

Diabetes Care

ADA 2006: Spotlight on Continuous Glucose Monitoring

- We attended the American Diabetes Association scientific sessions in Washington, DC this past weekend. Continuous glucose monitoring was a hot topic again this year, with multiple company-sponsored symposia and data from several studies presented. Highlights included the results of two studies using Abbott's FreeStyle Navigator and two more from Dexcom involving its recently approved STS device.
- **Navigator posted strong results in both a 5-day accuracy and home use study.** Sensor accuracy remained high across both studies, with no apparent safety concerns observed in either trial. In the 5-day study, sensor readings fell in the Clarke error grid A and B-zones 98.4% of the time, with mean ARD of 12.8% and median ARD of 9.3%. In addition, no degradation of sensor accuracy was observed over the 5-day period or between sensor placement sites on the arm or abdomen. These results held up well in the home use study, during which patients used the sensor for a total of 40 days in a real world setting. Readings in this more challenging environment fell in the Clarke A and B-zones 96.8% of the time, with a mean ARD of 14.4% and median ARD of 11.1%.
- **Patients using Navigator were able to both increase their time spent within their target glycemic range and decrease their time spent in both hypo and hyperglycemia.** Patients in the home use study increased the hours per day they spent between 81 and 140 mg/dL by 6%, while reducing the hours spent below 55 mg/dL by 47% and above 240 mg/dL by 19% when using Navigator versus fingerstick alone. Each of these results was a statistically significant change.
- **Patients rated the Navigator highly across virtually all performance categories.** The only major complaints observed in the home use study were the 10-hour initial calibration time required before the sensor becomes active and the calibration schedule, which requires four calibrations during the device's 5-day life. Although neither of these requirements is likely to change under the initial label, we believe Abbott will ultimately be able to improve upon both these areas with post-approval labeling changes. Importantly, these complaints did not affect the patient's desire to continue using the sensor after the completion of the study. We expect Navigator to gain FDA approval during 2H06.

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- **Dexcom (not covered) also reported data from trials evaluating the use of its STS device over both a 7-day period and as a complete replacement for self-monitoring.** The STS, which received FDA approval for 3-day use as an adjunct to fingerstick in March, showed continued effectiveness over the entire period in the 7-day study. On the Clarke grid, 97% of readings fell in the A and B-zones, with a mean ARD of 15.7% and median ARD of 11.4%. No degradation of sensor accuracy was observed over the 7-day period and the presenter commented that he had patients who had used the device for as long as 10 days without incident, both suggesting that the likelihood of a successful label change for extended use of the STS in the future is high. Dexcom intends to file a PMA supplement for the 7-day indication later this year.
- **Patients in the STS replacement study made appropriate insulin decisions more often using CGM alone than with SMBG alone (71% vs. 53%, $p=0.0052$).** Patients were also able to achieve increased time in their target blood glucose range and reduce hypoglycemic events only using data from the STS sensor. No adverse events were observed in the trial. While the small size of the study ($N=21$) makes drawing broad conclusions difficult, these results suggest that continuous glucose monitors can effectively replace fingerstick without endangering the patient. We continue to believe, however, that the FDA will keep the bar for approval under a replacement claim very high.
- **Continuous glucose monitoring appears to be gaining ground among clinicians, but much work remains to be done.** All of the sessions this weekend focusing on CGM were extremely well attended and the buzz around the results being seen in the field was palpable. As the pile of clinical evidence supporting their use grows, we expect CGM devices to continue to push their way into the mainstream of diabetes management. However, we believe serious obstacles remain for widespread patient adoption, including lack of reimbursement and current labeling for adjunctive use and sensor life, among others. Although the technology today appears good enough to make significant contributions to the way patients and physicians manage the disease, it will likely take resolution of these issues in order for CGM to reach its full potential.

FreeStyle Navigator 5-Day Study

On Friday, June 9, Abbott sponsored a symposium highlighting the results of two multi-center studies using its FreeStyle Navigator CGM system. The first of these, a 5-day inpatient accuracy study, involved 58 type-1 diabetics. Subjects wore two FreeStyle Navigator sensors simultaneously on both the abdomen and arm. Readings from both sensors were compared to venous sample measurements taken at 15 minute intervals for 50 of the 120 hours. The sensors were calibrated four times during the five-day period (at 10, 12, 24, and 72 hours) using the built-in FreeStyle meter.

