

## Bedside glucose testing systems

### POC glucose instruments

**Raymond Aller, MD**

See pages 26–34 for CAP TODAY's annual lineup of bedside glucose testing systems. Nine vendors market 14 systems for professional (and, in a few cases, home) use.

The data displayed—on everything from list price and loaners to linear range and lock-out—were supplied by the vendors in answer to CAP TODAY questions. We urge you to confirm that the device your hospital may be considering has the stated features and capabilities.

New to the lineup this year is MiniMed's system, which was launched one year ago. With this device, a patient's glucose values are recorded continuously, typically over two to three days. Also in the lineup of instruments for the first time is Roche Diagnostics' Accu-Chek Inform, which the Food and Drug Administration has not yet cleared.

*Dr. Aller is vice president for medical affairs and informatics at MDS Laboratory Services (U.S.). He is based in California and Nashville, Tenn., and can be reached at raller@mdslabsus.com.*

<i>Part 1 of 7</i>		
	Abbott Diagnostics Medisense Products Jim Gibbons (jim.gibbons@abbott.com) 4A Crosby Dr., Bedford, MA 01730 781-276-7774 abbottlaboratories.com	Agilent Technologies 3000 Minuteman Rd. Andover, MA 01810 978-659-7396 agilent.com/healthcare/pocd (manufactured by Diametrics Medical Inc.)
Name of instrument/first year sold	Precision PCx/1998	IRMA SL with SureStep Pro Blood Glucose Module/1998
Professional or home use	Professional & home use	Professional use
Units sold in U.S./outside U.S.	15,000+	15,000+
Part of series of similar/related models	—	No
Dimensions (H x W x D)/weight	7.7 x 3 x 2 in./10 oz. (including batteries)	5 x 9.5 x 13.5 in. (IRMA with SureStep Pro)/6 lbs. (IRMA SL with SureStep Pro Blood Glucose Module)
Analytical method/technology/enzyme system used	Glucose oxidase, 3 electrode biosensor technology	Glucose only: reflectance photometry, glucose oxidase
List price	\$995	\$1,116
Price per disposable reagent system unit	\$70.50 per box 100 test strips	Consult RNA Medical
No. of dispos. reagent system units per basic package	100 per box	50 strips
No. of times analyses performed using 1 reagent system unit	1	1
Dispos. units shelf life/reagent unit storage requirements	18 mo. (room temp.)/no (room temp.)	Strip: 24 mo./room temp.
Digital readout size/keypad input capability	Font size 24 pt./menu selection, numeric	4.5 x 2.5 in./menu selection, numeric, alphabetic
How results are displayed	True values	True values
Specimen types/sampling techniques	Whole blood/drop, wipe, capillary transfer	Whole blood/drop, capillary transfer
Suitable for samples from well/sick neonates	Yes/yes	Yes/yes
Time from sample intro. to result availability	20 sec.	<45 sec.
Batteries used/number used/avg. life of 1 set	AA or rechargeable batt. pk./2 AA, 1 pk/~30 days (based on 30 tests/day)	NiMH/1/3.2 h per battery
Avg. expected life of device/mean time between failures	—	>5 yrs./<3% warranty return rate
Device warranty/service options	24-h replacement upon failure	24-h replacement upon failure
Loaners provided	24-h replacement upon failure	24-h replacement upon failure
User list or user group	Yes	Yes
Toll-free No. for customer questions	24 h, 7 d	24 h, 7 d
Training and certif. program/No. training days provided	Yes/depends on No. of operators	Yes/depends on No. of operators
Avg. time for lab to complete maintenance	None	Clean glucose module as needed, 15 min.
Special cleansing procedures	No	No
Internal QC recommended or required	None	Hospital-specific procedures
Between instrument CV (based on PT) at these levels:		
• <50 mg/dL	12.2	4.39%
• 100–200 mg/dL	8.3	3.44%
• >400 mg/dL	—	4.97%
• Program name, year/challenge No./level of mean glucose challenge sample	CAP, WBG A/A/42,226	CAP
Accuracy/compared to what reference method or device	Capillary sample vs. plasma—slope 0.922, 0.984, intercept 11.1 mg/dL/YSI	r >0.98/YSI
Precision/compared to what reference method or device	CV 2.1–5.6% across a range of samples (40–478 mg/dL)/within run precision	3.44–4.97 CV across runs/YSI
Linear range	20–600 mg/dL	0–500 mg/dL
Suggested dynamic/measurement range	20–600 mg/dL	0–500 mg/dL
Contraindications	Severely dehydrated or severely hypotensive patients, patients in shock or in hyperglycemic state	No
Known interferences/high altitude interference	None/no	Sodium fluoride/no
Restrictions based on hematocrit	Yes. 20–70% Hct range	Yes. <25% high results, >60% low results
Electronic, optical function checks	Battery, bar-code scanner, database, and temperature check performed during power up of meter	Optical self-zeroing. Has LED to detect errors & internal check strip that is part of strip holder, automatically done with every test
Sample quantity checks	Test will not start until sufficient sample detected	Uses LED to determine sufficient quantity
When auto lock or shutdown occurs	User ID failure, QC failure, when meter is not docked in a specified amount of time	User ID failure, QC failure, lockout if reagent expired or if control lot & reagent not entered
User defines QC lockout intervals/lockout can be circumvented	Yes/no	Yes/no
What device supports bar-code scanning of	Operator & patient identifiers, reagent lot No., both control vials and strips (individually wrapped and bar-coded)	Bar-code scanner available
Method of analyst ID/ID required	Bar-code scan or keypad entry/yes	Touchscreen/optional or required, QA user setup
Internal memory size/max. No. patient results stored	4,000 patient results, 1,000 QC results, 4,000 operators/4,000	4 Mb RAM, 4 Mb ROM, 256 KB nonvolatile/200 patient results
What meters connect to	Data management system, which in turn connects to LIS/HIS	Data management system, which in turn connects to LIS/HIS; also directly to LIS/HIS
How meters are connected to external system to upload results/No. of installations	Direct serial/50+; modem dial-in/100+; hospital network/800	Direct serial/—, modem dial-in/—, Ethernet/—
Info. contained in transmission to external system	Device unique identifier, operator ID, patient ID, result, QC identifier	Device unique identifier, operator & patient ID, result, QC identifier, result date & time, strip/material lot, up to 3 alphanumeric notes, result flags, reference range/QC limits, software revision, sample type
Hardware/software for data management system	Precision Net System	Non-dedicated IBM compatible PC with Pentium processor/Windows 95 & IDMS
No. of different mgmt. reports system can produce	25 standard reports with custom options	6
Contents downloaded from DMS to meter	Strip lot Nos., valid control values, valid operator IDs, patient IDs, result, time, date, physicians	Strip lot Nos., valid control values, valid operator IDs
System connected (live installations) to which LISs/HISs:		
• using screen animation/screen scraping	Major vendors	Major vendors
• using standard HL7 interface	Major vendors	Major vendors
• using proprietary protocol interface	None	None
Use 3rd-party interfacing tool/engine for LIS/HIS interfaces	Yes (Neon Tools)	Yes. Product used depends on host system emulation requirements
Distinguishing features	<ul style="list-style-type: none"> <li>• Direct bi-directional interface using HL7 protocol</li> <li>• Automated downloading</li> <li>• Automated sample detection before test starts</li> </ul>	<ul style="list-style-type: none"> <li>• Integrated workstation with IRMA (blood gas, electrolytes, Hct)</li> <li>• 1 user interface, 1 in-service program, 1 data management system</li> </ul>

