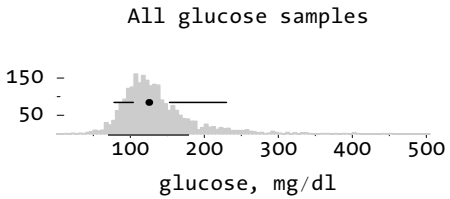
Glucometrics

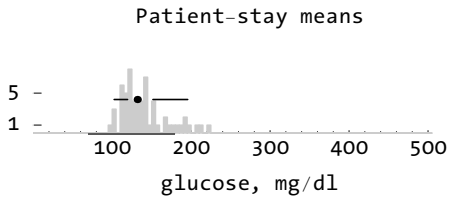
http://metrics.med.yale.edu Yale Center for Medical Informatics & the Yale School of Medicine, Section of Endocrinology

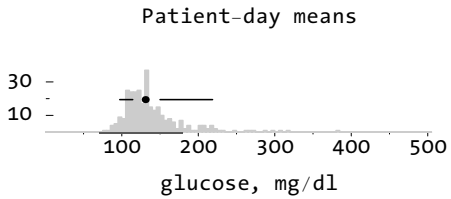
Institution: **123** Ward: **CV** Ward type: Adult Thoracic Surgery Coronary Care Unit
Glucose type: poc Patient subgroup: none
3.23.2005 to 4.21.2005

	Patient – samples		**Patient – stays** (means)		**Patient – days** (means)	
number	2444		60		298	
median	125		132		131	
mean	134		140		139	
5 th–95th percentile	78 –230		102 –196		97 –219	
spread	152		93		121	
Adverse events	**n**	**%**	**n**	**%**	**n**	**%**
at least one glucose < 40	6	0.2	4	6.7	6	2.0
at least one glucose < 70	74	3.0	18	30.0	45	15.1
at least one glucose ≥ 300	28	1.1	8	13.3	17	5.7
Target range						
70 ≤ glucose < 180	2044	83.6	52	86.7	263	88.3
Other ranges						
70 ≤ glucose < 110	708	29.0	4	6.7	53	17.8
110 ≤ glucose < 140	831	34.0	31	51.7	142	47.7
140 ≤ glucose < 180	505	20.7	17	28.3	68	22.8
180 ≤ glucose < 240	226	9.2	8	13.3	26	8.7
240 ≤ glucose < 300	72	2.9	0	0.0	6	2.0
110 ≤ glucose < 180	1336	54.7	48	80.0	210	70.5
70 ≤ glucose < 240	2270	92.9	60	100.0	289	97.0

The figures below show the distribution of glucose results; the dark bar on the x−axis between 70 and 179 highlights the target range. Data percentiles (5th, 25th, 50th, 75th, and 95th) are shown by the lines and dot over the histogram:
5−−−−−−25 •50 75−−−−−−95







Notes
The metrics use three time intervals over which to measure glycemic control. Individual glucoses measure control over the shortest interval, the varying time between samples, often between four to eight hours. Mean glucose for a patient's hospital stay measures control for the longest interval, usually several days, again varying. Mean glucose for a patient−day measures control for a fixed interval, one day. This standard interval allows equal comparison of control from one patient to another.

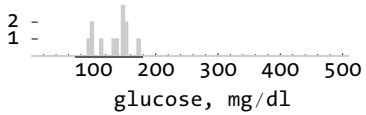
For patient-stays and patient-days we compute summary statistics on the *mean* glucose of these intervals. For example, in calculating the medians, we take the median {of patient-stay means}, and the median {of patient-day means}. Mean, median, percentile, spread, and ranges are in mg/dl.

The next pages contain additional statistics on the data.

Patient-stays with < 2 glucose measurements were excluded from the analysis:

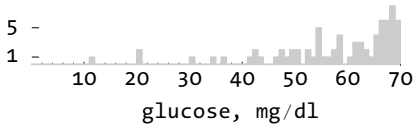
Patient-stays in the data file	72	
Patient-stays with < 2 glucoses	12	(16.7 %)
Patient-stays after excluding those with < 2 glucoses	60	

Distribution of glucose values in patients with < 2 measurements:



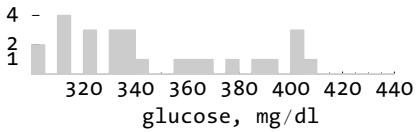
Glucoses < 70 and > 300

Glucoses < 70



Minimum	11.0
Median	61.0
Mean	57.1
Maximum	69.0

Glucoses > 300

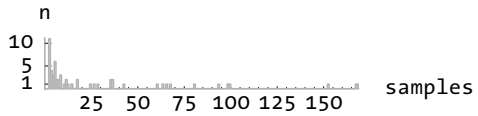


Minimum	301.0
Median	339.0
Mean	354.5
Maximum	453.0

Glucose sampling characteristics

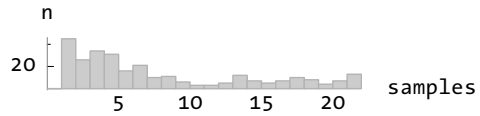
In the histograms below, data outliers beyond the 95th percentile are not shown.

Number of glucose samples per patient-stay.



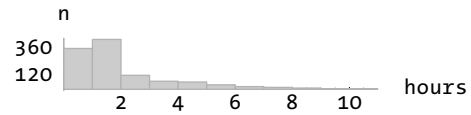
Median	8.0
Mean	40.7
Maximum	460.0
90 % data spread	166.0

Number of glucose samples per patient-day.



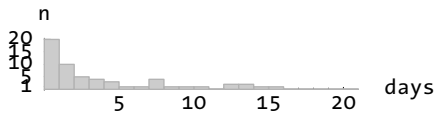
Median	5.0
Mean	8.2
Maximum	28.0
90 % data spread	20.0

Hours between glucose samples on a patient



Median	1.3
Mean	3.1
Maximum	528.3
90 % data spread	7.3

Duration of glucose monitoring, days :



Median	2.0
Mean	4.7
Maximum	22.6
90 % data spread	15.8