Table 1: Navigator 5-Day Study Patient Demographics

Patients	N =	58
Age	Mean +/- SD	40.5 +/- 11.2
T1DM		58 (100%)
BMI	Mean +/- SD	28.0 +/- 4.6
Gender	Male	36 (62.1%)
Race	Caucasian	47 (81.0%)
Duration of DM	0 to 5	6 (10.3%)
	6 to 14	11 (19.0%)
	15 to 24	20 (34.5%)
	= 25	21 (36.2%)

Source: Abbott Laboratories

In total, 20,362 data points were measured. **Using the Clarke error grid, 81.7% of these points fell in the A-zone (clinically accurate), while 16.7% were in the B-zone (benign error).** Of the more serious error zones (C, D, and E), which accounted for just 1.6% of the total datapoints, 316 of the total 337 erroneous readings fell in the D-zone. Using the Parkes error grid, 85.5% and 13.6% of the points fell in the A-zone and B-zone, respectively, while just 0.9% fell in the C, D, and E-zones combined. Table 3 summarizes these results.

Table 2: Clarke Error Grid CGM Accuracy Methodology

Zone A	Clinically Accurate
Zone B	Benign Error
Zone C	Over-correction of Hypo or Hyperglycemia
Zone D	Potentially Dangerous Failure to Detect Hypo or Hyperglycemia
Zone E	Erroneous Treatment

Source: Clarke WL, Cox D, Gonder-Frederick LA, Carter W and Porter SL, "Evaluating the Clinical Accuracy of Systems for Self-Monitoring of Blood Glucose" Diabetes Care, 10, 622-628, (1987)

Table 3: Navigator 5-Day Study Accuracy Results

Zone	Clarke		Parkes	
	%	N = 20,362	%	N = 20,362
A	81.7	16,627	85.5	17,419
B	16.7	3,398	13.6	2,776
C	0.1	19	0.8	161
D	1.6	316	0.03	6
E	0.01	2	0.0	0

Source: Abbott Laboratories

Both the Navigator's projected and threshold alarms were utilized in the study. Patients were given glucose and insulin tests during the 5-day period to evaluate the ability of the sensor to alert the patients of impending hypo and hyperglycemic

episodes. The Navigator showed equal ability to detect glycemic departures at both ends of the spectrum. **However, the device failed to detect some events before they were confirmed by venous sampling, missing 18% of all hypo and 16% of all hyperglycemic episodes.** Ninety-one percent of the hypoglycemic alarms the sensor gave were confirmed, while 9% proved to be false alarms. Eighty-eight percent of the Navigator's hyperglycemic alarms were confirmed. It should be noted though, that patients in the study were subjected to glucose and insulin tests during the period, so they experienced greater variability in their glucose levels than would be expected under normal conditions.

Table 4: Navigator 5-Day Study Event Detection Results

	YSI < 70mg/dL N = 173	YSI > 240mg/dL N = 200
Detected with Projected Alarm Only	17%	3%
Detected with Threshold Alarm Only	27%	54%
Detected with Projected Alarm and Confirmed with Threshold Alarm	38%	27%
Total Detected	82%	84%
Failed to Detect	18%	16%
Navigator Alarm Confirmed by YSI	91%	88%
Navigator False Alarm	9%	12%

Source: Abbott Laboratories

Navigator showed solid accuracy results when compared to reference venous samples. **The mean absolute relative difference for all datapoints was 12.8% +/- 13.6, while the median ARD came in at just 9.3%.** For comparison's sake, Abbott's FreeStyle Flash blood glucose meter averages a median ARD of roughly 5.0%. When one considers the time lag inherent in glucose concentrations found in the interstitial fluid versus venous blood, this small difference between fingerstick and CGM is even more impressive. Table 5 summarizes all of the statistical accuracy results of the study.

