A Hospital Catches the "Millennium Bug"
By Janis Gogan

Introduction

Bob Sadlemire completed the minutes of the May 1998 meeting of Fletcher Allen Health Care's Year 2000 Steering Committee, and headed out for a lunch meeting with his boss, Mary Kay Boudewyns. Before walking up the hill to the Burlington, Vermont restaurant, he paused to take in the serene sight of Lake Champlain. Refreshed, he walked on, his thoughts turning to the upcoming June meeting of the Patient Care and Systems Improvement (PCSI) committee of the Board of Trustees, in a few days (Exhibit 1). Sadlemire would have 15 minutes to brief the committee on the status of the hospital's Y2K project. Sadlemire -- an employee of Jennings Consulting, Inc. - had been assigned to Fletcher-Allen as its Y2K Project Coordinator, on a contract that ran from July 1, 1997 through July 1, 1999. While much had been accomplished, he was quite concerned that the project was not proceeding forward as fast as necessary.

How Hospitals Caught a Millennium Bug

Many computers, databases, applications software, and embedded microprocessor controls were coded (as long ago as the sixties and as recently as the nineties) with two-digit year fields. This choice would process the year "2000" as "00," causing problems. All but the smallest of organizations, in virtually every industry, were affected by this so-called "millennium bug," and Gartner Group estimated that it would cost $600 billion to fix systems affected by it. The year 2000 problem affected software (operating systems, transaction processing and decision support applications, vendor packages, user-developed applications, etc.), computing hardware (desktop, midrange and mainframe systems) and embedded microprocessors that control devices ranging from everyday equipment such as elevators and thermostats to specialized medical devices such as heart defibrillators and infusion pumps. Year 2000 compliance projects were comprised of the following steps:

- Inventory: identify hardware and software that might give rise to Y2K problems.
- Analysis: examine code for date fields, and determine which ones need to be fixed.
- Remediation (conversion): alter the code for Y2K compliance
- Testing: ensure that altered code produces correct results.
- Migration: put the new code into production

Boston attorney Steve Goldberg[1] stated: "Unrectified, Year 2000 failures could compromise patient care, disrupt core business functions, and create substantial liability exposure." He explained that the Y2K bug

> "… could scramble chronological patient histories and schedules for lab tests, admissions, surgeries, and office appointments. New perishable goods could be rejected by automated inventory systems as being 100 years old. Current accounts could be canceled because receivables were thought to be 100 years overdue. Equipment with computerized maintenance or calibration schedules could be taken out of service automatically… Even if a hospital takes care of its own Year 2000 problems, it may still experience business interruptions if third parties upon which it depends fail to do so. Health care systems cannot function effectively without reliable support from medical insurance payors, claims clearinghouses, banks, and suppliers of hundreds or thousands of other goods and services, all of which are potentially vulnerable to Y2K failures."

In addition to fixing the Y2K bug in software, hospitals had to ensure that medical instrumentation and facilities would not be affected. The United States Food and Drug Administration (FDA) sent a June, 1997 letter to medical device manufacturers, notifying them of their obligation to determine whether their devices were at risk of failure[2]. An article in the December, 1997 issue of *Health Devices* discussed the potential effects of the Y2K problem on equipment performance and hospital liability issues, and concluded:

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[1]

[2] The letter is posted at http://www.fda.gov/cdrh/yr2000.html.

"Hospitals should press to have remedies implemented without charge for any equipment that is still marketed and/or still supported by the supplier. If suppliers will not waive their fees, hospitals should pursue the following actions: (1) withhold any ongoing agreements they may have with the supplier, (2) refuse future purchases from that supplier and seek an alternative, Y2K-compliant supplier, and (3) report a supplier's refusal to cooperate to ECRI (a non-profit health care research organization and Collaborating Center of the World Health Organization)."

In January, 1998 the U.S. Department of Health and Human Services wrote to medical device manufacturers, requesting product year 2000 data that would be posted at the FDA web site. A May 1998 FDA document urged manufacturers "to use this mechanism to communicate the status of their products that are affected by the Year 2000 date problem to public and Government purchases and users of these products[3]." It added:

"… Device manufacturers must evaluate their entire lines of medical equipment and software, not just currently produced or supported products, to identify and assess problems that could result from inaccurate date representation. This assessment should take into account date errors that might lead to device failure, such as failure to provide diagnosis or patient treatment, date misrepresentation leading to incorrect records which might impact future treatment, or any process affected by the Year 2000 date problem that, if not corrected, has the potential to present a risk to health. Should the assessment indicate a risk to patient or public health by medical equipment unable to correctly process dates, device manufacturers must report corrective action taken in accordance with Section 806 (21 CFR 806), the regulation requiring reporting of device corrections and removals…"

An example of manufacturers' data as reported on the FDA site is provided in Exhibit 2.

Despite the high exposure of health care organizations to year 2000 risks in systems, devices and facilities, a Gartner Group survey revealed that 88% of U.S. hospitals were "aware" of the year 2000 problem but, as of late 1997, had not yet launched a project to inventory, assess and remediate their systems and equipment.

Background: Fletcher-Allen Health Care

Fletcher Allen Health Care (FAHC) was founded in 1995, in a merger of the 500-bed Medical Center of Vermont, 83-bed Fanny Allen Hospital and practice groups of 250 University of Vermont Medical School faculty. Fletcher-Allen's 4,800 employees (including 560 medical staff, 1000 nurses, 370 other caregivers) and 500 volunteers serving a catchment area comprised of 850,000 people in 13 Vermont counties and 6 New York counties. In more than 50 separate facilities they handled 22,000 in-patients, 150,000 outpatients, 45,000 emergency-room visits, and 573,000 physician-office visits each year, with operating expenses of about $330 million[4]. The main campus was adjacent to the University of Vermont College of Medicine Burlington campus.

These hospitals had long used a set of custom applications, coded in assembler -- HIS (Hospital Information System); most were developed in the seventies and ran on an IBM mainframe computer. To address the problem of outdated, incompatible systems, and to enable new forms of technology-enhanced patient care, a $17 million "Basic Infrastructure" initiative was underway, comprised of several ambitious components:

- Upgrade Burlington network, with new personal computers and Internet access.
- Integrate patient registration, enrollment, scheduling, eligibility and referral applications and provide links to an integrated billing system.
- Develop new Patient Data Repository (first step toward an integrated medical record).
- Develop new Care Management Information System.

Fletcher-Allen was also developing a $13 million Regional Information Network, including providing participating caregivers with workstations equipped with Internet access, video conferencing, enhanced electronic mail, and an ambitious expert system for diagnosing, assessing, and managing patient health. These

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[3] The database, containing some manufacturers' year 2000 data, is at http://www.fda.gov/cdrh/yr2000/year200.html.
[4] Source: http://www.fahc.vtmednet.org/facts.htm as of July 8, 1998.

"telemedicine" investments would extend the reach of Fletcher-Allen's specialists to patients and caregivers located in rural areas[5]. CIO Bill Montgomery commented in a budget document: "Health care could dramatically improve because of more timely care, reduced duplicative services, dissemination of knowledge, care delivery provided as close to the home or work as possible, and reduced travel costs by patients and families..." In 1997 and 1998, Fletcher-Allen was recognized by a leading health trade publication as being in the "top ten" of telemedicine programs in the United States.

When Bob Sadlemire started in summer 1997, Fletcher-Allen was organized in 11 Health Care Services teams (e.g., surgery, pathology, etc.) and five Key Support Process Teams:

Key Support Process Teams	VP	
Financial Services	C. Hindes	Budget, Mgt. Accounting, Patient Financial Services, Analysis
Clinical Support Services	D. Burke	Health Information Mgt., Health System Access, Risk Mgt./Safety
People and Systems Services	P. Kerr	Human Resources, Quality, Education and Development
Information Services	A. Wyman	Technical Support, Customer Support, Business Systems, Clinical Systems, Applications Development
Facilities Services	D. Ayres	Facilities Services, Materials Management

In spring 1998 the team-based structure was altered and some executive positions re-organized (Exhibit 3). A new CEO, William Boettcher, was to start July 1. A Board of Trustees press release (April 29, 1998) stated:

> "… We are addressing major challenges in health care delivery that have affected employee morale and our public image. With the naming of Bill Boettcher as chief executive officer today, we look forward to a period of stable leadership that will help the organization move forward."

Fletcher Allen Information Systems

Mary Kay Boudewyns was responsible for five major systems projects, one of which was the Year 2000 compliance project. The other four projects under her direction were:

1. Migrate Fanny Allen hospital information system (on IBM AS 400 computer) to Medical Center platform.
2. Convert an old payroll application to MVS.
3. Replace many old HIS applications for patient admitting, billing, managed care, and medical records with Unix-based applications from IDX, running on an Alpha[6] server.
4. Convert the mainframe (MVS) payroll and human resources applications to a Unix-based Peoplesoft package, which would run an IBM RS6000 midrange computer.

The first two projects made it possible to shut down computers on which old systems operated. These applications were then to be replaced by projects 3 and 4 (client/server implementations). The IDX project, a major undertaking implemented by consultants from a large firm, "went live" in October, 1997, five months late. The Peoplesoft conversion was "on track," per Boudewyn, for completion by January 1, 1999.

Joe Mack, hired as director of clinical systems in January 1998, was managing a large project to migrate nursing scheduling, pharmacy and other clinical applications (part of the old HIS system) to a Meditech package, and also projects to implement an integrated surgical application (ORSOS), a nurse scheduling system (ANSAS) and a radiology system (IDX Rad).

The Year 2000 Project is Launched

Boudewyns asked Jennings Information Systems Consulting, Inc. (hereafter, Jennings) to help prepare a year 2000 project plan. One manager questioned her selection of Jennings, asking, "Why not bring in a major consulting firm, one with a track record in this kind of work?" She replied:

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[5] For further information, see "Fletcher-Allen Health Care: the Telemedicine Initiative," by J.L. Gogan and P.J. Guinan.
[6] The Alpha computer was developed by Digital Equipment Corporation, which was subsequently acquired by Compaq.

"I prefer to work local when possible. On the IDX project there were issues of accountability and ownership. Bob Sadlemire will be seen as an extension of our staff, not some large consulting firm telling us what to do. That's key; the people who execute a project need to feel like they own it."

Boudewyns felt Sadlemire's previous experience on a Y2K team at an insurance company (where he worked for 16 years before joining Jennings) was impressive. Sadlemire explained that the Y2K bug was "contagious" in that it could affect systems that linked Fletcher Allen with its suppliers and payors, and it would also affect many areas outside of IS control, such as facilities, medical devices, and departmental systems.

When Sadlemire started on a full-time basis in August 1997, Boudewyns told him:

"This is a complex environment, with many different platforms. The merger brought together three different cultures, three different philosophies, three different sets of values. We have not had solid tools and processes for resource allocation, system development, and project management. We're making progress in these areas now, but I have a full plate of projects involving a wide range of applications. That's why I need you to oversee the year 2000 effort."

Sadlemire offered to brief senior management on Y2K issues shortly after he came on board, but was unable to get a meeting on their calendars. "They were just too busy dealing with the many challenges of creating a viable new health care model via the merged organization," he recalled. Sadlemire next attempted to compile an inventory of Fletcher Allen's hardware, systems software, and applications software. Although a comprehensive inventory did not exist, it was not too difficult to compile an up-to-date listing of the 107 administrative and clinical applications (Exhibit 4) supported by Alan Wyman's Information Services organization.

In fall 1997, Sadlemire polled IS managers about each of 107 IS-supported applications:

Impact of System Failure –What would the impact be on four critical aspects of the hospital:

- Patient Care: How will patients be effected, in quality or timeliness of services?
- Financial: How will the Year 2000 effect such functions as billing, A/P, payroll?
- Employee: How many effected? More people needed to perform manual functions?
- Legal: What's our exposure for being sued if certain services are interrupted?

Confidence of Y2K Solution – What is your confidence level that the stated Y2K solutions will be implemented before system fails? It's well documented that most significant IS projects are late; many are never finished. Are you confident that systems deemed compliant by the vendor will work, or should they be tested? We are looking for your *objective* view of the stated Y2K plan!