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Survey editor: Raymond Aller, MD

## Bedside glucose testing systems

<b>Part 2 of 7</b>	<b>Bayer Diagnostics</b> Sales and Marketing Support P.O. Box 2001, Mishawaka, IN 46544 800-445-5901 www.bayerdiag.com	<b>GDS Technology Inc.</b> 25235 Leer Dr., Elkhart, IN 46514 800-545-4437 www.statsite.com
<b>Name of instrument/first year sold</b>	<b>Glucometer Encore QA+ Professional System Model 5856/1998</b>	<b>Stat-Site/1991</b>
<b>Professional or home use</b>	<b>Professional use</b>	<b>Professional use</b>
<b>Units sold in U.S./outside U.S.</b>	<b>700/100</b>	<b>—</b>
<b>Part of series of similar/related models</b>	<b>Yes</b>	<b>Yes</b>
<b>Dimensions (H x W x D)/weight</b>	<b>4<sup>11</sup>/<sub>16</sub> x 12<sup>7</sup>/<sub>16</sub> x 12<sup>9</sup>/<sub>16</sub> in./5 lbs. (including batteries)</b>	<b>7 x 4.75 x 1.75 in./16 oz.</b>
<b>Analytical method/technology/enzyme system used</b>	<b>Hexokinase</b>	<b>Reflectance photometry, glucose oxidase and peroxidase</b>
<b>List price</b>	<b>\$850</b>	<b>\$990</b>
<b>Price per disposable reagent system unit</b>	<b>\$0.79 per strip</b>	<b>\$1 per test</b>
<b>No. of dispos. reagents system units per basic package</b>	<b>50 strips</b>	<b>100</b>
<b>No. of times analyses performed using 1 reag. system unit</b>	<b>Once per strip</b>	<b>1</b>
<b>Dispos. units shelf life/reag. unit storage requirements</b>	<b>18 mo./59–86° F (do not freeze)</b>	<b>18 mo./2–4°C (30 d at room temp.)</b>
<b>Digital readout size/keypad input capability</b>	<b>4 mm/menu selection, numeric, alphabetic</b>	<b>2<sup>5</sup>/<sub>16</sub> x 5<sup>5</sup>/<sub>8</sub> in./menu selection</b>
<b>How results are displayed</b>	<b>True values</b>	<b>True values</b>
<b>Specimen types/sampling techniques</b>	<b>Whole blood/drop</b>	<b>Whole blood/1st drop</b>
<b>Suitable for samples from well/sick neonates</b>	<b>Yes/yes</b>	<b>No/no</b>
<b>Time from sample intro. to result availability</b>	<b>15–60 sec.</b>	<b>2 min.</b>
<b>Batteries used/number used/avg. life of 1 set</b>	<b>C 1.5 v alk./6/5,100 cycles</b>	<b>9 v alk./2/4 h</b>
<b>Avg. expected life of device/mean time between failures</b>	<b>20,000 tests/6.7 yrs.</b>	<b>&lt;1% failure rate/6 yrs.</b>
<b>Device warranty/service options</b>	<b>Replace or repair at no additional cost for 2 yrs./lifetime replace-repair program, 24-h turnaround; spares kept on-site</b>	<b>1 yr. parts, labor/1 yr. extension \$250</b>
<b>Loaners provided</b>	<b>Yes</b>	<b>Yes</b>
<b>User list or user group</b>	<b>Yes (available upon request)</b>	<b>Yes (call home office)</b>
<b>Toll-free No. for customer questions</b>	<b>24 h, 7d</b>	<b>8 AM–5 PM EST</b>
<b>Training and certif. program/No. training days provided</b>	<b>Yes/depends on number of staff to be trained</b>	<b>Yes/1 d on site</b>
<b>Avg. time for lab to complete maintenance</b>	<b>Daily: 5 min., weekly: 5 min., monthly: 10 min.</b>	<b>n/a (sealed system)</b>
<b>Special cleansing procedures</b>	<b>No</b>	<b>No</b>
<b>Internal QC recommended or required</b>	<b>One or more control tests daily before patient testing begins and again if problems suspected with system</b>	<b>Controls—check cards</b>
<b>Between instrument CV (based on PT) at these levels:</b>		
• <50 mg/dL	9.1%	Not available
• 100–200 mg/dL	7.4%	Not available
• >400 mg/dL	7.0%	Not available
• Program name, year/challenge No./level of mean glucose challenge sample	Whole Blood Glucose Multiple Site—Series 1, 1998/WBG-C & B/52.2 mg/dL, 108.9 mg/dL, 333.4 mg/dL	n/a
<b>Accuracy/compared to what reference method or device</b>	<b>y=0.96 x -4.1/Dupont Dimension AR analyzer (hexokinase chem. method)</b>	<b>1.008/YSI 2300 Stat Plus</b>
