EEG recording system. The resulting measures of brain activity calculated by the DAM were assessed to be, within the limits of uncertainty, identical to those calculated using independently configured benchmark software. Finally, the GUI functioned correctly in terms of allowing the user to control and monitor all aspects of the recordings.

From a clinical monitoring perspective, recent improvements in the ability of the BAR Monitor to detect a wide range of anaesthetic drug effects allow a full suite of testing and calibration trials to occur prior to the monitors full production and distribution. The sensor layout has been modified to increase the level of the brain electrical activity detected and the DAM has been fine tuned to improve the BAR Monitors resilience to signal noise.

These improvements have increased the quality of the collected data. Improving the fidelity of the input signals will further enhance the sensitivity of the BAR Monitors ability to detect anaesthetic drug effects as well as increasing its robustness in dealing with the noisy electrical environment of the operating theatre.

The BAR monitoring system comprises a consumable self-adhesive electrode sensor, a Data Acquisition Module (DAM), and the BAR terminal, as shown below in the Schematic Diagram:

