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Interpretation of Continuous Glucose Monitoring (CGM) Data

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A Johnson & Johnson Diabetes Care Company

Overview of CGM

- Continuous glucose monitoring provides glucose data every few minutes from an interstitial fluid reading
- The first device was approved in the United States in 1999 as a retrospective, blinded to the patient device
- New devices on the market and coming to the market have been significantly improved for ease of use, accuracy, and real-time diabetes management
- Readings can now be used for both real-time, in the moment decisions and retrospectively for pattern management

Bailey, T.S., Grunberger, G., Bode, B.W., Handelsman, Y., Hirsch, I.B., Jovanovic, L., Roberts, V.L., Rodbard, D., Tamborlance, W.V. and Walsh, J. (2016). American Association of Clinical Endocrinologists and American College of Endocrinology 2016 Outpatient Glucose Monitoring Consensus Statement. Endocrine Practice. 22 (2), 231-261.
Walsh, J., Roberts, R. (2013). Pumping Insulin (5th Edition). Torrey Pines Press. San Diego, CA.

Advantages of CGM?

- Fewer hypoglycemic events while lowering A1c values
- Reduction in severity of hypoglycemic events
- Less glycemic variability
- Decreased anxiety over blood sugar levels
- Improved quality of life

Bailey, T.S., Grunberger, G., Bode, B.W., Handelsman, Y., Hirsch, I.B., Jovanovic, L., Roberts, V.L., Rodbard, D., Tamborlance, W.V. and Walsh, J. (2016). American Association of Clinical Endocrinologists and American College of Endocrinology 2016 Outpatient Glucose Monitoring Consensus Statement. Endocrine Practice. 22 (2), 231-261.

Kaufman, F.R., Westfall, E. (2012). Insulin pumps and continuous glucose monitoring: A User's guide to effective diabetes management. American Diabetes Association. Alexandria, VA.

Rodbard, D. (2016). Continuous glucose monitoring: A review of successes, challenges, and opportunities. Diabetes Technology & Therapeutics. 18 (2), S2-3.

Schiener, G. (2015). Practical CGM: A Guide to Improving Outcomes through Continuous Glucose Monitoring. American Diabetes Association. Alexandria, VA.

Walsh, J., Roberts, R. (2013). Pumping Insulin (5th Edition). Torrey Pines Press. San Diego, CA.

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Polling Question

Continuous glucose monitors have become so accurate that patients do not ever have to question the results.

A) True

B) False

CGM Drawbacks/Barriers

- Expense
  - as of 2/2016, no coverage for elderly people with T1DM
- Calibration
- Accuracy
- Convenience
- Fingerstick prior to treatment
- Patient acceptance
- Clinical inertia
- Sensor lifetime
- User experience/knowledge

Rodbard, D. (2016). Continuous glucose monitoring: A review of successes, challenges, and opportunities. Diabetes Technology & Therapeutics. 18 (2), S2-3.

Thoughts from Consensus Committee

- “The truth is that I go through it every day in the office. Yes, it looks a bit intimidating, but because patients now demand better control and achieve better control, it is impossible to maintain an HbA1c below 7% without having CGM,” said Dr. Victor Roberts.

- “A series of studies that looked at CGM showed that the more patients wear them, the more likely they are to stay in control. The CGM is a video of what is going on, but a blood draw is just a picture. The patient gets a visual of the situation instead of a snapshot. Patients take well to it. The majority of the patients are not well-controlled and this is a powerful tool to get there and stay there,” he added.

Bailey, T.S., Grunberger, G., Bode, B.W., Handelsman, Y., Hirsch, I.B., Jovanovic, L., Roberts, V.L., Rodbard, D., Tamborlance, W.V. and Walsh, J. (2016). American Association of Clinical Endocrinologists and American College of Endocrinology 2016 Outpatient Glucose Monitoring Consensus Statement. Endocrine Practice. 22 (2), 231-261.

Thoughts from Consensus Committee

- The consensus statement states that many pediatric patients with type 1 diabetes may be candidates for CGM, especially if they and their family caregivers have the appropriate training. Although no strong evidence indicates that using CGM will allow a patient to live longer, it is likely they will have better quality of life.

- They feel better, they aren't victimized as much. They are in control and they are less likely to be depressed.

Bailey, T.S., Grunberger, G., Bode, B.W., Handelsman, Y., Hirsch, I.B., Jovanovic, L., Roberts, V.L., Rodbard, D., Tamborlance, W.V. and Walsh, J. (2016). American Association of Clinical Endocrinologists and American College of Endocrinology 2016 Outpatient Glucose Monitoring Consensus Statement. Endocrine Practice. 22 (2), 231-261.

Research

- Due to the increasing demand for technology and the rapid release of newer and better models, it is hard to have up-to-date research that matches the pace of today's technology
- Research on today's models will most likely not be released for 3-4 years
- The Consensus Statement recommends CGM for Type 1 Diabetes, both for adult and pediatric ages
  - Trials assess ng the use of CGM in type 2 patients are ongoing

Kaufman, F.R., Westfall, E. (2012). Insulin pumps and continuous glucose monitoring: A User's guide to effective diabetes management. American Diabetes Association. Alexandria, VA.

Rodbard, D. (2016). Continuous glucose monitoring: A review of successes, challenges, and opportunities. Diabetes Technology & Therapeutics. 18 (2), S2-3.

Schiener, G. (2015). Practical CGM: A Guide to Improving Outcomes through Continuous Glucose Monitoring. American Diabetes Association. Alexandria, VA.

Polling Question

How much effect can acetaminophen have on CGM results?

A) None really; this is just a safety disclaimer from the companies.

B) It depends on where the sensor has been inserted.

C) Can result in significantly false high glucose readings

Factors to Consider when Interpreting CGM Data

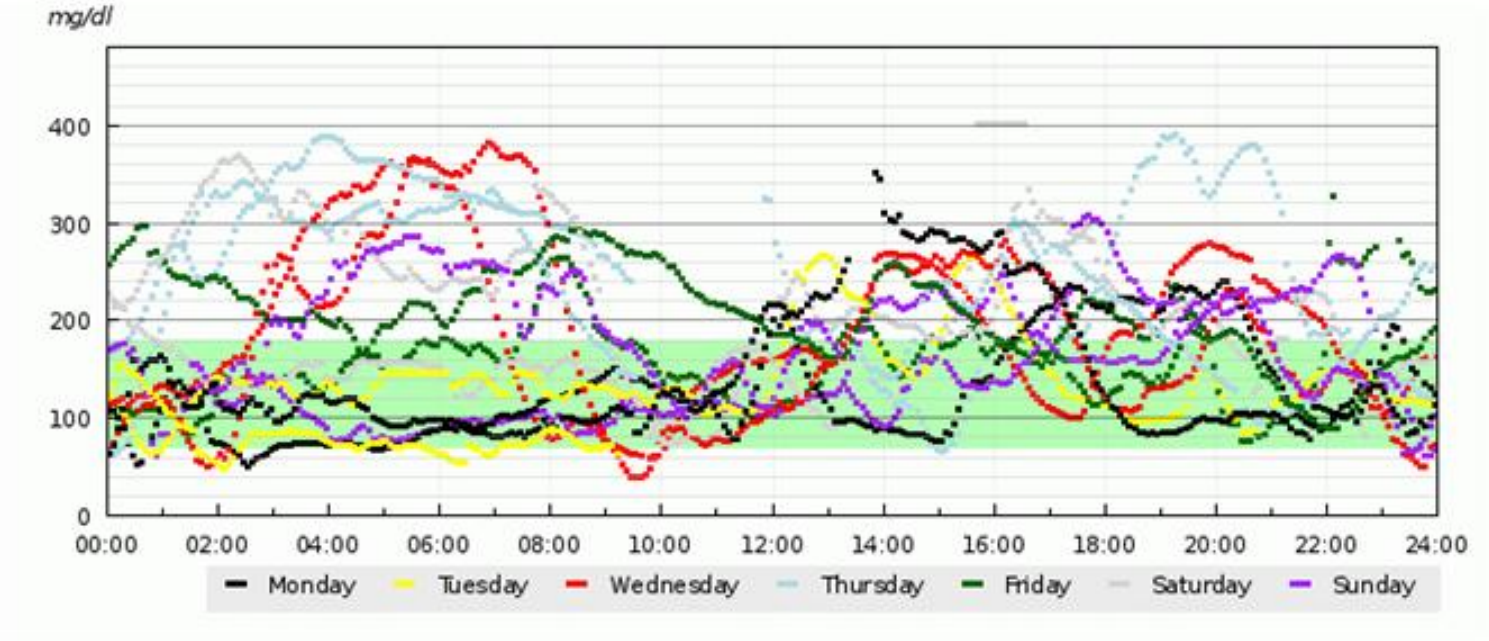
- Alcohol
- Stress
- Menses
- New meds
- Acetaminophen
- Change in physical activity/season
- Times are set correctly
- Type of meter used for calibration
- Growth spurts/puberty
- Sleep position

Basu, A., Veettil, S., Dyer, R., Peyser, T., and Basu, R. (2016). Direct evidence of acetaminophen interference with subcutaneous glucose sensing in humans: A pilot study. Diabetes Technology and Therapeutics. 18 (2), S2-43-47.

Bailey, T.S., Grunberger, G., Bode, B.W., Handelsman, Y., Hirsch, I.B., Jovanovic, L., Roberts, V.L., Rodbard, D., Tamborlance, W.V. and Walsh, J. (2016). American Association of Clinical Endocrinologists and American College of Endocrinology 2016 Outpatient Glucose Monitoring Consensus Statement. Endocrine Practice. 22 (2), 231-261.

Pattern Management

The “spaghetti report” (Standard Day)



Show active basal profile

Number of values:	**3631**	Values above goal (180 mg/dl):	**1557**	Highest value (mg/dl):	**401** (09/10/2016 16:32)
Values per day:	**259.4**	Values within goal (70-180 mg/dl):	**1966**	Lowest value (mg/dl):	**39** (09/14/2016 09:37)
Period average (mg/dl):	**178**	Values below goal (70 mg/dl):	**108**	Standard deviation:	**78**

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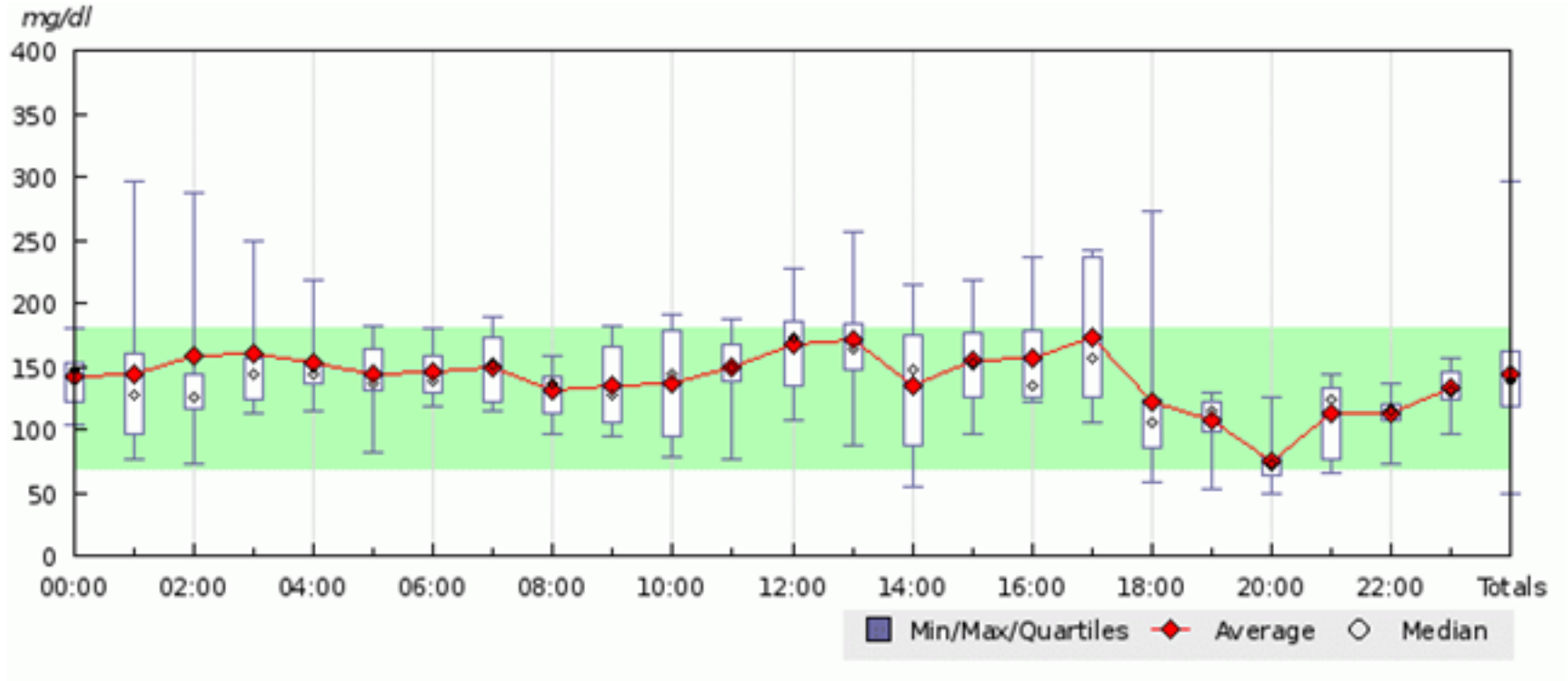

mg/dl
400
350
300
250
200
150
100
50
0
00:00
02:00
04:00
06:00
08:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Totals
Min/Max/Quartiles
Average
Median

Compilation

Glucose		CGM		Insulin		Carbs		Activity	
Average		Average		Average daily dose		Average carbs / day		Avg steps / day	Avg kcal / day
133 mg/dl		134 mg/dl		25.3 U		114 g		0 steps	0 kcal
SD = 42	# = 42	SD = 30	# = 1953	SD = 4	# days = 7	SD = 37	# = 20	0% of 10000 (target)	0% of 2500 (target)
Avg # / day = 6		Avg # / day = 279		Avg # bolus doses/day = 6.9		Avg # / day = 2.9			

Glucose (mg/dl)

Glucose values summary	
Average (mg/dl)	133
Median (mg/dl)	126
Highest value (mg/dl)	240
Lowest value (mg/dl)	70
Standard deviation (SD)	42
Values per day	6
Number of values	42
Values above goal (180 mg/dl)	8
Values within goal (70-180 mg/dl)	34
Values below goal (70 mg/dl)	0

Interval	*Avg BG*	*# BG*	*SD*
00:00-06:00	173	6	22
06:00-08:00	130	1	0
08:00-10:00	115	5	8
10:00-12:00	132	3	24
12:00-14:00	94	6	8
14:00-16:00	146	4	44
16:00-18:00	114	2	7
18:00-20:00	137	6	28
20:00-22:00	117	3	53
22:00-24:00	147	6	64

CGM (mg/dl)

CGM readings summary	
Average (mg/dl)	134
Median (mg/dl)	130
AUC high > 180 mg/dl	2
AUC low < 70 mg/dl	0
Highest value (mg/dl)	248
Lowest value (mg/dl)	63
Standard deviation (SD)	30
Values per day	279
Number of values	1953
Values above goal (180 mg/dl)	184
Values within goal (70-180 mg/dl)	1768
Values below goal (70 mg/dl)	1
Average daily CGM sensor duration	23:15 (97%)
Total CGM sensor duration	6 days 18:45

Interval	*Avg*	*#*	*SD*
00:00-06:00	151	509	30
06:00-08:00	126	169	13
08:00-10:00	125	162	13
10:00-12:00	131	149	20
12:00-14:00	117	162	25
14:00-16:00	129	171	33
16:00-18:00	127	156	20
18:00-20:00	125	167	26
20:00-22:00	131	173	33
22:00-24:00	146	173	46

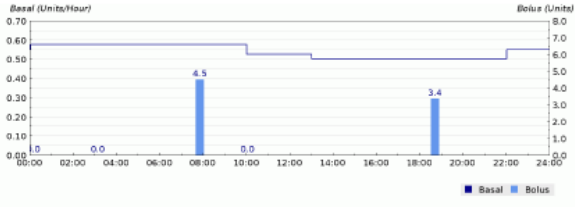
Insulin

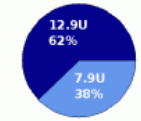
Insulin doses summary	
Average daily insulin (U)	25.3
Standard deviation (SD)	4.2
Average daily basal (U)	12.6
Average daily bolus (U)	12.7
Average bolus doses/day	6.9
Average days between cannula fills	3
Average days between primes	1

Carb summary	
Avg # carbs/day	114 g
Standard deviation (SD)	37

Bolus calculation summary	
Avg # ezBG Boluses/day	3.3 (48%)
Avg # ezCarb Boluses/day	2.9 (42%)
Avg # Combo Boluses/day	0 (0%)
Avg # Normal Boluses/day	0.7 (10%)
Bolus overrides/total boluses	6%
Avg # bolus overrides/day	0.4
Avg # bolus ezBG overrides/day	0.4
Avg # bolus ezCarb overrides/day	0
Avg # carbs/ezCarb Bolus	40 g
Avg # insulin units/ezCarb Bolus	3

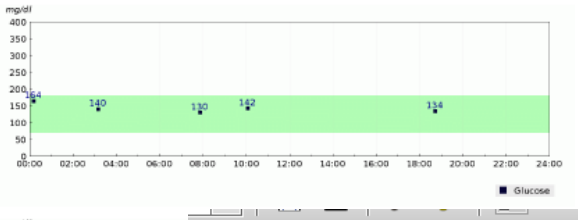
Wednesday 4/22





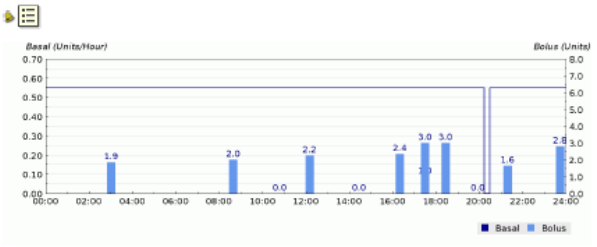
Basal	
Time	U/h
00:02	0.575
10:02	0.525
13:02	0.500
22:02	0.550

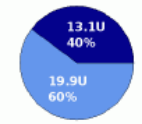
Bolus	
Time	U
00:10	0.00
Override (Suggested:	0.25)
(Corr:	1.10)
(IOB:	0.83)
03:09	0.00
07:52 (Meal:	4.50 4.50)
10:04 (IOB:	0.00 0.74)
18:43 (Meal:	3.35 3.33)



Carbohydrates

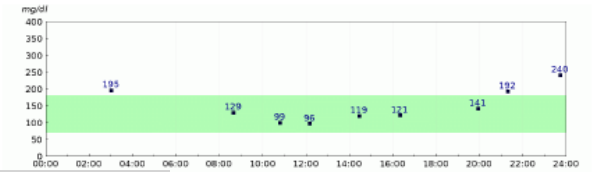
Sunday 4/19

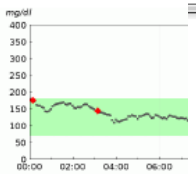




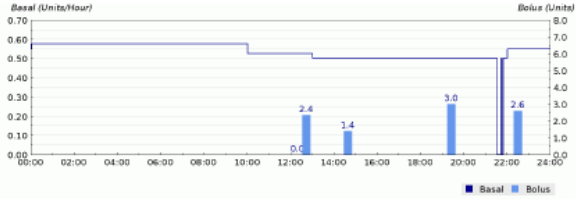
Basal	
Time	U/h
20:14	0.000
20:29	0.550

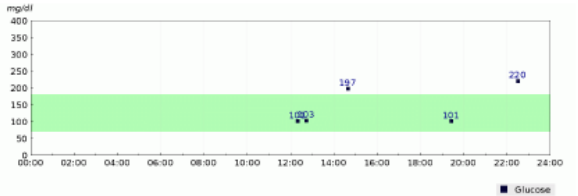
Bolus	
Time	U
03:01 (Corr:	1.85 1.87)
08:39 (Meal:	2.00 2.00)
10:48 (IOB:	0.00 0.35)
12:11 (Meal:	2.25 2.26)
14:27 (IOB:	0.00 0.32)
16:20 (Meal:	2.35 2.33)
17:30	1.00
17:30	3.00
18:27	3.00
19:56 (IOB:	0.00 1.67)
21:19 (Corr:	1.65 1.80) 0.17)
	2.80 3.00) 0.21)

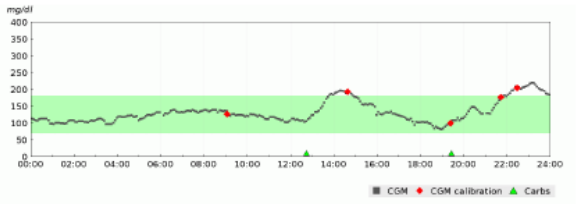




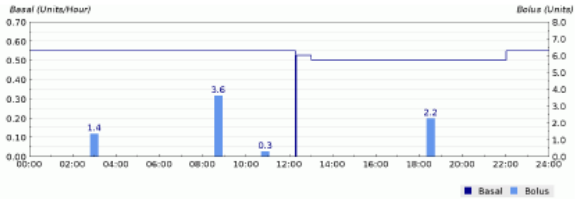
Tuesday 4/21

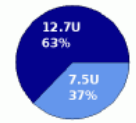






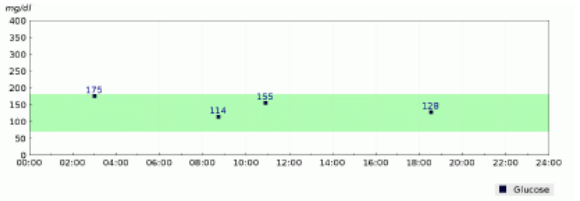
Monday 4/20



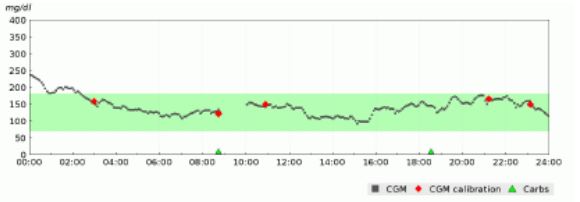


Basal	
Time	U/h
12:17	0.000
12:20	0.525
13:02	0.500
22:02	0.550

Bolus	
Time	U
03:00 (Corr:	1.35 1.37)
08:44 (Meal:	3.60 3.60)
10:54 (Corr: (IOB:	0.30 0.87 0.59)
18:33 (Meal:	2.25 2.26)



Carbohydrates	
Time	
08:44	36g
18:33	34g



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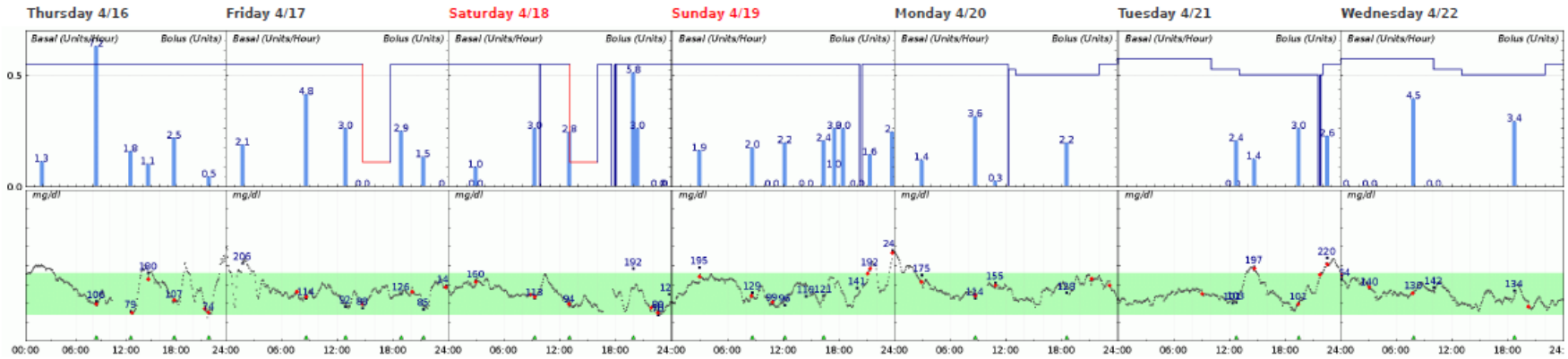
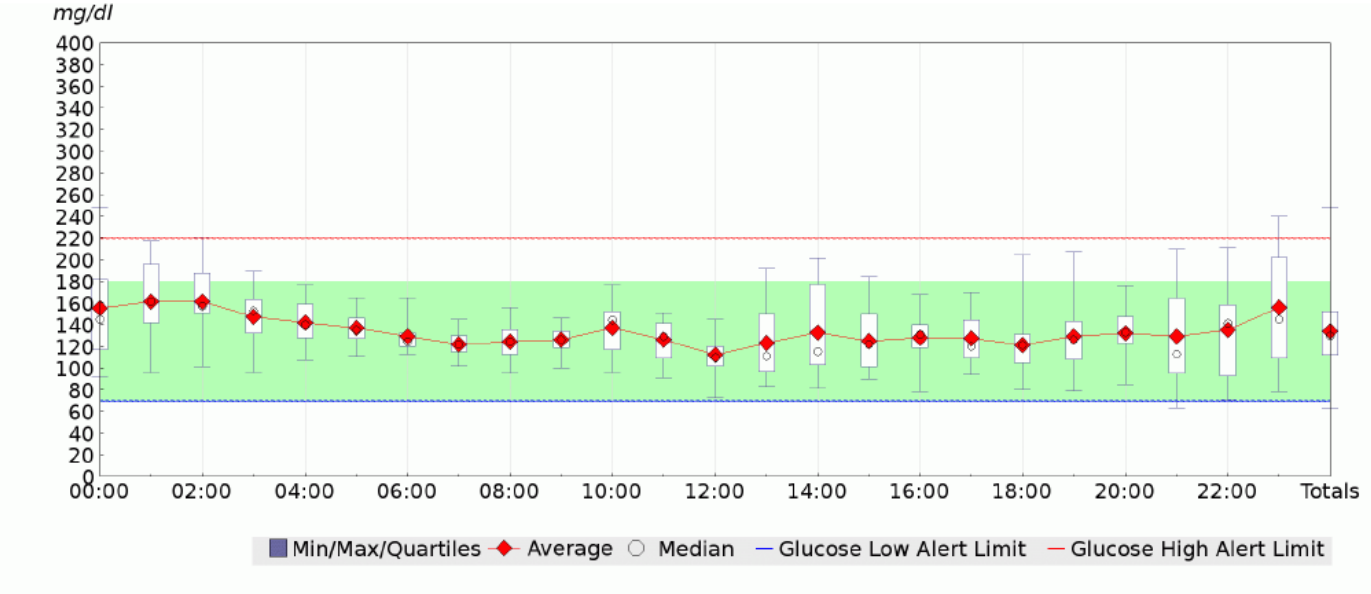
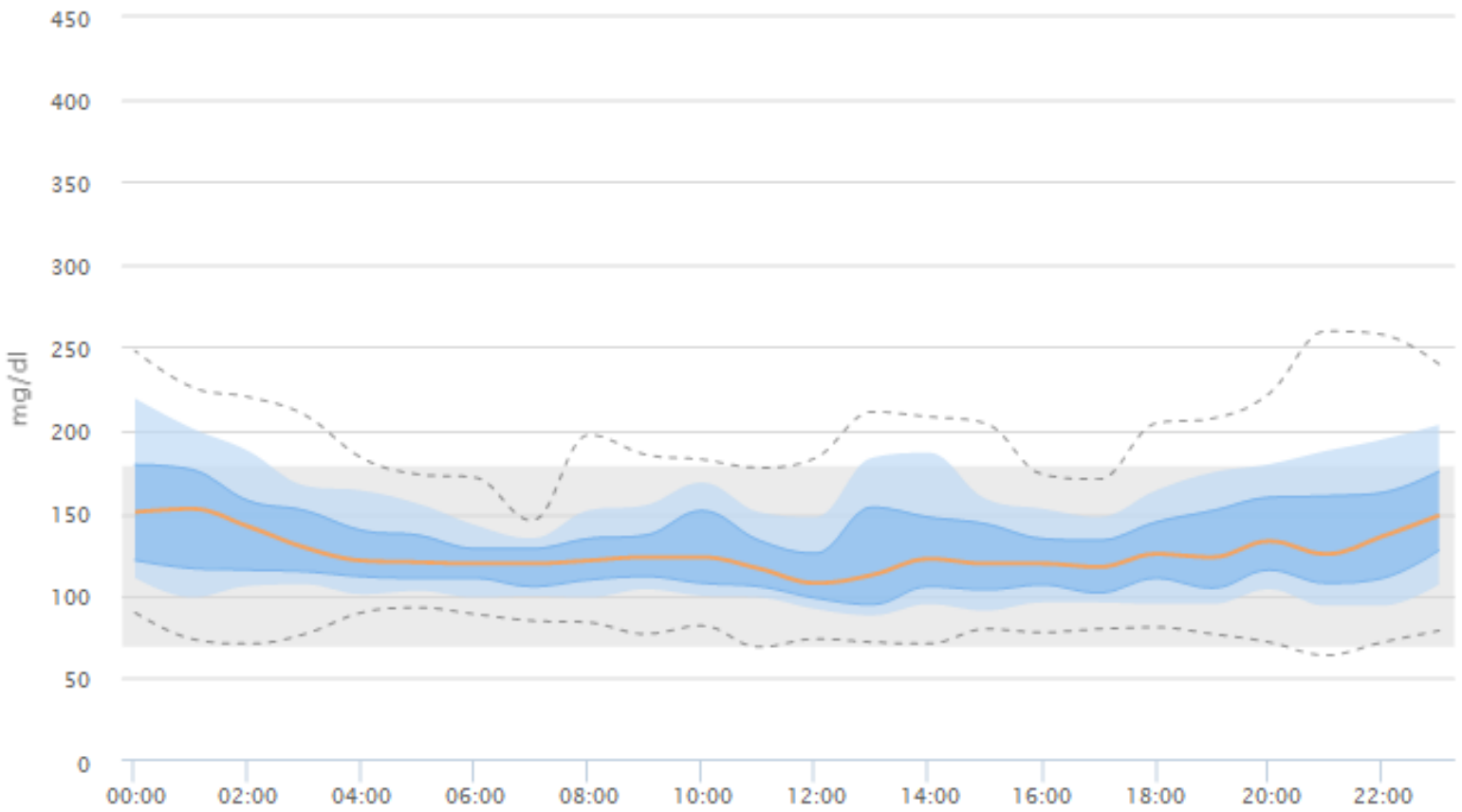
Comparison : Day by day overview





