

Appendix A

A: Data Quality Table

	LOINC_CODE	LAB_TYPE	FLUID	FLAG	Min value Men	Max value Men	Min value Women	Max value Women
0	Potassium	Blood	Chemistry		3.5	5.3	3.5	5.3
1	Ammonia	Blood	Chemistry		11.0	32.0	11.0	32.0
2	Amylase, Pleural	Pleural	Chemistry		30.0	110.0	30.0	110.0
3	% Hemoglobin A1c	Blood	Chemistry		0.0	5.7	0.0	5.7
4	Urea Nitrogen	Blood	Chemistry		8.0	20.0	8.0	20.0
5	Cancer Antigen 27.29	Blood	Chemistry		0.0	38.0	0.0	38.0
6	pCO2	Blood	Blood Gas	abnormal	80.0	100.0	80.0	100.0
7	Urea Nitrogen, Urine	Urine	Chemistry		6.0	20.0	6.0	20.0
8	Sedimentation Rate	Blood	Hematology		0.0	29.0	0.0	22.0
9	24 hr Protein	Urine	Chemistry		0.0	80.0	0.0	80.0
10	Total Protein, Urine	Urine	Chemistry		0.0	80.0	0.0	80.0
11	Amylase	Blood	Chemistry		23.0	85.0	23.0	85.0
12	Protein C, Functional	Blood	Hematology		73.0	140.0	73.0	140.0
13	Sodium, Whole Blood	Blood	Blood Gas		135.0	145.0	135.0	145.0
14	Phenytoin, Percent Free	Blood	Chemistry		8.0	14.0	8.0	14.0
15	Absolute CD8 Count	Blood	Hematology	abnormal	150.0	1000.0	150.0	1000.0
16	Potassium, Urine	Urine	Chemistry		25.0	125.0	25.0	125.0
17	Follicle Stimulating Hormone	Blood	Chemistry		1.5	12.4	1.5	12.4
18	Osmolality, Measured	Blood	Chemistry		275.0	295.0	275.0	295.0
19	Lactate Dehydrogenase, CSF	Cerebrospinal Fluid (CSF)	Chemistry		100.0	190.0	100.0	190.0

Figure A.1: Data Quality 1

	LOINC_CODE	LAB_TYPE	FLUID	FLAG	Min value Men	Max value Men	Min value Women	Max value Women
20	Blood	Urine	Hematology		2.00	5.00	2.00	5.00
21	PEEP	Blood	Blood Gas		4.00	5.00	4.00	5.00
22	WBC, Joint Fluid	Joint Fluid	Hematology		0.00	200.00	0.00	200.00
23	Alanine Aminotransferase (ALT)	Blood	Chemistry		7.00	55.00	7.00	55.00
24	Ferritin	Blood	Chemistry	abnormal	12.00	150.00	12.00	300.00
25	Cholesterol, HDL	Blood	Chemistry		35.00	80.00	35.00	65.00
26	MCHC	Blood	Hematology		80.00	95.00	80.00	95.00
27	Homocysteine	Blood	Chemistry	abnormal	4.00	15.00	4.00	15.00
28	Testosterone, Free	Blood	Chemistry	abnormal	8.00	48.00	193.00	800.00
29	DHEA-Sulfate	Blood	Chemistry		65.00	380.00	65.00	380.00
30	Absolute Lymphocyte Count	Blood	Hematology		1000.00	4800.00	1000.00	4800.00
31	Albumin, Urine	Urine	Chemistry		0.00	30.00	0.00	30.00
32	Rapamycin	Blood	Chemistry	abnormal	0.30	1.00	0.30	1.00
33	Lymphocytes, Percent	Blood	Hematology		20.00	40.00	20.00	40.00
34	Thrombin	Blood	Hematology		12.00	14.00	12.00	14.00
35	Gamma Glutamyltransferase	Blood	Chemistry	abnormal	9.00	48.00	9.00	48.00
36	Vitamin B12	Blood	Chemistry		200.00	900.00	200.00	900.00
37	Vancomycin	Blood	Chemistry	abnormal	10.00	20.00	10.00	20.00
38	Eosinophil Count	Blood	Hematology	abnormal	30.00	350.00	30.00	350.00