<b>Precision/compared to what reference method or device</b>	<b>Within run CV 6.5% (34 mg/dL), 4.3% (97 mg/dL), 4.0% (474 mg/dL)/n/a—aqueous controls</b>	<b>Mean: 99, SD: 5.3, CV: 5.3; mean: 222, SD: 6.8, CV: 3.1; mean: 350, SD: 1.7, CV: 3.9/Whole Blood YSI 2300 Stat Plus</b>
<b>Linear range</b>	<b>10–600 mg/dL</b>	<b>50–500 mg/dL</b>
<b>Suggested dynamic/measurement range</b>	<b>10–600 mg/dL</b>	<b>50–500 mg/dL</b>
<b>Contraindications</b>	<b>Capillary blood glucose testing may not be clinically appropriate when peripheral blood flow is decreased</b>	<b>No</b>
<b>Known interferences/high altitude interference</b>	<b>None/no (fluoride and iodoacetic acid collection tubes not recommended)</b>	<b>Evaluated ascorbic acid levels/no</b>
<b>Restrictions based on hematocrit</b>	<b>Yes. Blood Hct 20–70% do not significantly affect results at glucose levels ≤120 mg/dL. Combination of high glucose (300 mg/dL) and high Hct (60%) can lower results by as much as 10%</b>	<b>No</b>
<b>Electronic, optical function checks</b>	<b>Series of checks run to ensure integrity of electronics, memory, batteries, optical systems</b>	<b>Check card 1 &amp; 2, reflectance values, calib. module (lot specific)</b>
<b>Sample quantity checks</b>	<b>Checks for insufficient sample by using second wavelength</b>	<b>Hanging drop approximately 25 µL; “insufficient sample” will appear if significantly &lt;25 µL</b>
<b>When auto lock or shutdown occurs</b>	<b>User ID failure, operator-meter lockout, insufficient sample</b>	<b>QC failure</b>
<b>User defines QC lockout intervals/lockout can be circumvented</b>	<b>Yes/no</b>	<b>No/n/a</b>
<b>What device supports bar-code scanning of</b>	<b>Operator &amp; patient identifiers, reagent lot No. &amp; exp., control lot No., exp., &amp; ranges</b>	<b>Reagent lot No., exp., test</b>
<b>Method of analyst ID/ID required</b>	<b>Bar-code scanner or alphanumeric keyboard/yes</b>	<b>Manual/no</b>
<b>Internal memory size/max. No. patient results stored</b>	<b>4,800 patient &amp; control results/4,800 results</b>	<b>1 KB/1 last result</b>
<b>What meters connect to</b>	<b>Data management system, which in turn connects to LIS/HIS</b>	<b>Data management system, which cannot further transmit data</b>
<b>How meters are connected to external system to upload results/No. of installations</b>	<b>Modem dial-in/7</b>	<b>Direct serial/—</b>
<b>Info. contained in transmission to external system</b>	<b>Device unique identifier, operator &amp; patient ID, result, QC identifier, reagent lot info., linearity results, comment codes</b>	<b>Device unique identifier, operator &amp; patient ID, result, QC identifier, date, time, test</b>
<b>Hardware/software for data management system</b>	<b>Windows 95/NT 4.0, 486/66 MHz, 16/24 Mb RAM</b>	<b>n/a</b>
<b>No. of different mgmt. reports system can produce</b>	<b>14</b>	<b>n/a</b>
<b>Contents downloaded from DMS to meter</b>	<b>None</b>	<b>n/a</b>
<b>System connected (live installations) to which LISs/HISs:</b>		
• using screen animation/screen scraping	Dynamic, Cerner, SCC, Sunquest	n/a
• using standard HL7 interface	None	n/a
• using proprietary protocol interface	None	n/a
<b>Use 3rd-party interfacing tool/engine for LIS/HIS interfaces</b>	<b>Yes (Data Innovations/Instrument Manager)</b>	<b>n/a</b>
<b>Distinguishing features</b>	<ul style="list-style-type: none"> <li>• Off-meter inoculation—easier application, lessens infectious disease issues because only disposable strip enters patient room</li> <li>• Hexokinase reagent chem.—standard method in labs</li> <li>• Individually foil-wrapped strips—less waste</li> <li>• Capillary, venous, arterial, and neonatal samples can be used</li> </ul>	<ul style="list-style-type: none"> <li>• Multiple tests from one meter</li> <li>• True plasma results</li> <li>• Sealed optics</li> <li>• Expired reagent lockout</li> </ul>