Statistics

Number of values:	1953	Values above goal (180 mg/dl):	184	Highest value (mg/dl):	248	(04/17/2015 00:03)
Values per day:	279	Values within goal (70-180 mg/dl):	1768	Lowest value (mg/dl):	63	(04/16/2015 21:43)
Period average (mg/dl):	134	Values below goal (70 mg/dl):	1	Standard deviation:	30	



Show active basal profile

Number of values:	**7618**	Values above goal (180 mg/dl):	**573**	Highest value (mg/dl):	**260** (05/11/2015 21:51)
Values per day:	**253.9**	Values within goal (70-180 mg/dl):	**7042**	Lowest value (mg/dl):	**63** (04/16/2015 21:43)
Period average (mg/dl):	**131**	Values below goal (70 mg/dl):	**3**	Standard deviation:	**30**

Pattern Management

After downloading CGM data assess for patterns in the following manner:

- **Step 1:** Assess overnight glucose patterns. Make changes based upon a pattern of values.
- **Step 2:** Assess glucose patterns for pre-prandial period. Make changes based upon a pattern of values for each individual mealtime.
- **Step 3:** Assess glucose patterns for post-prandial period. Make changes based upon a pattern of values for each individual mealtime.

Hypoglycemia Review

Time Period	Considerations	Possible Actions*
If seen in the overnight period (12am-6am)	• Is the basal too high? • Was there a change in activity within last 24 hours? • Was the site changed at bedtime? • Was a correction given before bed or during night?	• Adjust the basal rate • Recommend a temporary basal overnight when increased activity • Recommend routine site changes earlier in the day • Assess insulin sensitivity factor (ISF) and if a different ISF needed at this time

*Must be individualized to each patient.

Hypoglycemia Review

Time Period	Considerations	Possible Actions*
If seen in the pre-meal period (before snack/meal)	• Are carbs being counted correctly? • Was there a change in normal activity after last meal? • Assess the timing of the meal bolus • Assess the type/amount of previous bolus • Is the Insulin to Carb (IC) ratio too high? • Is the ISF too high? • Assess the timing/quantity/composition of previous meal • Is the Insulin On Board (IOB) set correctly?	• Provide a carb counting refresher • Reduce the amount of a bolus if activity will follow the meal • Adjust the timing of the meal bolus • May need to adjust the type of previous bolus • Adjust IC ratio • Adjust ISF • Evaluate if an extended or combo bolus may be more effective • Test for IOB duration

*Must be individualized to each patient.

Hyperglycemia Review

Time Period	Considerations	Possible Actions*
If seen in the overnight period (12am-6am)	• Are carbs being counted correctly? • Was there a bedtime snack without coverage? • Is the basal too low? • Was the site changed at bedtime? • How long since last site change? • Is there gastroparesis? • Is the auto-off feature enabled on the pump?	• Provide a carb counting refresher • Consider covering snack with a bolus • Adjust the basal rate • Recommend routine site changes earlier in the day, check 1-2 hours after any site change • Assess if changing sites frequently enough • Assess if last meal of day could be impacting BGs during this time period • Instruct the patient how to avoid an auto-off shutdown, evaluate time period set for shutdown

*Must be individualized to each patient.

Hyperglycemia Review

Time Period	Considerations	Possible Actions*
If seen in the pre-meal period (before snack/meal)	• Assess the timing of the previous bolus • Assess the type/amount of previous bolus • Assess the timing/quantity/composition of previous meal • Was there activity after last meal (counter-regulatory effect)? • Is there any dawn phenomenon (before breakfast)? • Is IC ratio too high? • Is the ISF too high?	• May need to adjust timing of previous bolus • May need to adjust the type of previous bolus • Evaluate if an extended or combo bolus may be more effective • Consider using a + temp basal during/after activity • Adjust basal rate • Adjust IC ratio • Adjust ISF

*Must be individualized to each patient.