Figure A.2: Data Quality 2

	LOINC_CODE	LAB_TYPE	FLUID	FLAG	Min value Men	Max value Men	Min value Women	Max value Women
39	Uric Acid	Blood	Chemistry	abnormal	2.40	6.00	3.40	7.00
40	pH	Blood	Blood Gas		7.35	7.45	7.35	7.45
41	CA-125	Blood	Chemistry		0.00	35.00	0.00	335.00
42	Hemoglobin A	Blood	Hematology		12.00	15.50	13.50	17.50
43	Lymphs	Cerebrospinal Fluid (CSF)	Hematology		0.00	5.00	0.00	5.00
44	Free Calcium	Blood	Blood Gas	abnormal	4.64	5.28	4.64	5.28
45	Phenytoin, Free	Blood	Chemistry	abnormal	1.00	2.50	1.00	2.50
46	Haptoglobin	Blood	Chemistry		30.00	200.00	30.00	200.00
47	Prolactin	Blood	Chemistry		2.00	29.00	2.00	18.00
48	PT	Blood	Hematology	abnormal	11.00	13.50	11.00	13.50
49	Total Protein, CSF	Cerebrospinal Fluid (CSF)	Chemistry		15.00	60.00	15.00	60.00
50	Lymphocytes	Blood	Hematology	abnormal	1000.00	4800.00	1000.00	4800.00
51	Chloride, Urine	Urine	Chemistry		25.00	40.00	25.00	40.00
52	C3	Blood	Chemistry		80.00	160.00	80.00	160.00
53	pO2	Blood	Blood Gas	abnormal	75.00	100.00	75.00	100.00
54	Lymphocytes	Ascites	Hematology		0.00	500.00	0.00	500.00
55	Digoxin	Blood	Chemistry	abnormal	0.50	0.90	0.50	0.90
56	Parathyroid Hormone	Blood	Chemistry		10.00	65.00	10.00	65.00

Figure A.3: Data Quality 3

	LOINC_CODE	LAB_TYPE	FLUID	FLAG	Min value Men	Max value Men	Min value Women	Max value Women
56	Parathyroid Hormone	Blood	Chemistry		10.0	65.0	10.0	65.0
57	Immunoglobulin M	Blood	Chemistry		45.0	250.0	45.0	250.0
58	Osmolality, Urine	Urine	Chemistry		300.0	900.0	300.0	900.0
59	Monocytes	Blood	Hematology		2.0	8.0	2.0	8.0
60	Carcinoembryonic Antigen (CEA)	Blood	Chemistry	abnormal	0.0	3.0	0.0	3.0
61	Magnesium	Blood	Chemistry		1.5	2.5	1.5	2.5
62	Eosinophils	Urine	Hematology		0.0	6.0	0.0	6.0
63	Specific Gravity	Urine	Hematology		1002.0	1030.0	1002.0	1030.0
64	Phosphate	Blood	Chemistry		2.5	4.5	2.5	4.5
65	Chloride	Blood	Chemistry		96.0	106.0	96.0	106.0
66	Double Stranded DNA	Blood	Chemistry		0.0	75.0	0.0	75.0
67	Oxygen	Blood	Blood Gas		75.0	100.0	75.0	100.0
68	Alpha-Fetoprotein	Blood	Chemistry		0.0	10.0	0.0	10.0
69	Sodium	Blood	Chemistry		136.0	145.0	136.0	145.0
70	Cortisol	Blood	Chemistry		5.0	25.0	5.0	25.0
71	Thyroxine (T4)	Blood	Chemistry		5.0	12.0	5.0	12.0
72	Glucose	Urine	Hematology		0.0	0.8	0.0	0.8
73	D-Dimer	Blood	Hematology	abnormal	0.0	500.0	0.0	500.0
74	Neutrophils	Blood	Hematology	abnormal	40.0	60.0	40.0	60.0
75	Hemoglobin S	Blood	Hematology		85.0	90.0	85.0	90.0
76	Thyroxine (T4), Free	Blood	Chemistry		0.9	2.4	0.9	2.4
77	Calcium, Total	Blood	Chemistry		8.6	10.2	8.6	10.2