Table 5: Navigator 5-Day Statistical Accuracy Results

	Level	Mean	SD	Median	N
Difference (mg/dL)	< 100	10.7	20.5	8.8	2,961
Absolute Difference (mg/dL)	< 100	17.2	15.4	13.0	2,961
Relative Difference (%)	> 100	1.0	15.0	-0.1	17,401
Absolute Relative Difference (%)	> 100	11.1	10.0	8.6	17,401
Difference (mg/dL)	All Results	0.8	26.8	1.6	20,362
Absolute Difference (mg/dL)	All Results	20.1	17.8	15.3	20,362
Relative Difference (%)	All Results	3.0	18.4	1.0	20,362
Absolute Relative Difference (%)	All Results	12.8	13.6	9.3	20,362

Source: Abbott Laboratories

The accuracy of the Navigator sensor proved to be equally robust across all of the different analyses performed in the study. There was no difference in the accuracy of sensor readings when the device was placed in the arm (81.5% A-zone) vs. the abdomen (81.8% A-zone). Readings were slightly more accurate when taken at night (87.2% A-zone) than they were during the day (82.1% A-zone), although much of this difference may be explained by the fact that the glucose and insulin tests were all administered during the day. In addition, when both the A and B-zone readings are combined, the sensor performance during the day (88.5%) was much closer to the

nighttime performance (89.2%). Finally, the sensor showed no degradation in accuracy over 5-day period, with 82.5% of all Day 1 readings falling in zone A vs. 80.9% in Day 5.

Table 6: Navigator 5-Day Study Performance Analysis

Zone	Abdomen	Arm	Day	Night
A	81.5%	81.8%	82.1%	87.2%
B	16.8%	16.6%	16.4%	12.0%
C	0.1%	0.1%	0.1%	0.0%
D	1.6%	1.5%	1.5%	0.6%
E	0.0%	0.0%	0.0%	0.1%

Source: Abbott Laboratories

Table 7: Navigator 5-Day Study Performance Analysis (continued)

Zone	Day 1	Day 2	Day 3	Day 4	Day 5
A	82.5%	82.4%	79.4%	84.0%	80.9%
B	16.4%	16.6%	18.3%	14.2%	16.9%
C	0.2%	0.1%	0.0%	0.0%	0.0%
D	0.9%	0.9%	2.2%	1.8%	2.1%
E	0.0%	0.1%	0.0%	0.0%	0.0%

Source: Abbott Laboratories

One area where differences in the accuracy of the sensor were observed was as a function of the rate of change in the glucose level of the patients. **Navigator performed best when the rate of change was between -1 and +1 mg/dL/min, while accuracy deteriorated as the rate of change accelerated in either direction.** During times when patients' glucose levels were changing in the -1 to +1 range, 84.9% of the readings fell in the A-zone and the median ARD was just 8.5%. Accuracy fell dramatically when the patients' glucose was either rising by greater than 2 mg/dL/min (63.5% A-zone, 16.9% median ARD) or falling by greater than 2 mg/dL/min (54.6% A-zone, 17.4% median ARD). Part of this change can be attributed to the time lag in interstitial glucose levels. Importantly, although A-zone accuracy decreased significantly during periods of rapid glucose level change, the difference was much less substantial when looking at both the A and B-zones combined. The sensor readings fell in these zones 98.4% of the time during the -1 to +1 period, compared to 96.9% and 98.2% of the < -2 and > +2 periods, respectively. In addition, patients remained in the -1 to +1 range the majority of the time, with nearly 75% of the readings occurring in this range during the study.

Table 8: Navigator 5-Day Study Accuracy as a Function of Glycemic Change

Rate of Change mg/dL/min	Paired Points %	Clarke Error Grid Region					MARD %
		A	B	C	D	E	
< -2	3.1	54.6	42.3	1.3	1.8	0.0	17.4
-2 to -1	8.8	71.7	26.2	0.3	1.8	0.0	11.8
-1 to +1	74.6	84.9	13.5	0.0	1.5	0.0	8.5
+1 to +2	10	79.8	18.9	0.0	1.3	0.0	11.0
> +2	3.5	63.5	34.7	0.0	1.7	0.0	16.9

Source: Abbott Laboratories

FreeStyle Navigator Home Use Study

Abbott also presented results from its home use study, designed to test Navigator's performance in a real world setting. This multi-center trial involved 137 patients, each using the sensor for a 40-day period. Patients were blinded to the device's readings for the first 20 days and then allowed to see the information during the final 20 days. Sensor's were worn on either the arm or abdomen and were calibrated and changed by the patients themselves after just 60 minutes of training at the beginning of the study. Patients were instructed to follow the 10, 12, 24, and 72 hour calibration schedule and sensor readings were compared to capillary fingersticks measured with the FreeStyle meter.