Viability of Contingency – Are viable backup procedures or contingency plans in place?
Opinion on Overall Priority –Your opinion on the value of this system to Fletcher Allen.

Sadlemire felt this exercise helped highlight key systems, but did not lead to a detailed risk assessment, because the group agreed that all 107 applications supported by the IS organization needed to be analyzed. Boudewyns told him at least as many applications were also supported by clinical and administrative departments.

Getting an inventory of departmental applications proved difficult. Sadlemire wanted to meet with the 40 departmental managers and their direct reports, to brief them on Y2K issues and distribute an inventory and risk assessment questionnaire. (Exhibit 5). Since at that time no organization chart listed individuals reporting up to vice presidents or clinical directors, Sadlemire had to "do some digging" to find out who to contact. He spent much of fall 1997 meeting with these managers and instructing them on how to fill out the questionnaire. The initial product of this effort was discouraging. "As a result of not getting top-down buy-in, the response rate was not what I hoped for," Sadlemire commented. "It has been very difficult to compile the information, because people aren't giving this aspect the time and attention that is needed."

In fall, two IS employees were assigned to work with Sadlemire. One helped to compile the inventory of departmental applications and helped users identify remediation and testing options for these applications. Another helped the Technical Support group compile an inventory of desktop hardware and software packages.

To ensure broad participation, Sadlemire and Boudewyns formed a Year 2000 Task Force, which met once per month for about two hours, starting in December 1997. They agreed on four objectives:

1. Review the status of key projects within each of eight task areas (see below).
2. Recommend and support solutions to project issues, including making recommendations to allocate resources necessary to ensure the timely completion of key Y2K initiatives.
3. Raise awareness throughout the organization on the importance of the Year 2000 project.
4. Review the project status with key individuals within the organization.

The Year 2000 Task Force included the following individuals:

IT Organization		**Clinical/Admin. Departments**	
Boudewyns:	Business Systems	Allard:	Audit
Buermann:	Desktop apps	Carroll:	Surgery
Eary:	Technical	Donehower:	Nursing
Fraser:	Telecommunications	Irving:	Facilities
Harris:	Applications Development	Morgan:	Laboratory
Mack:	Clinical Systems	Parrish:	Nursing
Sadlemire:	Year 2000 Coordinator	Simmons:	Budget
Spencer:	Year 2000 team	Stanislas:	Medicine
Wyman:	IS		
Kanter:	Year 2000 team		

A Steering Committee, chaired by CIO Bill Montgomery, first met in March 1998, and Sadlemire briefed the hospital's leadership on year 2000 risks and issues. Each of eight task areas had one or more "owners," who were accountable to achieve compliance on all systems or devices in that domain. The tasks and "owners" were:

IS supported Application Systems:	Wyman
Technical: hardware and software tools:	Wyman
Telecommunications:	Fraser
Independent (departmental) applications:	Ayres (Administrative Support Services)
	Hindes (Financial Services)
	Leible (Materials Management)
	Novak and Wilson (Operations)
Clinical equipment:	Hindes, Novak, Wilson
Non-clinical equipment and facilities:	Ayres
Suppliers, Payors	Leible, Tolzmann (Provider Relations)

The Steering Committee agreed to meet once a month. Members were to provide a written status for each major initiative at each meeting, including "changes to the actual timeline, completion of major milestones, and identification of major issues." Minutes and a monthly status report were to be sent to senior management, and "status not reported by members will be so stated in the monthly report to management."

Sadlemire told the Steering Committee about his difficulties in compiling inventories of items that needed to be analyzed for potential year 2000 problems. By late fall he had identified 150 departmental applications, but he believed that many more had not yet been reported to them. He told the steering committee:

> "A lot of applications out there aren't that meaningful in the scheme of things, so I'm not too worried. Still, there may be some small systems that are of critical importance. We have to find them, identify date-sensitive code in them, and fix them."

Sadlemire met with Boudewyns once a week to apprise her of progress on the Y2K project. In one such meeting, he compared Fletcher Allen to the insurance company where he previously worked:

> "There's more diverse hardware, operating systems, and programming languages here than at my old company, where 85% of applications were on a mainframe. There, we divided 50 applications into seven implementation groups. We weren't allowed to touch vendors' source code on some systems, so we did various work-arounds. Also, the Y2K team had a dilly of a time, trying to get the CIO to admit that six systems that were scheduled to be replaced by new Y2K-compliant systems were not going to be replaced in time. Historically, many IS projects are delivered later than planned. We must be realistic, because this target date will not change."