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## Bedside glucose testing systems

<b>Part 3 of 7</b>	<b>HemoCue</b> Customer Service 23263 Madero #A, Mission Viejo, CA 92691 949-859-2630/800-323-1674 www.hemocue.com	<b>Hypoguard USA Inc. (formerly MEDgenesis)</b> Customer Service (jordanc@hypoguard.com) 10900 Red Circle Dr., Minnetonka, MN 55343 800-888-5957 www.hypoguard.com
<b>Name of instrument/first year sold</b>	<b>HemoCue Glucose Analyzer/1992</b>	<b>Supreme II Blood Glucose Meter/1997</b>
<b>Professional or home use</b> Units sold in U.S./outside U.S. Part of series of similar/related models Dimensions (H x W x D)/weight	<b>Professional use</b> >20,000 worldwide Yes 6 1/4 x 8 1/4 x 3 1/2 in./2 lbs.	<b>Professional &amp; home use</b> —/— Yes 4 3/4 x 2 1/2 x 1 1/4 in./4.7 oz.
<b>Analytical method/technology/enzyme system used</b> List price Price per disposable reagent system unit	<b>Dehydrogenase, absorbance photometry</b> \$600 classic, \$825 for data management model \$0.93 per test	<b>Glucose oxidase</b> \$50 \$0.35
<b>No. of dispos. reagent system units per basic package</b> No. of times analyses performed using 1 reagent system unit Dispos. units shelf life/reagent unit storage requirements	<b>25 cuvettes per vial</b> 1 9 mo./refrig. or 3 d room temp.	<b>25 or 50</b> 1 17 mo./ambient temp.
<b>Digital readout size/keypad input capability</b> How results are displayed	<b>1.25 cm/menu selection, numeric</b> True values	<b>1/4 x 1/2 in./none</b> True & calculated values. Reports true results in whole blood values, serum/plasma value calculated (whole blood x 1.12)
<b>Specimen types/sampling techniques</b> Suitable for samples from well/sick neonates Time from sample intro. to result availability Batteries used/number used/avg. life of 1 set Avg. expected life of device/mean time between failures Device warranty/service options Loaners provided	<b>Whole blood/venous, capillary, or arterial</b> Yes/yes 15–240 sec. AA/5/5 cycles (150 h) 7 yrs./>5 yrs. 1 yr., \$125 each additional yr./24-h loaner program Yes	<b>Whole blood/drop</b> No/no 50 sec. J cell/1/700 cycles 20,000 tests/not available 3 yrs./none Yes
<b>User list or user group</b> Toll-free No. for customer questions Training and certif. program/No. training days provided Avg. time for lab to complete maintenance Special cleansing procedures	<b>No</b> 7 AM–5 PM PST, 800-881-1611 Yes/as needed from vendor office Weekly: 5 min. No	<b>No</b> 7 AM–6 PM CST Yes/as needed Weekly: 10 min. No
<b>Internal QC recommended or required</b>  <b>Between instrument CV (based on PT) at these levels:</b> • <50 mg/dL • 100–200 mg/dL • >400 mg/dL • Program name, year/challenge No./level of mean glucose challenge sample	<b>Quality control cuvette daily</b>  7.5% (XQ-01) 6.6% (XQ-03) 4.4% (XQ-04 >350) CAP EXCEL, 1997/—/—	<b>Customer established</b>  Not available Not available Not available n/a
<b>Accuracy/compared to what reference method or device</b>  <b>Precision/compared to what reference method or device</b>  <b>Linear range</b> <b>Suggested dynamic/measurement range</b> <b>Contraindications</b>  <b>Known interferences/high altitude interference</b> <b>Restrictions based on hematocrit</b>  <b>Electronic, optical function checks</b>  <b>Sample quantity checks</b>  <b>When auto lock or shutdown occurs</b>  <b>User defines QC lockout intervals/lockout can be circumvented</b> <b>What device supports bar-code scanning of</b> <b>Method of analyst ID/ID required</b> <b>Internal memory size/max. No. patient results stored</b>	<b>0.994/GC-MS</b>  <b>1.44%/GC-MS</b>  0–400 mg/dL 0–400 mg/dL No  None/no No  Control cuvette (an interface filter) verifies photometer calib.  Sample quantity always 5 µL due to cuvette technique & design. Cuvette automatically draws (by capillary action) exact amount of blood  QC failure, control or reagent past exp., QC length  Yes/optional  Operator & patient identifiers, controls, reagent Manual or bar code/optional 1,000 records/approximately 1,000 results dependent on configuration	<b>y=0.99 x + 3, r=0.983, n=113/YSI 2300</b>  <b>Within-run: 3.9%, between-run: 4.0%/YSI 2300</b>  30–600 mg/dL 30–600 mg/dL No  Dopamine ≥10 mg/dL, ascorbate ≥4 mg/dL/no Yes. 28%–65%  Internal sumcheck functions for electronics, internal optics standardization, std. strip Only 1 drop (≥9 µL) sample required  No auto lock or shutdown  No/yes  No bar-code scanner None/n/a 100 tests/100 tests
<b>What meters connect to</b>  <b>How meters are connected to external system to upload results/No. of installations</b> <b>Info. contained in transmission to external system</b>	<b>Hemocue data management system, which cannot further transmit data</b>  Direct serial/—  Device unique identifier, operator & patient ID, result, QC identifier, pass/fail, date, time, comment code, analyte unit of measurement type	<b>n/a</b>  <b>n/a</b>  <b>n/a</b>
<b>Hardware/software for data management system</b>  <b>No. of different mgmt. reports system can produce</b> <b>Contents downloaded from DMS to meter</b>  <b>System connected (live installations) to which LISs/HISs:</b> • using screen animation/screen scraping • using standard HL7 interface • using proprietary protocol interface Use 3rd-party interfacing tool/engine for LIS/HIS interfaces	<b>PC or laptop/HemoCue DM software</b>  <b>Customizable</b> —  None None Sunquest In progress	<b>n/a</b>  <b>n/a</b> <b>n/a</b>  <b>n/a</b> <b>n/a</b> <b>n/a</b> <b>n/a</b>
<b>Distinguishing features</b>	<ul style="list-style-type: none"> <li>• Indicated for diabetes mellitus</li> <li>• Not hematocrit dependent</li> <li>• No known interferences</li> <li>• Perfect for meter verification</li> </ul>	<ul style="list-style-type: none"> <li>• Blood can be applied to test strips inside or outside of meter</li> </ul>