Table 9: Navigator Home Use Study Patient Demographics

Patients	N =	137
Age	Mean +/- SD	48.6 +/- 13.0
T1DM		100 (73%)
BMI	Mean +/- SD	28.7 +/- 5.8
Gender	Male	65 (47.4%)
Race	Caucasian	108 (78.8%)
Duration of DM	Mean +/- SD	22.0 +/- 11.9

Source: Abbott Laboratories

Patients were able to successfully insert the sensor 96.4% of the time, with only 43 of the 1,196 attempts unsuccessful. Once inserted, patients succeeded in calibrating the sensor 89.2% of the time. These results suggest that Navigator simple enough to be used effectively in the home setting. The device also showed fairly good durability, with an average sensor life of roughly 109 hours overall, or just over 4.5 days of a possible five. Patients wore the sensor for 108 hours or more 83.3% of the time.

Navigator's accuracy also remained robust in the home setting. Using the Clarke error grid, 77.2% of the datapoints fell in the A-zone, while 79.9% fell in this zone under the Parkes methodology. **More than 96% of the points fell in the A and B-zones combined using both methods.** The median absolute relative difference between the sensor readings and fingerstick was 11.1% overall. The consistency of these results to those seen in the 5-day study is remarkable considering the protracted length of use, the uncontrolled environment, and the limited training provided to the patients.

Table 10: Navigator Home Use Study Accuracy Results

Zone	Clarke		Parkes	
	%	N = 11,487	%	N = 11,487
A	77.2	8,863	79.9	9,180
B	19.6	2,255	19.1	2,194
C	0.01	1	0.9	109
D	3.2	365	0.03	4
E	0.03	3	0.0	0

Source: Abbott Laboratories

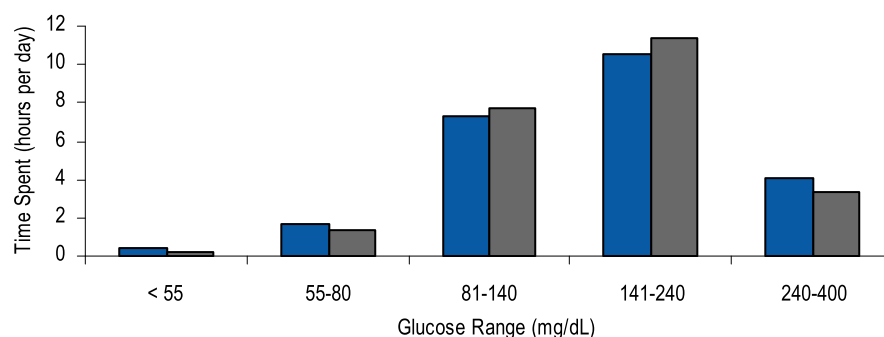
Table 11: Navigator Home Use Study Statistical Accuracy Results

	Glucose < 100mg/dL	Glucose > 100mg/dL	Glucose All Levels
Paired Points	2,463	9,024	11,487
Mean Absolute Difference (mg/dL)	14.7 +/- 12.8	24.7 +/- 24.4	22.6 +/- 22.8
Mean Relative Difference (%)	13.7 +/- 12.8	-3.6 +/- 16.1	0.1 +/- 19.7
Mean Absolute Relative Difference (%)	20.6 +/- 19.8	12.7 +/- 10.4	14.2 +/- 13.4
Median Absolute Relative Difference (%)	15.4	10.3	11.1

Source: Abbott Laboratories

Patients were able to consistently increase the amount of time spent in their target range, while reducing time spent in both hypo and hyperglycemia. This result was achieved despite the fact that patients were given no instruction on how to use the information provided by the sensor during the unmasked period. Overall, patients spent 1.29 more hours per day in the 81-240 range (a 7.2% increase). At the same time, they reduced the amount of time they spent above 240 mg/dL by nearly 20% and cut the amount of time spent in hypoglycemia (< 55 mg/dL) by almost 50%. Each of these results was statistically significant.