Formation of the Y2K Task Force and Steering Committee were helpful, in Sadlemire's view. He commented to Boudewyns, "This has been a bottom-up effort, but now top management is beginning to focus on it."

Jodi Kanter was working with Rick Eary's Technical Support group (who were in charge of mainframe, DEC Alpha server and Unix servers, WindowsNT and Novell servers, and network components) to compile an inventory. She had received information on WindowsNT and Novell items; but had not yet for mainframe, DEC Alpha and Unix systems. Boudewyns observed "We depend on Eary's group. If the hardware is not compliant, or operating systems don't work, our applications won't run." But Eary was busy with "higher priority" projects in the $17 million Basic Infrastructure initiative, including the network upgrade to WindowsNT.

The Basic Infrastructure project was supposed to replace all older PCs with a new platform. However, Kanter reported that three software products in the planned new configuration were not Y2K compliant. She also learned that budgetary constraints had led to a decision to refurbish some older systems rather than to purchase entirely new machines. This would complicate the Y2K project, since each old machine would need to be tested. Kanter added: "Even if all users get new machines, they will still want to retain most of the software that's sitting on the old machines." In December she sent an e-mail to all employees:

> The Year 2000 project team is gathering information regarding system tools that you use on a daily or occasional basis. Some examples of tools would be any programming tools or languages, text editors as well as word processing tools. Please respond to this E-mail by listing the names of ALL the tools that you use, and then answer the following questions about EACH tool that you have listed.
>
> > Description of use (purpose)?
> > What platform does it run on (mainframe, NT server, Unix, etc.)?
> > Who supports it?
> > Rate its level of criticality (low, moderate, high)
>
> Please be as thorough as possible when completing this list. Respond by December 22, 1997 via E-mail

From the responses, Kanter compiled a list of 115 different software tools. She learned that many users worked with software that would either not be compatible with the new desktop configuration or for which an NT-compliant and/or Y2K-compliant vendor upgrade would be prohibitively expensive. She began to contact vendors to determine the Y2K status of each package and to identify viable options for achieving compliance.

Preparation for the June, 1998 PCSI Meeting

To prepare for the June 1998 meeting with the PCSI committee, Sadlemire reviewed the status of the eight task areas with Mary Kay Boudewyns.

1. IS-Supported Applications: Most older systems were being converted to vendor software, which was already or soon to be Y2K-compliant. Sadlemire was concerned that some replacement projects might not be done in time. The Peoplesoft project seemed on track to go live by January 1999, but the Meditech project to replace most clinical applications in HIS, was to be launched in fall 1998, with a target go-live of June, 1999. Boudewyns cautioned: "I don't think it's a smart move to count on that being done." Alan Wyman replied:

"It's a tight schedule, no doubt about it. In the fall, I'll ask Joe Mack if the entire job can be completed by June 1999. If he thinks not, we'll have to ask Jennings Consulting to remediate HIS – but that will cost more than $100,000."

Jennings was already performing a Y2K analysis on the HIS applications (comprising 800,000 lines of assembler code).

2. Technical (hardware and software tools): Wyman allowed Eary's Technical Support group to defer some year 2000 work, pending completion of their Basic Infrastructure project. Sadlemire's group would no longer be involved with Eary's Y2K project. "The only problem with that 'solution,' Sadlemire said, "is that many other areas will depend on the Technical piece being compliant. For now, that's the solution we have to live with."

3. Telecommunications: The telephone network was scheduled to be replaced, presumably resulting Y2K-compliant network software, switches, and other elements. Kent Fraser sent letters to key vendors (Bell Atlantic, Siemens, others) requesting detailed year 2000 compliance information on their products and services. Fletcher-Allen did not have a test environment to assess telecommunications equipment, so it was important to get some form of independent validation of vendor claims. Fraser also planned to coordinate with Technical Support to determine compliance strategies for various other items, such as channel recorders, short-haul modems, and network software. It was also possible that the network replacement project would be scaled back due to budgetary constraints. "If so, we may have to do remediation work there, also," said Sadlemire.