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<b>Part 4 of 7</b>	Hypoguard USA Inc. (formerly MEDgenesis) Customer Service (jordanc@hypoguard.com) 10900 Red Circle Dr., Minnetonka, MN 55343 800-888-5957 www.hypoguard.com	LifeScan Inc., a Johnson & Johnson Company Lorna Wood (lwood2@lfsus.jnj.com) 1000 Gibraltar Dr., 10A, Milpitas, CA 95035-6312 800-524-7226 www.lifescan.com
Name of instrument/first year sold	Assure Blood Glucose Meter/1998	OT II Hospital first sold in 1992, Data Dock in 1996
Professional or home use Units sold in U.S./outside U.S. Part of series of similar/related models Dimensions (H x W x D)/weight	Professional & home use —/— No 4 3/8 x 2 3/8 x 13/32 in./5.3 oz.	Professional use (CLIA waived) 4,000 shipped annually/n/a Yes Data Dock: 8 x 3.62 x 3.25 in., meter: 4.7 x 2.4 x 1.1 in./1 lb. (1.5 lb. meter + dock)
Analytical method/technology/enzyme system used List price Price per disposable reagent system unit	Glucose oxidase \$50 \$0.35	Glucose oxidase, reflectance photometry Contracted Contracted
No. of dispos. reagent system units per basic package No. of times analyses performed using 1 reagent system unit Dispos. units shelf life/reagent unit storage requirements	25, 50, 100 1 18 mo./ambient temp.	50 test strips per box (2 vials of 25 strips) 1 Strips: 18 mo. or 4 mo. after opening; controls: 18 mo. or 3 mo. after opening/room temp.
Digital readout size/keypad input capability How results are displayed Specimen types/sampling techniques Suitable for samples from well/sick neonates Time from sample intro. to result availability Batteries used/number used/avg. life of 1 set	1/4 x 1/2 in./menu selection True values Whole blood/drop No/no 35 sec. J cell/1/1,000 cycles	2 x 0.5 in./menu selection, numeric, alphabetic True values Whole blood/drop—hanging, cap. transfer, fine tip transfer pipette, syringe Yes/yes <45 sec. AA/2 for Dock & J 6 v/1 for meter/1,000 tests
Avg. expected life of device/mean time between failures Device warranty/service options	20,000 tests/not available 3 yrs./none	>5 yrs./not available No charge replacement for life of contract/24-h replacement policy
Loaners provided	Yes	Yes
User list or user group Toll-free No. for customer questions Training and certif. program/No. training days provided Avg. time for lab to complete maintenance Special cleansing procedures	No 7 AM–6 PM CST Yes/as needed Weekly: 10 min. No	No 24 h, 7 d Yes/as needed on site Daily: <1 min. Standard biohazard disinfection procedures
Internal QC recommended or required Between instrument CV (based on PT) at these levels: • <50 mg/dL • 100–200 mg/dL • >400 mg/dL • Program name, year/challenge No./level of mean glucose challenge sample	Customer established  Not available Not available Not available n/a	As specified by accreditation  3.1% 3.4% <4.0% Internal testing & clinical studies
Accuracy/compared to what reference method or device	y=0.98 x + 8, r=0.976, n=109/YSI 2300	Slope 1.0, r=0.98/YSI 2700
Precision/compared to what reference method or device	Within-run: 4.7%, between-run: 3.7%/YSI 2300	3–4%/YSI 2700
Linear range Suggested dynamic/measurement range	30–550 mg/dL 30–550 mg/dL	0–600 mg/dL 0–600 mg/dL
Contraindications Known interferences/high altitude interference	No L-dopa and dopamine (≥10 mg/dL)/no	No Sodium fluoride (black/gray top tube preservative)/no
Restrictions based on hematocrit	Yes. 20%–60%	Yes. Neonatal 25–76%, glucose <150 mg/dL; adult 25–60%
Electronic, optical function checks	Sumcheck functions for electronics and software, no optics	Internal system checks upon power up; checkstrip
Sample quantity checks	Only 1 drop (≥7 µL) sample required	User alerted if insufficient sample
When auto lock or shutdown occurs	No auto lock or shutdown	User ID failure, QC failure (optional), QC not performed within required time, alerts insufficient specimen, cannot test blood in QC mode, alerts battery low, memory almost full
User defines QC lockout intervals/lockout can be circumvented	No/yes	Yes/no
What device supports bar-code scanning of	No bar-code scanner	Operator & patient identifiers, reagent lot No. (optional bar-code wand)
Method of analyst ID/ID required	None/n/a	Alphanumeric entry/optional
Internal memory size/max. No. patient results stored	180 tests/180 tests	128k/1,200 results
What meters connect to	n/a	Data management system, which in turn connects to LIS/HIS (scripted interface & electronic data interface)
How meters are connected to external system to upload results/No. of installations	n/a	DataLink Connect (modem & network)/newly available, 22 installations; DataLink Interface (script & EDI to LIS)/1
Info. contained in transmission to external system	n/a	Device unique identifier, operator & patient ID, result, QC identifier, flags & comments
Hardware/software for data management system	Yes	Desktop Windows NT & proprietary software
No. of different mgmt. reports system can produce Contents downloaded from DMS to meter	4 n/a	9 Strip lot Nos., valid control lot Nos., unique meter loc. ID, unique event codes (QC), unique critical ranges, unique lockout parameters
System connected (live installations) to which LISs/HISs: • using screen animation/screen scraping • using standard HL7 interface • using proprietary protocol interface Use 3rd-party interfacing tool/engine for LIS/HIS interfaces	n/a n/a n/a n/a	None None None n/a
Distinguishing features	• Touchscreen display	• Ability to detect blood vs. control solution—“true” QC lockout • Alphanumeric keypad entry • Simplest to use, chosen by thousands of hospitals/clinicians