Figure A.4: Data Quality 4

	LOINC_CODE	LAB_TYPE	FLUID	FLAG	Min value Men	Max value Men	Min value Women	Max value Women
78	Cholesterol Ratio (Total/HDL)	Blood	Chemistry		35.0	80.0	35.0	65.0
79	Bilirubin, Direct	Blood	Chemistry		0.0	1.2	0.0	1.2
80	Oxygen Saturation	Blood	Blood Gas		94.0	99.0	94.0	99.0
81	Lipase	Blood	Chemistry		0.0	160.0	0.0	160.0
82	Calculated Bicarbonate, Whole Blood	Blood	Blood Gas		22.0	28.0	22.0	28.0
83	pH	Urine	Chemistry		4.5	8.0	4.5	8.0
84	Folate	Blood	Chemistry		2.0	10.0	2.0	10.0
85	Protein	Urine	Hematology		0.0	20.0	0.0	20.0
86	Chloride, Whole Blood	Blood	Blood Gas		96.0	106.0	96.0	106.0
87	Salicylate	Blood	Chemistry		15.0	30.0	15.0	30.0
88	Iron Binding Capacity, Total	Blood	Chemistry		250.0	460.0	250.0	460.0
89	Quantitative G6PD	Blood	Hematology		5.5	20.5	5.5	20.5
90	Phenytoin	Blood	Chemistry	abnormal	10.0	20.0	10.0	20.0
91	Eosinophils	Blood	Hematology		0.0	6.0	0.0	6.0
92	Valproic Acid	Blood	Chemistry		6.0	22.0	6.0	22.0
93	Glucose	Blood	Chemistry	abnormal	70.0	100.0	70.0	100.0
94	Fibrinogen, Functional	Blood	Hematology	abnormal	150.0	400.0	150.0	400.0
95	Spherocytes	Blood	Hematology		6.0	10.0	6.0	10.0
96	Protein/Creatinine Ratio	Urine	Chemistry	abnormal	0.0	0.2	0.0	0.2
97	Iron	Blood	Chemistry		40.0	150.0	50.0	160.0
98	RBC, Joint Fluid	Joint Fluid	Hematology		0.0	200.0	0.0	2000.0
99	Glucose, CSF	Cerebrospinal Fluid (CSF)	Chemistry		50.0	1000.0	50.0	1000.0

Figure A.5: Data Quality 5

	LOINC_CODE	LAB_TYPE	FLUID	FLAG	Min value Men	Max value Men	Min value Women	Max value Women	
100		pH	Urine	Hematology	4.5	8.0	4.5	8.0	
101		Hematocrit, Calculated	Blood	Blood Gas	36.0	48.0	40.0	54.0	
102		Cholesterol, LDL, Measured	Blood	Chemistry	0.0	100.0	0.0	100.0	
103		Bilirubin, Total	Blood	Chemistry	0.1	1.2	0.1	1.2	
104		C4	Blood	Chemistry	abnormal	16.0	48.0	16.0	48.0
105		Protein C, Antigen	Blood	Hematology	abnormal	70.0	140.0	70.0	140.0
106		Red Blood Cells	Blood	Hematology	4.2	5.4	4.7	6.1	
107		Thyroid Stimulating Hormone	Blood	Chemistry	1.1	4.0	1.1	4.0	
108		Asparate Aminotransferase (AST)	Blood	Chemistry	9.0	32.0	10.0	40.0	
109		Basophils	Pleural	Hematology	abnormal	0.0	300.0	0.0	300.0
110		Hemoglobin	Blood	Hematology	12.0	15.5	13.5	17.5	
111		MCH	Blood	Hematology	27.0	33.0	27.0	33.0	
112		Immunoglobulin G	Blood	Chemistry	abnormal	560.0	1800.0	560.0	1800.0
113		Calculated Total CO2	Blood	Blood Gas	abnormal	23.0	29.0	23.0	29.0
114		Tidal Volume	Blood	Blood Gas	400.0	600.0	400.0	600.0	
115		Methemoglobin	Blood	Blood Gas	0.0	3.0	0.0	3.0	
116		Cholesterol, Total	Blood	Chemistry	0.0	150.0	0.0	150.0	
117		Protein S, Antigen	Blood	Hematology	73.0	200.0	73.0	200.0	
118		Sodium, Urine	Urine	Chemistry	40.0	220.0	40.0	220.0	
119		Hemoglobin A2	Blood	Hematology	abnormal	1.5	3.1	1.5	3.1
120		White Blood Cells	Blood	Hematology	abnormal	4.3	10.8	4.3	10.8