Hyperglycemia Review

Time Period	Considerations	Possible Actions*
If seen in the post-meal period (3-hour period after meal)	• Are carbs being counted correctly? • Assess the timing of previous bolus • Assess the type/amount of previous bolus • Assess the timing, quantity, composition of previous meal • Was an extended or combo bolus used? • Was there any activity prior to meal (counter-regulatory effect)? • Is the IC ratio too low? • Is the ISF too low? • Is there any gastroparesis?	• Provide a carb counting refresher • Adjust timing of the previous bolus • May need to adjust the type of previous bolus • Evaluate if an extended or combo bolus may be more effective • Alter the type, percentage, or duration of bolus • Consider using a +temp basal during/after activity • Adjust IC ratio • Adjust ISF • Consider using a combo/extended bolus

*Must be individualized to each patient.

Polling Question

According to the *Variability of Insulin Requirements Over 12 Weeks of Closed-Loop Insulin Delivery in Adults with Type 1 Diabetes* study, what time of the day showed the most variability of total daily insulin requirements over a prolonged period in adults with type 1 diabetes?

A) Overnight requirements

B) Daytime requirements

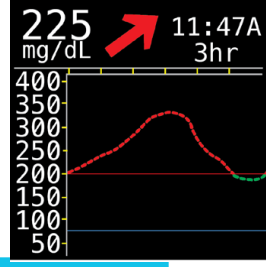
C) Total daily insulin requirements

Consideration for Therapy Adjustment Using Trend Arrows When Bolusing

When using trending arrows to help adjust the bolus dose, you should consider the following:

- Hypoglycemia
- Time of insulin in relation to food
- The greater the velocity of change indicated by the arrows, the earlier or more aggressive the action should be
- Insulin on board
- Direction of the trend
- Type of food consumed (simple vs. complex carb, high fat, high protein)
- Change in activity level and past response to activity
- Honeymoon stage

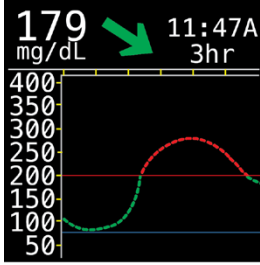
Trend Arrows and Insulin Adjustments



Glucose Trend	Possible Actions
Glucose rising (>3mg/dl/min)	• Take pre-meal bolus insulin and delay eating until the sugar is leveled out • Adjust correction dose by increasing recommended dose 20%
Glucose rising (2-3mg/dl/min)	• Take pre-meal bolus insulin and delay eating until the sugar is leveled out • Adjust correction dose by increasing recommended dose 10%
Glucose rising (1-2mg/dl/min)	• Take pre-meal bolus insulin and delay eating until the sugar is leveled out
Glucose rising/falling (<1mg/dl/min)	• Take bolus as recommended for carbs

*Must be individualized to each patient.

Trend Arrows and Therapy Adjustments

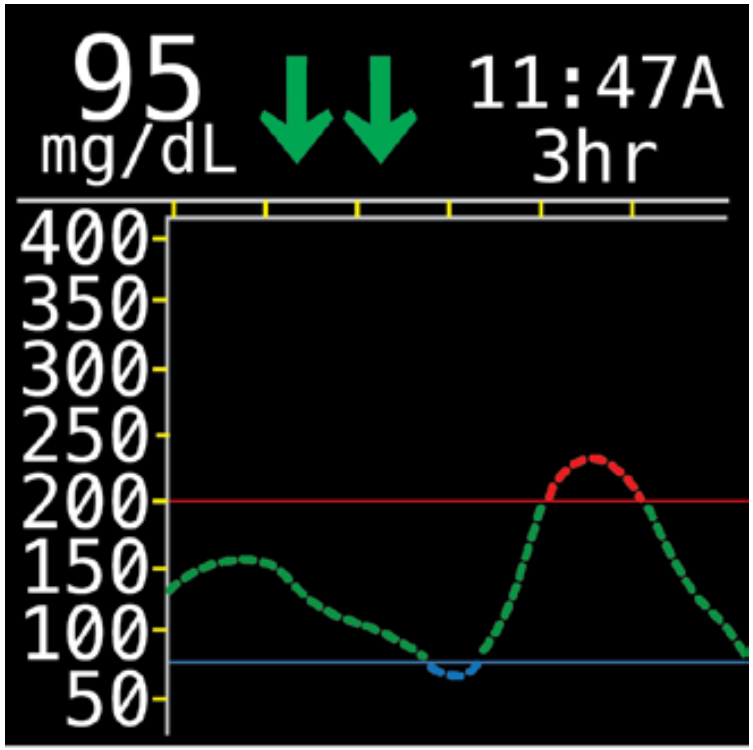


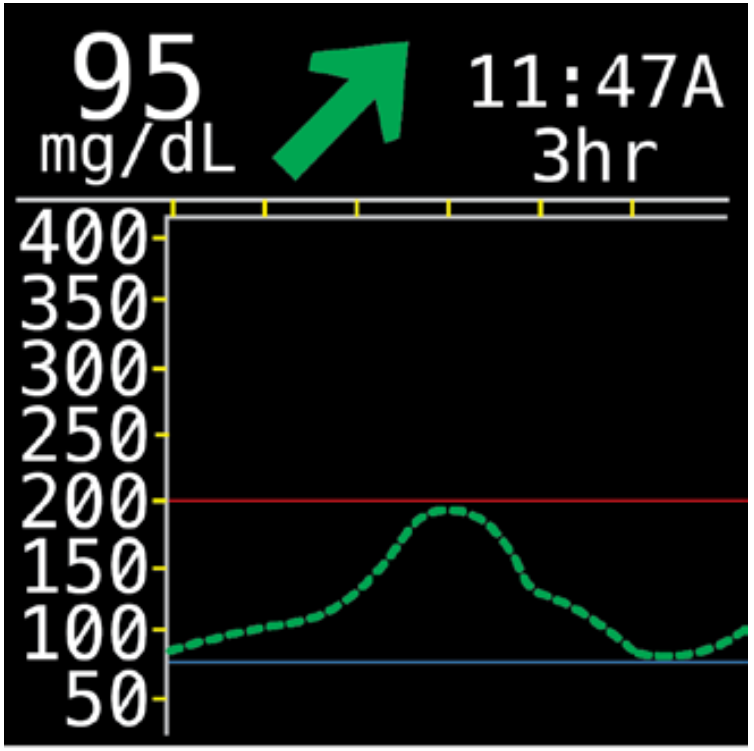
Glucose Trend	Possible Actions
Glucose falling (1-2mg/dl/min)	• If in lower end of target range, follow the rule of 15
Glucose falling (>2-3mg/dl/min)	• If in the lower end of target range, follow the rule of 15 • Adjust meal bolus by decreasing recommended dose 10% • Set a temporary basal if appropriate (activity)
Glucose falling (>3mg/dl/min)	• If in the lower end of target range, follow the rule of 15 • Adjust meal bolus by decreasing recommended dose 20% • Set a temporary basal if appropriate (activity)

*Must be individualized to each patient.