Figure 1: Time Spent in Hypo and Hyperglycemia: Masked vs. Unmasked



Glycemic Region	N	Masked Hours	Unmasked Hours	% Change	p-value
< 55	123	0.45	0.24	-47.0%	0.0001
55-80	123	1.66	1.35	-19.0%	< 0.0001
81-140	123	7.34	7.76	6.0%	0.0148
141-240	123	10.49	11.36	8.0%	< 0.0001
>240	123	4.06	3.29	-19.0%	0.0001

Source: Abbott Laboratories

There were slight differences in the ability of type-1 and type-2 patients to reduce their time spent outside of the target range. Type-1 patients had greater success cutting the amount of time they spent in hypoglycemic events (< 70 mg/dL), experiencing a 42% reduction, while type-2 patients saw greater results eliminating hyperglycemic excursions, reducing the amount of time spent above 180 mg/dL by 18%.

Table 12: Time Spent in Hypo and Hyperglycemia by Diabetes Type

Diabetes Type	Glucose Level	N	Masked (hrs)	Unmasked (hrs)	p-value
Type-1	< 70 mg/dL	94	1.42	0.83	< 0.0001
Type-1	> 180 mg/dL	94	9.47	9.38	0.71
Type-2	< 70 mg/dL	29	0.62	0.69	0.65
Type-2	> 180 mg/dL	29	9.62	7.93	0.0057

Source: Abbott Laboratories

Navigator's safety profile in the study was also extremely good. Thirteen patients reported a total of 15 adverse events during the study. However, 12 of these events were completely unrelated to the device or the patients' diabetes, including ear infections, flu-related symptoms, and respiratory illness. One patient did experience two cases of mild irritation at the insertion site, while the only serious adverse event in the study was a patient who had a hypoglycemic episode requiring assistance, after which she fully recovered. This patient did have a history of severe hypoglycemia and, importantly, device interrogation confirmed that an alarm did sound prior to the patient losing consciousness. The presenter explained that the patient was in the process of drying her hair at the time and thus apparently did not hear the alarm.

Patients were asked a series of questions related to the device's features and their satisfaction with its performance. On ease of application, 96.9% of patients agreed that the mount was easy to apply to the skin, although nearly 20% of them said the inserter was more painful than a fingerstick. Adhesive performance was strong also, with 91.6% of patients reporting that the adhesive was comfortable on the skin and could be removed with minimal pain. However, almost 20% of patients did complain of minor irritation. The receiver display scored high across the board, with patients reporting that the menus were easy to follow and that the device made it easy to understand their glucose level changes. For the system overall, 88.5% of patients agreed that it was easy to learn and 79.9% said it was easy to carry around with them. **The only major complaints were the 10 hour initial calibration time, which only 46.2% of patients said was acceptable, and the 10/12/24/72 hour calibration schedule, which was found to be acceptable by just 60% of all patients. Importantly, these complaints were not seen as significant enough to prevent patients from wanting to continue using the sensor after the studies completion.**

Dexcom STS Replacement Trial

Dexcom (not covered), reported results from two studies using its recently approved STS continuous glucose monitor. The first of these evaluated the feasibility of the STS as a replacement for fingerstick. The trial enrolled 21 type-1 diabetics at 2 centers. Patients went through three 24-hour phases. During Phase 1, patients were blinded to the STS readings and tracked their glucose levels by fingerstick alone using the LifeScan One-Touch Ultra meter. In Phase 2, the replacement phase, patients relied solely on the readings from the STS sensor and were blinded to the results of their fingersticks. Finally, during Phase 3, patients were allowed to see both sets of results.

Table 13: STS Replacement Study Patient Demographics

Patients	N =	21
Age	Mean	44.0
T1DM		100%
A1c	Mean	7.0%
Duration of DM	Mean	21.7

Source: Dexcom

The study produced 514 paired datapoints across the three phases. Overall, mean ARD for the STS compared to fingerstick was 19.5%, while median ARD was 14.8%. The investigators also looked at the treatment decisions made by the patients

based on the information provided to them by the STS device. During the replacement phase, patients made a total of 104 insulin dose decisions. Thirty-three of these were modified in some way by the attending staff, while 71 were allowed to be administered as the patients had calculated themselves. Importantly, most of the modifications were minor in nature and none of the patient decisions was in the wrong direction. Treatment decisions were then evaluated for appropriateness based on the patient's blood glucose three hours post administration. Decisions were deemed to be appropriate if the patient's glucose was between 80 and 240 mg/dL at that time. **The study found that 71% of the insulin decisions made relying only on the STS device were appropriate versus just 53% when using fingerstick alone, a statistically significant result ($p = 0.0052$).**