Figure A.6: Data Quality 6

	LOINC_CODE	LAB_TYPE	FLUID	FLAG	Min value Men	Max value Men	Min value Women	Max value Women	
121		24 hr Creatinine	Urine	Chemistry	955.0	2936.0	955.0	2936.0	
122		Estradiol	Blood	Chemistry	15.0	350.0	15.0	350.0	
123		Reticulocyte Count, Automated	Blood	Hematology	0.5	1.5	0.5	1.5	
124		PTT	Blood	Hematology	abnormal	30.0	45.0	30.0	45.0
125		Creatine Kinase (CK)	Blood	Chemistry	abnormal	0.5	1.0	0.7	1.2
126		NonSquamous Epithelial Cell	Urine	Hematology	0.0	10.0	0.0	10.0	
127		Troponin T	Blood	Chemistry	0.0	0.1	0.0	0.1	
128		INR(PT)	Blood	Hematology	2.0	3.0	2.0	3.0	
129		Albumin	Blood	Chemistry	3.5	5.0	3.5	5.0	
130		Albumin, Pleural	Pleural	Chemistry	0.0	12.0	0.0	12.0	
131		Cholesterol, LDL, Calculated	Blood	Chemistry	0.0	100.0	0.0	100.0	
132		Urine Volume	Urine	Chemistry	800.0	2000.0	800.0	2000.0	
133		Creatinine	Blood	Chemistry	0.6	1.1	0.7	1.3	
134		Triglycerides	Blood	Chemistry	0.0	150.0	0.0	150.0	
135		Potassium, Whole Blood	Blood	Blood Gas	abnormal	0.1	0.7	0.1	0.7
136		Theophylline	Blood	Chemistry	5.0	20.0	5.0	20.0	
137		Heparin, LMW	Blood	Hematology	0.5	1.2	0.5	1.2	
138		CK-MB Index	Blood	Chemistry	abnormal	3.0	5.0	3.0	5.0
139		Bicarbonate	Blood	Chemistry	22.0	28.0	22.0	28.0	
140		Lactate	Blood	Blood Gas	0.0	2.0	0.0	2.0	
141		Testosterone	Blood	Chemistry	8.0	48.0	193.0	800.0	
142		Lactate Dehydrogenase (LD)	Blood	Chemistry	100.0	190.0	100.0	190.0	

Figure A.7: Data Quality 7

Appendix B

B: Patterns

B.0.1 Vertical Support 1000 patients. 0.1 Minimal Support

- The Anion Gap is normal (lab) **before** The SPECIMEN TYPE is MIX (lab) **before** Heparin Sodium:25,000 UNIT. 25,000 unit Premix Bag (prescri) **before** Eosinophils is abnormal (lab). 130 times. **CLASS: NOT INFO.**
- The Anion Gap is normal (lab) **before** The SPECIMEN TYPE is MIX (lab) **before** Heparin Sodium:25,000 UNIT. 25,000 unit Premix Bag (prescri) **before** The Alanine Aminotransferase (ALT) is abnormal (lab). 115 times. **CLASS: KNOWN.**
- The Chloride is abnormal (lab) **before** The SPECIMEN TYPE is MIX (lab) **before** The Phosphate is normal (lab) **contains** The Eosinophils is normal (lab). 114 times. **CLASS: NOT INFO.**

The RBC is abnormal (lab)**before** Furosemide:20 mg. 40mg/4mL Vial (prescri) **before** The Epithelial Cells is 0-2 (lab) **before** Heparin Sodium : 25,000 UNIT. 25,000 unit Premix Bag (prescri). 120 times. **CLASS: KNOWN.**

- The SPECIMEN TYPE is MIX (lab) **before** The pH is abnormal (lab) **before** Heparin Sodium:25,000 UNIT. 25,000 unit Premix Bag (prescri) **before** Metoprolol : 5 mg. 5mg/5mL Vial (prescri). 113 times . **CLASS: KNOWN.**