Tabulation does not represent an endorsement by the College of American Pathologists

## Bedside glucose testing systems

<b>Part 5 of 7</b>	LifeScan, a Johnson & Johnson Company Lorne Wood (lwood2@lfsus.jnj.com) 1000 Gibraltar Dr., 10A, Milpitas, CA 95035-6312 800-524-7226 www.lifescan.com	Lifescan, Inc., a Johnson & Johnson Company Lorna Wood (lwood2@lfsus.jnj.com) or Diane Snoey (dsnoey@lfsus.jnj.com) 1000 Gibraltar Dr., 10A, Milpitas, CA 95035-6312 800-524-7226 www.lifescan.com
Name of instrument/first year sold	SureStep Pro/1997	SureStep FLEXX/2000
Professional or home use Units sold in U.S./outside U.S. Part of series of similar/related models Dimensions (H x W x D)/weight Analytical method/technology/enzyme system used List price Price per disposable reagent system unit	Professional use >20,000/n/a Yes 7.4 x 3.5 x 2.6 in./1.2 lbs. Glucose oxidase, reflectance photometry \$1,200 per bedside unit Contracted	Professional use n/a Yes 6.34 x 3.55 x 1.63 in./12.5 oz. (with bar-code scanner), 12.1 oz. (without) Reflectance photometry/glucose oxidase \$1,200 with bar-code scanner, \$850 without bar-code scanner By contract, volume
No. of dispos. reagent system units per basic package No. of times analyses performed using 1 reagent system unit Dispos. units shelf life/reagent unit storage requirements	2 25-strip vials (50 strips per box) 1 18 mo. unopened/<30°C (86°F); away from heat, direct sunlight	2 25-strip vials (50 strips per box) 1 18 mo. unopened/<30°C (86°F); away from heat, direct sunlight
Digital readout size/keypad input capability How results are displayed Specimen types/sampling techniques Suitable for samples from well/sick neonates Time from sample intro. to result availability Batteries used/number used/avg. life of 1 set Avg. expected life of device/mean time between failures Device warranty/service options	18 pt. font/menu selection, numeric, alphabetic, bar-code scan built-in True values Whole blood/drop, wipe, capillary transfer, touchable test strip Yes/yes 15–45 sec. C 1.5v/2/approximately 1,000 tests >5 yrs./<3% warranty return rate Life of contract for defects/Gold Service Program option	18 pt. font (16-pixels high, 8-pixels wide)/menu select., numeric, alphabetic True values Whole blood/drop, wipe, capillary transfer, touchable test strip Yes/yes 15 sec. minimum AA/3/1,000 test minimum 5 yr. minimum (15 tests per day)/not yet determined 1-year warranty/extended service agreements available
Loaners provided	Yes	Yes
User list or user group Toll-free No. for customer questions Training and certifi. program/No. training days provided Avg. time for lab to complete maintenance Special cleansing procedures	Yes (contact SureStep Pro product manager) 24 h, 7 d, multiple languages Yes/as negotiated None No	Yes (contact SureStep FLEXX product manager) 24 h, 7 d, multiple languages Yes/as negotiated None No
Internal QC recommended or required Between instrument CV (based on PT) at these levels: • <50 mg/dL • 100–200 mg/dL • >400 mg/dL • Program name, year/challenge No./level of mean glucose challenge sample	As defined by hospital policy 4.39% 3.44% 4.97% Data from 2000 AACC poster #20 and #63	As defined by hospital policy 2.5% 2.9% 2.4% Data from 2000 AACC poster #20
Accuracy/compared to what reference method or device Precision/compared to what reference method or device Linear range Suggested dynamic/measurement range Contraindications Known interferences/high altitude interference	>0.98/YSI 3.44–4.97 CV across runs/YSI 0–500 mg/dL 0–500 mg/dL Excessive water loss or dehydration Sodium fluoride/no	>0.98/YSI 3.44–4.97/YSI 0–500 mg/dL 0–500 mg/dL Excessive water loss or dehydration Sodium fluoride/no
Restrictions based on hematocrit Electronic, optical function checks Sample quantity checks When auto lock or shutdown occurs User defines QC lockout intervals/lockout can be circumvented What device supports bar-code scanning of	Yes. Adult: 25–60% RBC; neonates: 25–65% RBC Automatic electronic and optical checks with each test Test strip color confirmation dot when adequate sample applied, bedside unit error messages User ID failure, QC failure, data upload lockout option Yes/no (2.0 software version) Operator & patient identifiers, reagent (strip) lot No., bedside unit serial Nos.	Yes. Adults: 25–60% RBC; neonates: 25–65% RBC Automatic electronic and optical checks with each test Test strip color confirmation dot when adequate sample applied; meter error messages User ID failure, QC failure, failure to transfer data Yes/no Operator & patient identifier, reagent (strip) lot No., control solution lot No., meter serial No.
Method of analyst ID/ID required Internal memory size/max. No. patient results stored	Bedside unit custom programmed for manual or bar-code entry/required or optional 2,500 patient & QC tests plus 50 test strip lots and QC lots	Unique alphanumeric ID/optional (defined by location) 256k/1,500 patient +QC tests, 50 test strip lots and 50 QC lots
What meters connect to How meters are connected to external system to upload results/No. of installations Info. contained in transmission to external system	Data management system, which in turn connects to LIS/HIS (scripted interface & electronic data interfaces) Datalink Connect (modem + network): 376 sites; Datalink Interface (script + EDI + LIS): 75 sites; infrared port used to transfer results by modem or network to workstation Device unique identifier, operator & patient ID, result, QC identifier, flags, comments	Data management system, which in turn connects to LIS/HIS (scripted interface & electronic data interfaces) Datalink Connect (modem + network): 376 sites; Datalink Interface (script + EDI + LIS): 75 sites; infrared port used to transfer results by modem or network to workstation Device unique identifier, operator & patient ID, result, QC identifier, result flags, location/site
Hardware/software for data management system No. of different mgmt. reports system can produce Contents downloaded from DMS to meter System connected (live installations) to which LISs/HISs: • using screen animation/screen scraping • using standard HL7 interface • using proprietary protocol interface Use 3rd-party interfacing tool/engine for LIS/HIS interfaces	Desktop or laptop, Windows NT, proprietary software 17 reports plus export function for customized reports Strip lot Nos., valid control values, valid operator IDs, all configurations: expiration, time, lockouts DHCP-VA System, HBOC Pathlab3, Star, ALG, Sunquest Flexilab, Cerner Pathnet (legacy), SCC, Softlab, DHT, Dynacor Premier Cerner Pathnet (legacy), Sunquest Flexilab, MEDITECH Magic & client/server None Yes (Telcor, exclusive contract; Reflections WRQ software)	Desktop or laptop, Windows NT, Microsoft SQL server, proprietary DataLink Data Management System 3.0 12 standard, unlimited customized reports Strip lot No., valid control values, valid operator IDs, critical value ranges, comment codes DHCP-VA system, HBOC PathLab 3, Star, ALG; Sunquest Flexilab, Cerner Pathnet (legacy); SCC SoftLab, DHT Dynacor Premier Cerner Pathnet (legacy); Sunquest Flexilab; MEDITECH Magic & Client/Server None Yes (Telcor, exclusive contract; Reflections WRQ software)
Distinguishing features	<ul style="list-style-type: none"> <li>• Unique test strip technology: off-meter sample application, sample volume confirmation</li> <li>• Bedside unit with alphanumeric touchscreen and built-in bar-code scanner</li> <li>• Infrared bidirectional interface between bedside unit and workstation with the widest array of DataLink Connectivity solutions: direct, modem, network, scripted interface, EDI</li> </ul>	<ul style="list-style-type: none"> <li>• Exception reporting and database tracking—customized QC compliance rules</li> <li>• Multiple levels of security—nonvalidated operator, noncertified operator, warn and lockout</li> <li>• True off-meter sample application; unique test strip technology—touchable, absorbent test strip</li> </ul>

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## Bedside glucose testing systems