Similar to previous studies done using the STS, patients were able to increase the amount of time they spent within their target blood glucose range and decrease the amount of time they spent in hypoglycemia. The average amount of time spent between 80 and 200 mg/dL increased by 2.3 hours, while the amount of time spent below 55 mg/dL declined by 1.4 hours. Unlike previous studies, however, patients did not experience a reduction in time spent in hyperglycemia.

Table 14: STS Replacement Study: Time Spent in Hypo and Hyperglycemia (Phase 1 vs. 2)

Glycemic Region	Shift in Hours Spent
< 55	-1.4
55-79	-0.9
80-200	2.3
201-300	0.2
>300	0.0

Source: Dexcom

The STS device demonstrated its safety as a replacement for fingerstick as well. There were no adverse events reported in the study and no incidences of hypoglycemia requiring assistance. **While this study was done on just a small patient cohort (N=21), the results suggest that CGM sensors are feasible as complete replacements for self monitoring through fingersticks.**

Dexcom STS 7-Day Study

Dexcom also reported the results of its extended use study evaluating the STS over a 7-day period. The device is currently approved under a 3-day label. The trial enrolled 86 type-1 and type-2 patients at 5 US centers. The study was divided into three 7-day periods. During Phase 1, patients were blinded to the STS readings and relied on fingerstick alone. In Phases 2 and 3, the patients were allowed to see the STS sensor readings in addition to their own fingerstick results. Sensor readings were checked for accuracy against both SMBG and YSI.

Table 15: STS 7-Day Study Patient Demographics

Patients	N =	86
Gender	Male	38 (44.1%)
T1DM		69 (80.2%)
A1c	Mean	7.7%
Duration of DM	Mean	20.2

Source: Dexcom

The STS sensor proved to be accurate over the 7-day period. Mean ARD was 15.7% compared to SMBG and 16.6% compared to YSI, while median ARD was 11.4% and 13.3% compared to SMBG and YSI, respectively. On the Clarke error grid, 97% of all SMBG matched datapoints fell within either the A or B-zone. When compared to YSI, 98% of the points fell in these two zones. In addition, there were no signs of accuracy degradation over the 7-day period.

Table 16: STS 7-Day Study Accuracy Results

	vs. SMBG	vs. YSI
Mean ARD	15.7%	16.6%
Median ARD	11.4%	13.3%
A+B Zones	97%	98%

Source: Dexcom

Similar to the results of the 3-day pivotal study, the STS was able to increase the amount of time patients spent within their target glucose range, while reducing overall time spent in both hypo and hyperglycemia. Table 17 shows these results both for patients with A1c higher than 9% and below 7%. In the high A1c patients, the STS nearly doubled the amount of time spent in the target range, while reducing time spent in severe hypoglycemia (< 55 mg/dL) by 31.1%. This group did not experience a reduction in hyperglycemic episodes, however. In the more moderate A1c patients, use of the sensor readings reduced time spent below 55 mg/dL by a statistically significant 46.1%, while also cutting the time spent in severe hyperglycemia (> 240 mg/dL) by 14.2%. **Importantly, this is the first study to show that moderate A1c patients could increase the time they spent within the target range through the use of a continuous glucose monitor, while simultaneously reducing their hyperglycemic events.**

Table 17: STS 7-Day Study: Time Spent in Hypo and Hyperglycemia

Glucose Range (mg/dL)	Reduction in Time Spent			
	A1c > 9%	p-value	A1c < 7%	p-value
< 55	-31.1%	NS	-46.4%	< 0.05
55-80	27.4%	NS	-14.5%	NS
81-140	94.6%	< 0.05	8.8%	NS
141-240	0.8%	NS	-8.5%	NS
> 240	0.0%	NS	-14.2%	NS

Source: Dexcom

The safety profile of the STS during the 7-day period remained strong, with no major adverse events reported in the study. Overall, the results suggest that effective extended use of the device beyond the current 3-day label is possible. **Interestingly, the presenter commented that he has had some patients use the sensor for as long as 10 consecutive days**, meaning it may be possible for even longer use studies to be conducted in the future.

