

# Medical Instrumentation for Critical care

- Needs of India -

N Ravindran

Head – Design & Development, L&T Medical

## India – some facts

- 1.1 Billion population, growing at 2 %
- Overall purchasing power is also growing.
- Change in lifestyle
- Reduced physical activity, obesity, increased stress
- “It would cost India \$237 b in 2015 to tackle lifestyle diseases”.

## Hypertension, Diabetes, Stroke

- 10 % suffer from hypertension – almost 2 million people die of heart attack every year in India
- 8 -12 % of adult population are diabetic
- 3 out of every 1000 people suffer a stroke

## Women's Health

### Breast Cancer & Osteoporosis.

- 80 new cases of breast cancer per 100,000 population per year.
- 30 % women in age group > 20 yrs; and 50% women > 50 years of age, suffer from Osteoporosis.

How can new technologies help us ..

Non-invasive

Lower cost

Simpler

Lower energy consumption

Smaller, portable equipments

Non invasive methods of diagnosis for :-

## Blood Glucose

- Near Infra Red - Diffuse Reflectance Spectroscopy (NIR- DRS)
- Optical bridge
- Occlusion spectroscopy
  
- Photo - Plethysmography
- Measurement of Glucose level of the Aqueous Humor (fluid under the cornea of eye) ??

## Early detection of breast cancer

- Elastographic Imaging
  - Ultrasonic excitation
  - Optical measurement of displacement (DWS)

## Patient Monitoring technologies

**L&T's own technologies for front end modules**

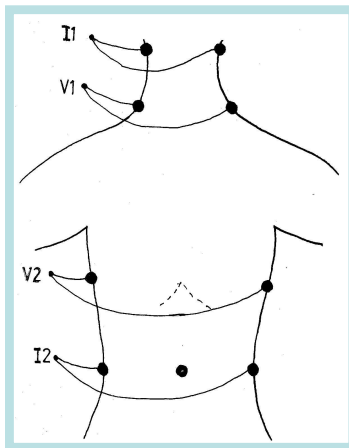
- ✓ ECG 3L / 5L / 12L
- ✓ ST segment analysis
- ✓ Respiration, Temperature
- ✓ SpO2 (Pulse Oximery)
- ✓ IBP (Invasive BP)
- ✓ NIBP (Non Invasive BP)
- ✓ ICO (Invasive Cardiac Output)
- ✓ NICO (Non invasive CO) \*

\* Developed with Technology transfer from the Biomedical wing of BARC, Mumbai

Nicomon



### Electrode connections



*Nicomon*  
was awarded  
the *Golden Peacock*  
for the best  
Innovative Medical Product

## Efforts involved in Concept to Product

### Packaging

- Porting of PC based algorithms to embedded system
- PCB re-layout
- Industrial design & Tooling for plastics

User Interface – software development

Clinical trials

Compliance to Safety & Regulatory standards

Product Launch - demo systems

# Patient Monitors

Skyline 55

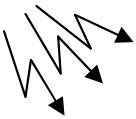


8 Ch / 12.1" disp.

Star 55



*new*



Star 50N

*new*



Planet 55



6 Ch / 10.4" disp.

Skyline M

Planet 50N

*new*



4 Ch / 8.4" disp.

Planet 30

*new*



3 Ch / 8.4" disp.

Planet 10  
Comet P



1 & 2 para / 6.4" disp

3 para / 6.4" disp

ECG machine, Electrosurgery & Ultrasound

Maestro plus




Orion



Sonalisa 1000



Sonnet



L&T  
cares  
for the  
girl-child.

*Please do not use this unit to determine the sex of the foetus.*

Thank you



*L&T Medical Equipment & Systems, Mysore, India*