<b>Part 6 of 7</b>	<p>MiniMed Inc. Leslie Wright (leslie.wright@minimed.com) 18000 Devonshire St., Northridge, CA 91325 800-999-9859 minimed.com</p>	<p>Roche Diagnostics Accu-Chek Customer Care 9115 Hague Rd., Indianapolis, IN 46256 800-440-3638 www.roche.com</p>
<b>Name of instrument/first year sold</b>	MiniMed Continuous Glucose Monitoring System (CGMS)/2000	Accu-Chek HQ/1999
<p>Professional or home use Units sold in U.S./outside U.S. Part of series of similar/related models Dimensions (H x W x D)/weight Analytical method/technology/enzyme system used List price Price per disposable reagent system unit</p>	<p>Professional use &gt;1,000/&gt;600 No 2.8 x 0.9 x 3.6 in./4 oz. Glucose oxidase \$1,995/monitor, \$30/sensor (disposable) \$30 per sensor</p>	<p>Professional use 7,500/none Yes 2.9 x 4.2 x 9.4 in./3.5 lbs. Biosensor—glucose dehydrogenase \$1,495 Contingent on contract price</p>
<p>No. of dispos. reagent system units per basic package No. of times analyses performed using 1 reagent system unit Dispos. units shelf life/reagent unit storage requirements</p>	<p>10/box 1 sensor lasts ~36–72 h 6 mo./refridgeration 2°C–24°C</p>	<p>50 test strips 1 18–24 mo., stable until exp. on vial/room temp., &lt;90°F, do not freeze</p>
<p>Digital readout size/keypad input capability How results are displayed  Specimen types/sampling techniques  Suitable for samples from well/sick neonates Time from sample intro. to result availability Batteries used/number used/avg. life of 1 set Avg. expected life of device/mean time between failures Device warranty/service options  Loaners provided</p>	<p>—/menu selection At time of monitor download, system can display retrospective only/numerical agreement. Avg. difference between glucose sensor and glucose meter of -5.4 mg/dL, daily median correlation coefficient of 0.92, calibration using blood glucose meters daily. Continuous monitoring and sampling of interstitial fluid glucose levels  No/yes (with diabetes) Retrospective analysis after disconnection AAA alkaline batteries/2/~2 mo. ~3 yrs./— 1 yr. warranty for monitor, no warranty on disposable/none  No</p>	<p>7 lines x 30 characters/menu selection, numeric, alphabetic True values  Arterial, venous, capillary, neonate (including cord blood)  Yes/yes 40 sec. (soon to be 25 sec.) 3v lithium/2/700 tests 5 yrs./828,000 tests All-inclusive warranty through life of Accu-Chek HQ system at no additional cost/24 h, 7 d customer care with overnight replacement if needed Yes</p>
<p>User list or user group Toll-free No. for customer questions Training and certif. program/No. training days provided Avg. time for lab to complete maintenance Special cleansing procedures</p>	<p>No Yes Yes (training only)/~1 day Monthly: 10–15 min No</p>	<p>Yes (contact local account manager) 24 h, 7 d Yes/site-specific according to quantity of personnel None No</p>
<p>Internal QC recommended or required Between instrument CV (based on PT) at these levels: • &lt;50 mg/dL • 100–200 mg/dL • &gt;400 mg/dL • Program name, year/challenge No./level of mean glucose challenge sample</p>	<p>None — 5% (40–400 mg/dL) — CGMS 1999–98/—/—</p>	<p>Daily, 2 level  50.0 SD=4.2 (6,593 labs) 167.9 CV=4.5 (6,619 labs) 203.3 CV=4.3 (13,382 labs) CAP, 2000/WBG-C/see above</p>
<p>Accuracy/compared to what reference method or device  Precision/compared to what reference method or device  Linear range Suggested dynamic/measurement range  Contraindications Known interferences/high altitude interference Restrictions based on hematocrit Electronic, optical function checks  Sample quantity checks  When auto lock or shutdown occurs  User defines QC lockout intervals/lockout can be circumvented What device supports bar-code scanning of Method of analyst ID/ID required Internal memory size/max. No. patient results stored</p>	<p>Coefficient of variation (CV) of 5%/fingerstick blood glucose measurements  —/glucose meters, Hemocue, YSI (any and all)  — 40–400 mg/dL  Not recommended for use by persons with impaired vision or hearing Possibly MRI/no No None  None  None  No/no No bar-code scanner At time of monitor download/optional Up to 14 days continuous data/288 readings per day</p>	<p>y=0.991 x + 8.4, r=0.980/glucose hexokinase—Hitachi  Controls: low SD=1.9 mg/dL, mid CV=2.6%, high CV=1.8%; Blood: low SD=1.5 mg/dL, mid CV=3.2%, high CV=3.2%/glucose hexokinase 10–600 mg/dL 10–600 mg/dL  Per labeling Per labeling/none up to 10,150 feet Yes. Glucose &lt;200 mg/dL, 20–65%; glucose &gt;200, 20–55% Meter cradle communication with the Advantage meter, meter cradle with code key, battery voltage test, internal database memory check, internal configuration check  Built-in electronic fail safe check, visual confirmation of sample volume  User ID failure (valid op.), QC failure, patient ID length, reagent &amp; QC lots, comment codes, incorrect code key, incorrect Advantage meter  Yes/yes. (RALS-G information management system identifies operators who violate hospital policy) Operator &amp; patient identifiers Alphanumeric/yes 2,000 records/2,000 records</p>
<p>What meters connect to How meters are connected to external system to upload results/No. of installations Info. contained in transmission to external system</p>	<p>Com-Station for download to computer &amp; software Direct serial/—  Patient ID, result</p>	<p>Data management system, which in turn connects to LIS/HIS Direct serial/50, modem dial-in/5, hospital network/50  Device unique identifier, operator &amp; patient ID, result, QC identifier, proficiency &amp; linearity samples, comment codes, meter loc., download loc.</p>
<p>Hardware/software for data management system  No. of different mgmt. reports system can produce Contents downloaded from DMS to meter  System connected (live installations) to which LISs/HISs: • using screen animation/screen scraping • using standard HL7 interface • using proprietary protocol interface Use 3rd-party interfacing tool/engine for LIS/HIS interfaces</p>	<p>Com-Station (docking unit that transmits data from CGMS to computer) and software 3 —  Does not interface LIS or HIS, a report from software—nontransferable No No No No</p>	<p>Software: Accu-Chek HDM, RALS-Link, RALS-G, RALS Plus, DataCare POC  Unlimited (customer defined) Strip &amp; QC lot Nos., valid control values, valid operator IDs, meter configuration, message of the day, linearity values, critical ranges comments  Cerner, Sunquest, DHCP, HBOC, Phamis, MEDITECH, SoftLAB Cerner, Sunquest, MEDITECH, HBOC None Roche offers DataCare POC as well as interfacing through the MAS continuum</p>
<b>Distinguishing features</b>	<ul style="list-style-type: none"> <li>• Continuous glucose values collected (every 5 min)</li> <li>• Up to 72 h of data</li> <li>• Ability to enter in events (insulin, food, exercise, etc.) to compare against glucose values upon review of data</li> </ul>	<ul style="list-style-type: none"> <li>• Superior strip technology: glucose dehydrogenase &amp; comfort curve design</li> <li>• Hand-free communication with LIS/HIS</li> <li>• Alphanumeric touchscreen</li> <li>• Proven bidirectional network connection from Accu-Chek HQ to LIS/HIS</li> <li>• ADT data interface with RALS-G/RALS Plus/DataCare POC</li> </ul>

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## Bedside glucose testing systems