B.0.2 Vertical Support 2000 patients. 0.1 Minimal support

- The INR(PT) is normal (lab) **before** Pantoprazole : 40 mg. 40mg Tablet (prescri) **before** The Phosphate is normal (lab) **before** Heparin Sodium : 25,000 UNIT. 25,000 unit Premix Bag (prescri). 232 times. **CLASS: NOT INFO.**
- Iso-Osmotic Dextrose: 50 ml. 50ml Bag (prescri) **before** NS : 500 ml. 500mL Bag (prescri) **before** Heparin Sodium : 25,000 UNIT. 25,000 unit Premix Bag (prescri) **before** The pH is abnormal (lab). 234 times. **CLASS: KNOWN**
- Iso-Osmotic Dextrose: 50 ml. 50ml Bag (prescri) **before** NS:500 ml. 500mL Bag (prescri) **before** Heparin Sodium:25,000 UNIT. 25,000 unit Premix Bag (prescri) **before** The Hematocrit is abnormal (lab). 213 times. **CLASS: KNOWN**
- Pantoprazole:40 mg. 40mg Tablet (prescri) **before** The Phosphate is normal (lab) **before** Heparin Sodium : 25,000 UNIT. 25,000 unit Premix Bag (prescri) **before** The INR(PT) is normal (lab). 221 times. **CLASS: NOT INFO.**
- The Glucose is normal (lab) **before** The Phosphate is normal (lab) **before** The Chloride is normal (lab) **before** The Epithelial Cells is normal (lab). 216 times. **CLASS: NOT INFO**

B.0.3 Vertical Support. 3000 patients. 0.1 Minimal Support

- The Hematocrit is abnormal(lab) **before** The SPECIMEN TYPE is ART (lab) **before** The Magnesium is abnormal(lab) **before** The Glucose is normal(lab). 340 times. **CLASS: KNOWN.**
- The Hematocrit is abnormal(lab) **before** The SPECIMEN TYPE is ART (lab) **contains** The Glucose is anormal(lab) **before** The Chloride is abnormal(lab) **before** The Phosphate is abnormal. 306 times. **CLASS: KNOWN**
- The Red Blood Cells is normal(lab) **before** The Hemoglobin is abnormal (lab) **before** The Glucose is normal(lab) **before** The Glucose is abnormal(lab) 305 times. **CLASS: NOT INFO.**

- The Diagnosis is 4280 (Diagnosis) **before** Sodium Chloride 0.9% Flush:3 ml. Syringe (prescription) **contains** Iso-Osmotic Dextrose:200 ml. 200ml Bag(prescription).340 times. **CLASS: NOT INFO.** 4280,"4480","Heredit hemorr telangiec","Hereditary hemorrhagic telangiectasia"
- Albuterol 0.083 % Neb Soln:1 NEB. 0.083 %,3mL Vial (prescription) **before** Ipratropium Bromide Neb:1 NEB. 2.5mL Vial (prescription) **before** Insulin:0 UNIT. Dummy Package for Sliding Scale (prescription). 320 times. **CLASS: KNOWN**

B.0.4 Vertical Support. 1000 patients. 0.3 Minimal Support

- The Bacteria is MOD **before** The pH is normal **before** The Bicarbonate is normal **before** The Glucose is normal. 301 times. **CLASS: NOT INFO**
- The Bacteria is MOD **before** The pH is normal **before** The Phosphate is abnormal **before** The Magnesium is normal. 303 times . **CLASS NOF INFO.**
- The Magnesium is abnormal **before** The pH is normal **before** The Bicarbonate is normal **before** The Glucose is normal. 321 times. **CLASS: NOT INFO**
- The PT is normal **before** The PT is abnormal **before** The Magnesium is abnormal **before** The Red Blood Cells is abnormal **contains** The Anion Gap is abnormal. 316 times. **CLASS: NOT INFO.**
- The Hemoglobin is abnormal **before**The Anion Gap is abnormal **before** The Hemoglobin is abnormal **before** The Red Blood Cells is abnormal. 317 times. **CLASS: KNOWN.**

B.0.5 Vertical Support. 2000 patients. 0.2 Minimal support

- The Diagnose is 41401 (diagnose) **before** The SPECIMEN TYPE is ART(lab) **contains** The Base Excess is normal(lab). 465 times. **CLASS: NOT INFO.** 41401: Coronary atherosclerosis of native coronary artery.
- The Cortisol is abnormal(laboratory) **before** The SPECIMEN TYPE is ART(lab) **before** The Glucose is normal (lab) **before** The Phosphate is abnormal (lab). 429 times. **CLASS: NOT INFO**