4. Independent (departmental) Applications: Sadlemire told Boudewyns: "Application owners finally realize it's their responsibility to contact relevant vendors and do the necessary remediation and testing." Sadlemire added that "actual progress toward compliance appears minimal, so far." Also with the spring reorganization, many managers that he met with the previous fall "are gone."

5. Clinical Equipment: Since December 1997 an eight-member team had met to identify medical devices with date-sensitive microprocessors. Team leader Wally Elliott reported that nearly 6000 devices were used at Fletcher Allen, representing up to 400 different manufacturers and 1000 separate models. About 2000 devices – such as heating pads and pneumatically-controlled ventilators -- had no electronic components and hence could not have Y2K issues. Of the remaining 4000 devices, some – such as some EKG monitors -- did contain date-sensitive processors. Many more would need to be analyzed to determine whether they did (and if so, whether they were Y2K compliant). Rather than contact each supplier separately, Fletcher-Allen subscribed – at a cost of $15,000 -- to VHAseCURE.net™, a subscription-based service of the Volunteer Hospital Association (Exhibit 6). Jodi Kanter sent a list of 4000 questionable devices to VHA. VHA was to match that list against their files (data gathered from manufacturers and other hospitals) and produce Y2K status reports for all items that matched up. The report was due back in June, 1998, and would be updated as new data were received.

Elliott tried to estimate funding necessary to upgrade to compliant devices. While some manufacturers offered free upgrades, many did not. Elliott reported: "The supplier of a $400,000 nuclear medicine device says it's not compliant and we'll just have to buy a new one! That's the most radical problem on our list – so far." He added that it would not be possible to test every device in the hospital for Y2K compliance. Three classes of items would be tested: life-support technologies, items that had already been identified as non-compliant ("after a fix is supplied, we will test to make sure the problem is really solved," he stated), and items for which there had been no response from the manufacturer yet could jeopardize patient well-being.

6. Facilities and Non-Clinical Equipment: Two full-time employees were budgeted to begin an inventory of facilities devices and systems (such as building access systems and environmental controls). Where appropriate, manufacturers would be contacted. Since many of Fletcher Allen's 50 buildings were leased, letters were also sent to building owners to identify Y2K issues in their facilities.

7. Payors: Geoffrey Tolzmann planned to send letters to 14 key payors (e.g., Medicare, Medicaid, Blue Cross/ Blue Shield, other insurance carriers), requesting information on their Y2K compliance programs. In analyzing potential cash-flow issues, he estimated that $26 million to $40 million owed to Fletcher-Allen could be delayed if these payors experienced Y2K failures. Tolzmann was inserting Y2K compliance clauses in all new contracts.

8. Suppliers: Paul Leible (director of Materials Management) oversaw the purchasing of thousands of medical and pharmaceutical supplies from 183 "critical" vendors (e.g., Abbott Laboratories, Baxter Health Care, Cardinal, Johnson & Johnson), plus many small vendors. His primary concern was to tightly control materials costs while avoiding supply shortages that might disrupt surgical schedules or otherwise affect patient care. As for contingency planning, he reported that two options were being considered:

> "The first is to rely on the standard practice of utilizing second or third contingency suppliers in the event that our primary supplier cannot come up with the goods. The second option involves identifying the critical inventory items and establishing contingencies such as bumping up the inventory or adding staff. This process would be time consuming and costly, and it will also be difficult to know how much is enough."

Although Leible was confident Fletcher Allen's primary suppliers' Y2Kcompliance projects were well along, he did plan to contact vendors to determine their year 2000 readiness.

Sadlemire was pleased with what was accomplished in less than a year, yet concerned that many managers did not fully appreciate either the risks of non-compliance or the formidable task ahead to achieve compliance. "I'd like to see more people feel they really own this problem," he said to Boudewyns, adding:

> "When it comes to buying or making changes to a system, users stand up every time and say 'We own this, we have a right to tell you what to do.' But when it came to Y2K, they backed off.."