Study results

CGM users often rely on rate of change (ROC) information when determining insulin doses and tend to make larger changes than current recommendations suggest regardless of insulin delivery methods.





Pettus, J. and Edelman, S.V. (2016). Use of glucose rate of change arrows to adjust insulin therapy among individuals with type 1 diabetes who use continuous glucose monitoring. Diabetes Technology & Therapeutics. 18 (2), S2-34.

Conclusion

- “CGM offers the potential to revolutionize patient treatment by providing more frequent information that may allow a greater portion of patients to achieve target glucose and A1C levels with greater safety.”
- “CGM is only as beneficial as the patient’s desire and ability to use it.”

Bailey, T.S., Grunberger, G., Bode, B.W., Handelsman, Y., Hirsch, I.B., Jovanovic, L., Roberts, V.L., Rodbard, D., Tamborlance, W.V. and Walsh, J. (2016). American Association of Clinical Endocrinologists and American College of Endocrinology 2016 Outpatient Glucose Monitoring Consensus Statement. Endocrine Practice. 22 (2), 231-261.

References

- Bailey, T.S., Grunberger, G., Bode, B.W., Handelsman, Y., Hirsch, I.B., Jovanovic, L., Roberts, V.L., Rodbard, D., Tamborlance, W.V. and Walsh, J. (2016). American Association of Clinical Endocrinologists and American College of Endocrinology 2016 Outpatient Glucose Monitoring Consensus Statement. Endocrine Practice. 22 (2), 231-261.

- Basu, A., Veettil, S., Dyer, R., Peyser, T., and Basu, R. (2016). Direct evidence of acetaminophen interference with subcutaneous glucose sensing in humans: A pilot study. Diabetes Technology and Therapeutics. 18 (2), S2-43-47.

- Diabetes Research in Children Network (DirecNet) Study Group (2008). Use of the DirecNet Applied Treatment Algorithm (DATA) for diabetes management with a real-time continuous glucose monitor (the FreeStyle Navigator). Pediatric Diabetes 9, 142-147.

- Fabiato, K., Buse, J., Duclos, M. et al. (2009). Clinical experience with continuous glucose monitoring in adults. Diabetes Technology & Therapeutics. 11(1), s93-103.

- Hirsch, I.B. (2007). Algorithms for care in adults using continuous glucose monitoring. Journal of Diabetes and Technology, 1(1), 126-129.

- JDRF CGM Study Group (2008). JDRF Randomized clinical trial to assess the efficacy of real-time continuous glucose monitoring in the management of Type 1 Diabetes: Research Design and Methods. Diabetes Technology and Therapeutics 10 (4), 310-321.

- Kaufman, F.R., Westfall, E. (2012). Insulin pumps and continuous glucose monitoring: A User's guide to effective diabetes management. American Diabetes Association. Alexandria, VA.

- Ly, T., Keenan, D.B., Roy, A., Han, J., Grosman, B., Cantwell, M., Kurtz, N., von Eyben, R., Clinton, P., Wilson, D.M., and Buckingham, B.A. (2016). Automated overnight closed-loop control using a proportional-integral-derivative algorithm with insulin feedback in children and adolescents with type 1 diabetes at diabetes camp. *Diabetes Technology and Therapeutics.* 18 (6), 377-384.

- Nardacci, E.A., Bode, B.W. and Hirsch, I.B. (2010). Individualizing care for the many: The Evolving role of professional continuous glucose monitoring systems in clinical practice. *The Diabetes Educator.* 30, S4-S19.

References

- Pettus, J. and Edelman, S.V. (2016). Use of glucose rate of change arrows to adjust insulin therapy among individuals with type 1 diabetes who use continuous glucose monitoring. Diabetes Technology & Therapeutics. 18 (2), S2-34.

- Rodbard, D. (2016). Continuous glucose monitoring: A review of successes, challenges, and opportunities. Diabetes Technology & Therapeutics. 18 (2), S2-3.

- Ruan, Y., Leelarathna, L., Hartnell, S., Willinska, M.E., Dellweg, Sbenesch, C., Mader, J.K., Holzer, M., Kojzar, H., Evans, M.L., Piebar, T.R., Arnolds, S., and Hovorka, R. (2016). Variability of insulin requirements over 12 weeks of closed-loop insulin delivery in adults with type 1 diabetes. Diabetes Care publish ahead of print, 3.10.2016, 1-3.

- Scheiner, G. (2016). CGM retrospective data analysis. Diabetes Technology & Therapeutics. 18 (2), S2-14.

- Schiener, G. (2015). Practical CGM: A Guide to Improving Outcomes through Continuous Glucose Monitoring. American Diabetes Association. Alexandria, VA.

- Schwartz, S., Scheiner, G. (2012). The Role of continuous glucose monitoring in the management of Type 1 and Type 2 diabetes. Evidence Based Management of Diabetes. 1-16 .

- Theti T.K., Rao, A.J., Kawji, H. et al (2009) Consequences of delayed pump infusion line change in patients with type 1 diabetes mellitus treated with continuous subcutaneous insulin infusion. Journal of Diabetes and Its Complications. 24 (2), 73-78.

- Walsh, J., Roberts, R. (2013). Pumping Insulin (5th Edition). Torrey Pines Press. San Diego, CA.

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