

A Vision of the Wireless Hospital

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Developments in nanotechnology, information technology and communications technology are bringing the vision of the wireless hospital closer to reality.

Future medical diagnosis systems using nanotechnology including in-vivo, in-vitro sensors, hand-held, wireless diagnostics and wearable, wireless monitors.

Miniaturized devices will be constructed through the use of micro-nano electronic packaging allowing 100x reduction in memory size and 10x area reduction for a communications module, high density flexible interconnect for 5x more density and zero interconnect length for 10x greater speed.

Organic electronics & systems will be used for miniaturized displays, sensors and transducers.

Nanotechnology will contribute to a wide range of diagnostic applications through the development of:

- Implantable Diagnostic Devices
- Internal Diagnostics
- Intracellular Diagnostics

Nano biosensors will have applications in the emergency room for real time, in-situ reading of biochemical activity, cellular level optical imaging and in sensor guided precision surgical tools.

In the doctors office it will be possible to obtain a total blood analysis in minutes, a rapid, accurate disease diagnosis and a patient specific disease treatment through the use of molecular recognition and high density nano-arrays.

At home the use of biosensors, wireless communications, self powered devices and high-resolution displays will allow simple patient administered diagnostic tests and automatic transmission of outpatient data from home to the doctor or the hospital.

Wireless technologies will be found everywhere tracking people, assets, and patient flow. Data flow throughout the hospital will be able to leverage web services, data storage and hi speed digital networks to make the hospital one living, communicating environment.

Wifi tags will capture patient flow data in a 100% wireless infrastructure allowing business & clinical decisions on diagnosis to be made in real-time.

Infinite scalability will be made available through grid computing.

Information integration will enable therapy decisions to be made.

There will be an amalgamation of telecommunications & IT

allowing real time data collection & simulation with broadband & web services everywhere.

Smart systems will talk to central, learning engines.

Multiple healthcare information technologies will be integrated including: Emergency, Physician Office, CPOE(Computerized Physician Order Entry), Lab, Pharmacy, Perinatal, Critical Care, Perioperative, Wireless Telemetry, Cardiology, Radiology, Image Management and Services.

Telemetry systems will capture, analyze and transfer critical patient data.

The healthcare providers will be able monitor hundreds or thousands of patients at a time on an advanced telemetry system that helps ensure that patient data is transmitted clearly and completely to a central patient monitoring station.

Network Patient Data Servers will collect and store monitoring data continuously as patients are admitted from one monitor to another. Clinicians will have access to vital signs and alarm history events as the patient is transferred between hospital departments, enabling them to make confident decisions at any stage.

The telemetry system will be connected to a life-critical data network dedicated solely to patient monitoring. Clinicians will be able to use a secure web connection to view the information anytime, anywhere.

The IHE (Integrating the Healthcare Enterprise) initiative has successfully started to validate the compatibility between devices using different IT and communications standards. IHE is a concerted action from users and vendors resulting from the initiative of the RSNA (Radiological Society of North America) and HIMSS (Healthcare Information and Management Systems Society)

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