- The Urine is Yellow(lab) **before** The SPECIMEN TYPE is ART(lab) **before** The Glucose is normal (lab) **before** The Phosphate is abnormal (lab). 424 times. **CLASS: NOT INFO**
- The Lymphocytes is normal (lab) **before** The Magnesium is abnormal (lab) **before** The Anion Gap is normal (lab) **before** The Urea Nitrogen is abnormal (lab). 428 times. **CLASS: NOT INFO**
- The pH is abnormal (lab) **before** The Diagnose is78551(diagnose) **before** The Cortisol is abnormal (lab) **before** Docusate Sodium:100 mg. 100MG CAP (prescrip). 443 times. 12990,"78551","Cardiogenic shock","Cardiogenic shock". **CLASS: NOT INFO.**

B.0.6 Vertical Duration Support. 1000 patients. 0.1 min support

- 0 seconds of 3 The Iron is abnormal(lab) **before** 0 seconds of The Glucose is normal(lab) **before** 0 seconds of the Glucose is abnormal(lab). 167 times. **CLASS: NOT INFO.**
- 0 seconds of Docusate Sodium: 100 mg. 100mg Capsule(prescrip) **before** 0 seconds of The Phosphate is abnormal(lab) **before** 0 seconds of The Glucose is abnormal(lab). 142 times. **CLASS: NOT INFO**
- 0 seconds of Sodium Chloride 0.9 % Flush: 3 ml. Syringe(prescrip) **before** 0 seconds of Propofol : 1000 mg. 1000mg/100mL Vial(prescrip) **before** 0 seconds of The Glucose is normal(lab). 114 times. **CLASS: NOT INFO**
- 0 seconds of Docusate Sodium : 100 mg. 100mg Capsule(prescrip) **before** 0 seconds of The Phosphate is abnormal(lab) **before** 0 seconds of The Glucose is abnormal(lab) **before** 0 seconds of 3 Glucose is normal(lab). 102 times. **CLASS: NOT INFO**
- 0 seconds of 3 The Hematocrit is normal(lab) **before** 0 seconds of 3 The Lymphocytes is normal(lab) **before** 0 seconds of 3 The Potassium is abnormal(lab) **before** 0 seconds of 3 The Glucose is abnormal(lab). 103 times. **CLASS: NOT INFO**

B.0.7 Horizontal Support. 0.1 min support. 2000 patients

- The Alanine Aminotransferase (ALT) is normal(lab) **before** Heparin Sodium:25,000 UNIT. 25,000 unit Premix Bag(prescrip) **before** The RDW is normal(lab) **before** The Macrocytes is normal(lab). 43470 times. **CLASS: NOT INFO.**
- The Bacteria is FEW (lab) **before** The SPECIMEN TYPE is MIX(lab) **before** The Anion Gap is normal(lab) **before** Heparin Sodium : 25,000 UNIT. 25,000 unit Premix Bag(prescrip). 50179 times. **CLASS: KNOWN**
- The Protein is TR(lab) **before** The Glucose is normal(lab) **before** The Creatinine is normal(lab) **before** The Creatinine is abnormal(lab). 7310 times. **CLASS: NOT INFO.**
- The Anion Gap is normal (lab) **before** The SPECIMEN TYPE is MIX(lab) **before** Heparin Sodium:25,000 UNIT. 25,000 unit Premix Bag(prescrip) **before** The Potassium, Whole Blood is abnormal(lab). 26189 times. **CLASS: KNOWN.**

B.1 Vertical Support. 8000 patients. Minimal support 0.3

- The Bands is normal (lab) **before** The Glucose is normal (lab) **before** The Phosphate is abnormal (lab). 2653 times. **CLASS: NOT INFO**
- The Hematocrit is normal (lab) **before** The Chloride is abnormal (lab) **before** The Glucose is abnormal (lab). 2490 times. **CLASS:NOT INFO**
- The Bands is normal(lab) **before** The Chloride is abnormal (lab) **before** The Glucose is normal (lab) **before** The Phosphate is abnormal (lab) **before** The Glucose is abnormal(lab).2654 times. **CLASS:NOT INFO**
- The Hematocrit is abnormal(lab) **before** The SPECIMEN TYPE is ART (lab) **contains** The Glucose is normal (lab) **before** The Chloride is abnormal (lab) **before** The Phosphate is abnormal(lab) **before** The Phosphate is normal(lab).2745 times.**CLASS: KNOWN**
- The Monocytes is normal (lab) **before** The SPECIMEN TYPE is ART(lab) **before** The Phosphate is abnormal (lab). **before** The Chloride is abnormal (lab). **CLASS:**

KNOWN.