Abbott Valuation and Rating Analysis

Abbott shares trade at 17.3x and 15.6x our 2006E and 2007E EPS estimates (including stock-based expense), respectively, a slight premium to the major pharma universe but below the Medtech average. In our view, Abbott's products have a lower risk profile relative to the rest of the pharma group, most of Abbott's potential negative pipeline news should now be behind the company, and there is a strong likelihood of seeing earnings actually accelerate in the 2007-2008 timeframe. We are currently modeling earnings growth of 11% in 2007 and 15% in 2008, both of which could rise if Abbott's pipeline unfolds on schedule, particularly in drug eluting stents. As such, Abbott's 2007-08 growth profile should compare quite favorably to its pharma peers and quite possibly to comparable medical product companies, and we therefore assign Abbott shares our Overweight rating.

Risks to Our Abbott Rating

Risks to our Overweight thesis on Abbott include: (1) generic competition for key pharmaceutical products; (2) lower than anticipated near-term margin expansion; and (3) pipeline disappointments, in particular in drug-eluting stents.

Companies Recommended in This Report (prices as of COB 08 June 2006)

Abbott Laboratories (ABT/\$43.17/Overweight), Medtronic (MDT/\$51.33/Neutral)

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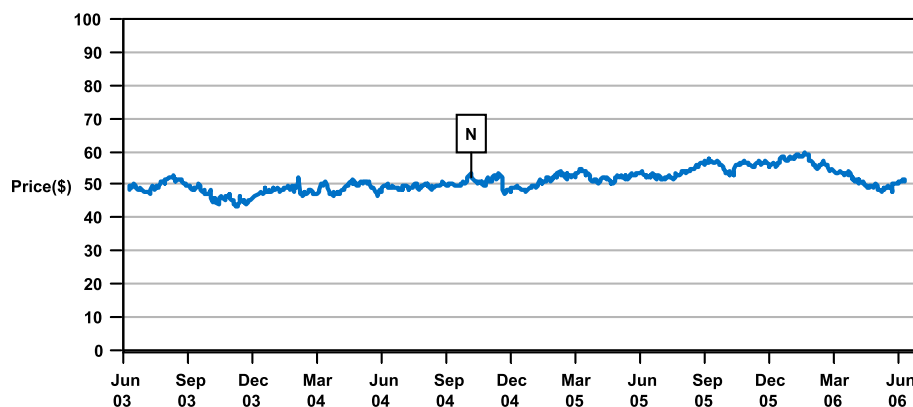
Date	Rating	Share Price (\$)	Price Target (\$)
12-Apr-04	UW	41.20	-
29-Mar-05	N	45.18	-
09-Jan-06	OW	42.41	-

Source: Reuters and JPMorgan; price data adjusted for stock splits and dividends.

This chart shows JPMorgan's continuing coverage of this stock; the current analyst may or may not have covered it over the entire period. As of Aug. 30, 2002, the firm discontinued price targets in all markets where they were used. They were reinstated at JPMSI as of May 19th, 2003, for Focus List (FL) and selected Latin stocks. For non-JPMSI covered stocks, price targets are required for regional FL stocks and may be set for other stocks at analysts' discretion.

JPMorgan ratings: OW = Overweight, N = Neutral, UW = Underweight.

Medtronic (MDT) Price Chart



Date	Rating	Share Price (\$)	Price Target (\$)
06-Oct-04	N	52.10	-

Source: Reuters and JPMorgan; price data adjusted for stock splits and dividends.

This chart shows JPMorgan's continuing coverage of this stock; the current analyst may or may not have covered it over the entire period. As of Aug. 30, 2002, the firm discontinued price targets in all markets where they were used. They were reinstated at JPMSI as of May 19th, 2003, for Focus List (FL) and selected Latin stocks. For non-JPMSI covered stocks, price targets are required for regional FL stocks and may be set for other stocks at analysts' discretion. JPMorgan ratings: OW = Overweight, N = Neutral, UW = Underweight.

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JPMorgan Equity Research Ratings Distribution, as of April 3, 2006

	Overweight (buy)	Neutral (hold)	Underweight (sell)
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*Percentage of investment banking clients in each rating category.

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