Physiological Monitor Informatics (PMI)

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Phase 1:

- Document of agreed upon terms for physiological parameters
- Document of default values, soft limits and hard limits (where applicable) of physiological parameters categorized by different vendors
- Document of default values, soft limits and hard limits (where applicable) of physiological parameters categorized by different profiles and hospitals

Phase 2:

- Develop a protocol for collecting alarms from monitor devices
- Design and develop a database for physiological parameter alarms
- Develop the analytical and visualization tool based on the collected alarms

Phase 3:

- Develop a protocol for collecting physiological parameter values from the monitors
- Start building a 24/7 database based on selected physiological parameters
- Promote evidence based community of practice

Current Status:

Vendor:

- GE (Dash, Solar, BX50)
- Philips
  - MX400/450/500/550/600/700/800
  - MP2/5/20/30/40/50 60/70/80/90
  - MP5T/MP5SC/X2
- Draeger

Hospital:

- Cameron
- ICU, Med-surg, ED

Possible Steps:

- Develop the parser
  - Philips (pdf to data converter)
- Develop the mapping table
- Start designing the interface
- Finalizing the categories and sub-categories

Challenges:

- Lack of compatibility
- No easy way to collect the data

ECG	MX450-MX800, MP20-MP90						MX400		
	#H01, #H1x, #H2x, #H4x			#H3x			#H01, #H1x, #H2x, #H3x #H4x		
Setting	Adult	Pedi	Neo	Adult	Pedi	Neo	Adult	Pedi	Neo
ECG	On	On	On	On	On	On	On	On	On
Primary Lead	II	II	II	II	II	II	II	II	II
Secondary Lead	V (V1)	V (V1)	V (V1)	V (V1)	V (V1)	V (V1)	V (V1)	V (V1)	V (V1)
Analysis Mode	Multi Lead	Multi Lead	Multi Lead	Multi Lead	Multi Lead	Multi Lead	Multi Lead	Multi Lead	Multi Lead
Lead Placement	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Limb Leads	On Trunk	On Trunk	On Trunk	On Trunk	On Trunk	On Trunk	On Trunk	On Trunk	On Trunk
Hexad (Va,Vb)	Off	n/a	n/a	Off	n/a	n/a	Off	n/a	n/a
Va Lead	V2	V2	V2	V2	V2	V2	V2	V2	V2
Vb Lead	V5	V5	V5	V5	V5	V5	V5	V5	V5
Asystole Thresh.	4.0 sec	4.0 sec	3.0 sec	4.0 sec	4.0 sec	3.0 sec	4.0 sec	4.0 sec	3.0 sec
Fallback	On	On	On	On	On	On	On	On	On
Alarms	On	On	On	On	On	On	On	On	On
Pulse Alarms	Off	Off	Off	Off	Off	Off	Off	Off	Off
High Limit	120	160	200	120	160	200	120	160	200
Low Limit	50	75	100	50	75	100	50	75	100
^ ExtrTachy	20	20	20	20	20	20	20	20	20
Tachy Clamp	200	220	240	200	220	240	200	220	240
^ ExtrBrady	20	20	20	20	20	20	20	20	20
Brady Clamp	40	40	50	40	40	50	40	40	50
Alarms Off	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled
AlarmSource Sel.	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled
PulseAlarms Tele	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled
Pulse NotAI INOP	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled
System Pulse	Auto	Auto	Auto	Auto	Auto	Auto	Auto	Auto	Auto
Sync Out Chan 2	ECG AnlgWave	ECG AnlgWave	ECG AnlgWave	ECG AnlgWave	ECG AnlgW	ECG AnlgW	ECG AnlgW	ECG AnlgW	ECG AnlgW

Fig 1: Sample screenshot for Philips monitor

Parameter Default	Dash						Solar					
	ADULT-ICU		NEONATAL-ICU		OPERATING		ADULT-ICU		NEONATAL-ICU		OPERATING ROOM	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	Low	High	Low	High	Low	High
HR	50	150	90	200	–1	150	50	150	90	200	-1	150
PVC/MIN	—	6	—	6	—	6	—	6	—	6	—	6
ST-I	-2	-2	-2	-2	-2	-2	-2.0	2.0	-2.0	2.0	-2.0	2.0
ST-II	-2	-2	-2	-2	-2	-2	-2.0	2.0	-2.0	2.0	-2.0	2.0
ST-III	-2	-2	-2	-2	-2	-2	-2.0	2.0	-2.0	2.0	-2.0	2.0
ST-V1	-2	-2	-2	-2	-2	-2	-2.0	2.0	-2.0	2.0	-2.0	2.0
ST-AVL	-2	-2	-2	-2	-2	-2	-2.0	2.0	-2.0	2.0	-2.0	2.0
ST-AVF	-2	-2	-2	-2	-2	-2	-2.0	2.0	-2.0	2.0	-2.0	2.0
ST-AVR	-2	-2	-2	-2	-2	-2	-2.0	2.0	-2.0	2.0	-2.0	2.0
ST-V2	-2	-2	-2	-2	-2	-2	-2.0	2.0	-2.0	2.0	-2.0	2.0
ST-V3	-2	-2	-2	-2	-2	-2	-2.0	2.0	-2.0	2.0	-2.0	2.0
ST-V4	-2	-2	-2	-2	-2	-2	-2.0	2.0	-2.0	2.0	-2.0	2.0
ST-V5	-2	-2	-2	-2	-2	-2	-2.0	2.0	-2.0	2.0	-2.0	2.0
ST-V6	-2	-2	-2	-2	-2	-2	-2.0	2.0	-2.0	2.0	-2.0	2.0
NBP-S	80	200	40	100	40	200	80	200	40	100	40	200
NBP-D	20	120	20	60	20	120	20	120	20	60	20	120
NBP-M	40	140	30	70	40	140	40	140	30	70	40	140
ART-S	80	200	40	100	40	200	80	200	40	100	40	200
ART-D	20	120	20	60	20	120	20	120	20	60	20	120
ART-M	40	140	30	70	40	140	40	140	30	70	40	140
ART-R	50	150	90	200	–1	150	50	150	90	200	-1	150
FEM-S	80	200	40	100	40	200	80	200	40	100	40	200

Fig 1: Sample screenshot for GE monitor

* Questions ? Comments? Please contact: mhaque@purdue.edu