B.2 Vertical Support. 10.000 patients. 0.05 min support (only Diagnose)

- The Diagnosis is 99592(diagnosis) **before** The Diagnosis is 0389 (diagnosis) **before** The Diagnosis is 51881(diagnosis). 553 times **CLASS: KNOWN**
- The Diagnosis is 99592(diagnose) **before** The Diagnosis is 78552 (diagnosis) **before** The Diagnosis is 51881(diagnosis) .672 times **CLASS:KNOWN**
- The Diagnosis is 4280 (diagnose) **before** The Diagnosis is 99592(diagnosis) **before** The Diagnosis is 78552 (diagnosis).546 times **CLASS: KNOWN**

Appendix C

C: TIRPS, shapes and behaviours extra charts

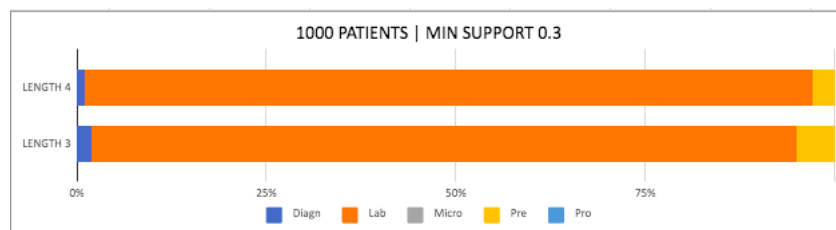


Figure C.1: Distribution of TIRPS using Vertical Support

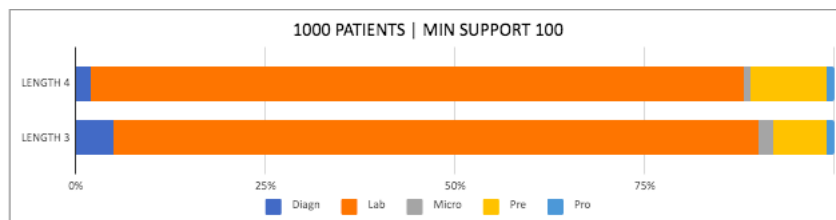


Figure C.2: Distribution of TIRPS using Horizontal Support 1

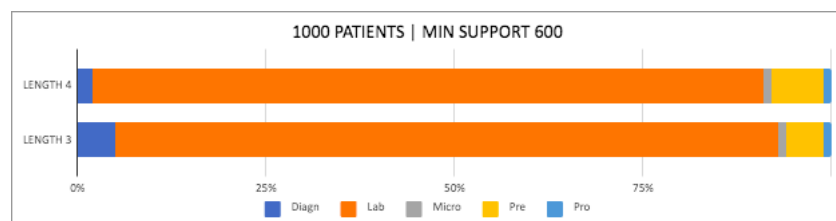


Figure C.3: Distribution of TIRPS using Horizontal Support 2

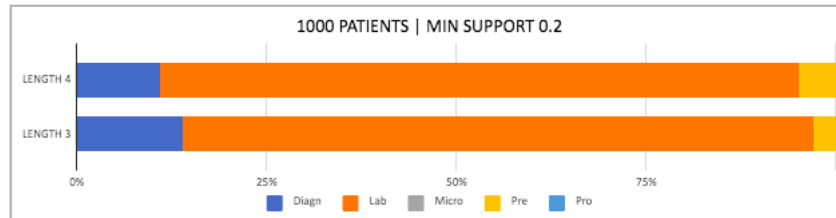


Figure C.4: Distrubition with Vertical Duration Interval Support 2

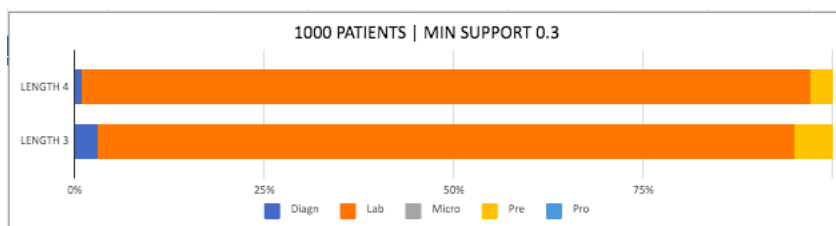


Figure C.5: Distrubition with Vertical Duration Interval Support 3