Boudewyns agreed. "It's hard for managers to worry about something that will happen January 1, 2000; they worry about just getting through the next day!" She added:

> "No one has stepped up to say, 'We must stop such-and-such a project, because resources are needed for Y2K.' We operate under the assumption that we can do all of these things and Y2K as well.'

Sadlemire replied, "Yet, the Year 2000 problem could sink this institution if it isn't fixed. This project sometimes plays second fiddle to other projects that I believe are less critical."

Just then Alan Wyman dropped by with advice for Sadlemire:

> "The Board has heard plenty of Year 2000 horror stories, so you need to assure them that we have a solid process in place to deal with it. As long as we hit our timelines, we'll be in good shape. That's the key message."

References:
Anon. "Medical Devices and the Year 2000 Problem." *Health Devices* 26(12): 449-456, December 1997.

Exhibit 1

Agenda for the Y2K PCSI Committee Meeting, June 1998

A.   What is the Y2K Problem?

B.   Scope
    1.   Application Systems
    2.   Technical Systems
    3.   Clinical Equipment
    4.   Facilities Equipment
    5.   Telecommunications
    6.   Suppliers
    7.   Payors

C.   Status
    1.   Application Systems

Status:	Inventory almost complete
	All mission critical systems have been identified
	Plans identified for all mission critical systems
	Active projects
	Vendor correspondence on-going
Future:	Plan should be implemented by mid-1999.
Exposures:	Implementation of major initiatives
	Independent systems unknowns
	Overall – will be in good shape

    2.   Technical Systems

Status:	Desktop rollout and network upgrade
	Completed evaluation of standard desktop h/w and s/w compliant
	Network and mainframe inventory and evaluation: active
Future:	Components will be verified as compliant or made compliant by mid-99
Exposures:	None; manageable situation

    3.   Clinical Equipment

Status:	Inventory complete
	Corresponding with vendors via VHA
	Risk assessment complete
	Plan to test Level 1 equipment – last half of 98
	Upgrades to begin in October 98
Future:	Should be complete before mid-99
Exposures:	Not many issues identified or expected

4. Facilities

    Status: Notified owner of the buildings we rent
                      Working with our vendors for major systems
                      Beginning the site inventories this week
                      Confident that vendors and manufacturers will support upgrades

    Future: Inventory complete by mid-summer
                      Strategy defined for non-compliant components by end of third quarter

    Exposures: Few issues expected; no elevator problems, etc.

5. Telecommunications

    Status: Inventory completed
                      Assess compliance status of equipment – Active
                      PBX procurement plan
                      Actively corresponding with vendors

    Future: Define a strategy by summer

    Exposures: Procurement, local exchanges

6. Suppliers

    Status: Inventory of critical suppliers – complete
                      Just beginning to correspond to vendors via VHA
                      Meeting with the operations group to discuss alternatives
                              Contingency planning: reduce non-essential services, identify
                                    critical services and vendors, bump up inventory
                            Use current system of second or third backups

    Exposures: Yet to determine; potentially significant

7. Payors

    Status: Identified critical payors
                      Questionnaires sent
                      Formation of a task force
                      Open dialog with each payor
                      Contingency planning