<b>Part 7 of 7</b>	Roche Diagnostics Accu-Chek Customer Care 9115 Hague Rd., Indianapolis, IN 46256 800-440-3638 www.roche.com	Roche Diagnostics Local account manager 9115 Hague Rd., Indianapolis, IN 46256 800-428-5074 www.roche.com
Name of instrument/first year sold	AccuData GTS Plus System/2000	Accu-Chek Inform/FDA CLEARANCE PENDING
Professional or home use Units sold in U.S./outside U.S. Part of series of similar/related models Dimensions (H x W x D)/weight Analytical method/technology/enzyme system used List price Price per disposable reagent system unit	Professional use 40,000*/5,000 Yes 11 x 8.75 x 4 in./5 lbs. Biosensor—glucose dehydrogenase \$550 Contingent on contract price	Professional use n/a Yes 1.4 x 3.8 x 7.6 in/12 oz. Biosensor—glucose dehydrogenase TBD Contingent on contract price
No. of dispos. reag. system units per basic package No. of times analyses performed using 1 reag. system unit Dispos. units shelf life/reag. unit storage requirements	50 strips per vial 1 18–24 mo., stable until exp. on vial/<90°F, do not freeze	50 test strips 1 18–24 mo., stable until expir. date on vial/room temp., less than 90°F, do not freeze
Digital readout size/keypad input capability How results are displayed Specimen types/sampling techniques Suitable for samples from well/sick neonates Time from sample intro. to result availability Batteries used/number used/avg. life of 1 set Avg. expected life of device/mean time between failures Device warranty/service options  Loaners provided	4 lines x 20 characters LCD/menu selection, numeric True values Arterial, venous, capillary, neonate (including cord blood) Yes/yes 40 sec. (soon to be 25 sec.) 3v lithium/2/~700 tests 5 yrs./10,000 tests All-inclusive warranty through life of AccuData GTS Plus at no additional cost/24 h, 7 d customer care with overnight replacement if needed  n/a	Font size varies/menu selection, numeric, alphabetic True values Whole blood/drop Yes/yes 40 sec. (shorter test time will be introduced in 2001) 3.7 v rechargeable lithium ion/1/testing in progress 5 yrs./testing in progress All-inclusive warranty through life of Accu-Chek Inform System at no additional cost/customer care is available 24 hrs/365 days per year with overnight replacement if needed  Yes
User list or user group Toll-free No. for customer questions Training and certif. program/No. training days provided Avg. time for lab to complete maintenance Special cleansing procedures	Yes (contact local account manager) 24 h, 7 d Yes/site-specific according to quantity of personnel None No	Yes (contact local account manager) Yes (24 h, 7d/365 d per yr.) Yes/site specific according to quantity of personnel None No
Internal QC recommended or required Between instrument CV (based on PT) at these levels: • <50 mg/dL • 100–200 mg/dL • >400 mg/dL • Program name, year/challenge No./level of mean glucose challenge sample	Daily, 2 level  50.0 SD=4.2 (6,593 labs) 167.9 CV=4.5 (6,619 labs) 203.3 CV=4.3 (13,382 labs) CAP, 2000/WBG-C/see above	Daily, 2 levels of glucose control solutions  n/a n/a n/a —
Accuracy/compared to what reference method or device Precision/compared to what reference method or device  Linear range Suggested dynamic/measurement range Contraindications  Known interferences/high altitude interference  Restrictions based on hematocrit  Electronic, optical function checks  Sample quantity checks  When auto lock or shutdown occurs  User defines QC lockout intervals/lockout can be circumvented What device supports bar-code scanning of  Method of analyst ID/ID required  Internal memory size/max. No. patient results stored	y=0.991 x + 8.4, r=0.980/glucose hexokinase—Hitachi Controls: low SD=1.9 mg/dL, mid CV=2.6%, high CV=1.8%; Blood: low SD=1.5 mg/dL, mid CV=3.2%, high CV=3.2%/glucose hexokinase 10–600 mg/dL 10–600 mg/dL Per labeling  Per labeling/none up to 10,150 feet  Yes. Glucose <200 mg/dL, 20–65%; glucose >200, 20–55%  Meter cradle communication with Advantage meter, GTS with code key, battery voltage test, internal database memory check, internal configuration check Built-in electronic fail-safe check, visual confirmation of sample volume  User ID failure (valid op.), QC failure, patient ID length, incorrect code key, incorrect Advantage meter Yes/yes (RALS-G information management system identifies operators who violate hospital policy) Operator & patient identifiers  Numeric input or bar-code wand scan/yes  1,000 total patient, control, linearity, proficiency tests/1,000 (stores 2,000 valid operator IDs)	y=0.991 x + 8.4, r=0.980/glucose hexokinase—Hitachi Controls: low SD=1.9 mg/dL, mid CV=2.6%, high CV=1.8%; blood: low SD=1.5 mg/dL, mid CV=3.2%, high CV=3.2%/glucose hexokinase 10–600 mg/dL 10–600 mg/dL Yes, per labeling  Per labeling/none up to 10,150 ft.  Yes. Glucose <200 mg/dL 20–65%; glucose >200 mg/dL 20–55%  Meter with code key, battery voltage test, internal database memory check, internal configuration check Built-in electronic fail safe check, visible verification of sample volume  User ID failure, QC failure, download interval lockout, patient ID length, reagent editing, mandatory comments, incorrect/missing code key Yes/no (optional QC pass/fail feature)  Operator & patient identifiers (reagent lot number to be introduced in 2001)  Alphanumeric/yes  4,000 results/4,000 tests
What meters connect to How meters are connected to external system to upload results/No. installations Info. contained in transmission to external system	Data management system, which in turn connects to LIS/HIS Direct serial/50, modem dial-in/5, hospital network/50  Device unique identifier, operator & patient ID, result, QC identifier, download loc., comment codes, proficiency & linearity samples	Data management system, which in turn connects to LIS/HIS Direct serial/—, modem dial-in/—, hospital network/—  Device unique identifier, operator & patient IDs, result, QC identifier, proficiency and linearity samples, comments, meter location, download location
Hardware/software for data mgmt. system No. of different mgmt. reports system can produce Contents downloaded from DMS to meter  System connected (live installations) to which LISs/HISs: • using screen animation/screen scraping • using standard HL7 interface  • using proprietary protocol interface Use 3rd-party interfacing tool/engine for LIS/HIS interfaces	Software: Accu-Chek HDM, RALS-Link, RALS-G, RALS Plus, DataCare POC Unlimited (customer defined) Strip & QC lot Nos., valid operator ID, valid control values, linearity values  Cerner, Sunquest, DHCP, HBOC, Phamis, MEDITECH, SoftLAB Cerner, Sunquest, MEDITECH, HBOC  None Roche offers DataCare POC as well as interfacing through the MAS continuum	DataCare POC, RALS Plus Unlimited (user defined) Strip lot Nos., valid control values, valid operator & patient IDs, meter configuration, linearity lot numbers and values, comments  Limited scripting on a system-by-system basis Cerner, MEDITECH, Sunquest, CPSI, CompuCare, Antrim, Softlab, SMS, HBOC, CHC, TDS, Dawning Tech., Cloverleaf, Data Innovations  — No
Distinguishing features	<ul style="list-style-type: none"> <li>• Superior strip technology: glucose dehydrogenase &amp; comfort curve design</li> <li>• Proven bidirectional network connection from AccuData GTS Plus to LIS/HIS</li> <li>• ADT data interface with RALS-G/RALS Plus/DataCare POC</li> </ul> *Combined AccuData GTS and AccuData GTS Plus sales	<ul style="list-style-type: none"> <li>• Superior strip technology, glucose dehydrogenase, wide hematocrit range and comfort curve design</li> <li>• Hands-free, bidirectional communication with LIS/HIS</li> <li>• Palm-powered alphanumeric touchscreen (based on Palm OS)</li> </ul>

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