    Exposures: Staff and cash flow implications

D. Miscellaneous Activities
    1. Steering Committee
    2. Task Force Group
    3. Liability and Legal Issues

E. Questions
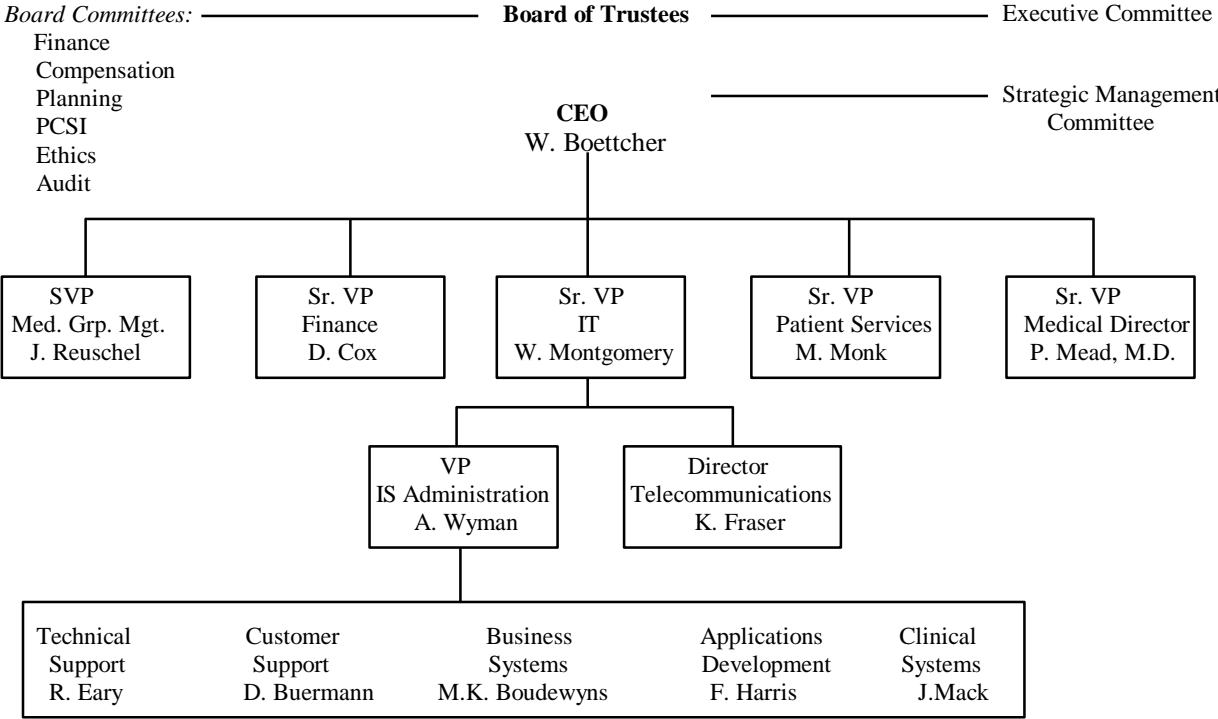
Exhibit 2

A Page from the FDA's Year 2000 Site: http://www.fda.gov/cdrh/yr2000/y2kprblm.html

Products Reported by Manufacturer to have Date Related Problems
Data is posted to this database as it is received from the manufacturer. Submission of data is voluntary. There is no assurance of the compliance status of any manufacturer who does not respond. For manufacturers whose assessments are incomplete, the data will be updated when additional information is received from the manufacturer. The Food and Drug Administration, however, cannot and does not make any independent assurances or guarantees as to the accuracy or completeness of this data.

Manufacturer	**Product**	**Name**	**Telephone**
ADAC			
Laboratories A/S	ADAC Thyrus	Hansen, Jorgen	45 98 18 36 61
	Model Number	**Serial Number**	**SW Version**
	ADAC Thyrus	XTH2-3000A	V3.5b
	Description		
	Database cannot read 4 characters in the date-code, only 2 characters		
	Solution Code	**Solution Date**	
	Hardware upgrade will be provided at cost.	08/01/1999	

Manufacturer	**Product**	**Name**	**Telephone**
ALFA Bioteck (UK) Ltd.	Discrete photometric chemistry analyser for clinical use	Taylor, John	01252-341477
	Model Number	**Serial Number**	**SW Version**
	AuraFlex	All insruments built prior to BIOS upgrades ident.	N/A
	BIOS on master CPU reverts to 01/01/1980 on 01/01/2000		
	BIOS on slave CPU reverts to 01/01/1980 on 01/01/2000		

Manufacturer	**Product**	**Name**	**Telephone**
Avecor Cardiovascular	OnCourse OnLine Notebook Software	Steger, Dennis E.	800 328 3320
	Model Number	**Serial Number**	**SW Version**
	NA		1 & 2
	Description		
	Software stores only last two digits of the year resulting in incorrect transfer of data to the server from Jan. 1, 2000 forward. However, all subsequent versions of OnCourse Monitor OnLine are Y2K Compliant.		
	Solution Code	**Solution Date**	
	Product obsolete; NO upgrade will be provided		

Exhibit 3

Fletcher-Allen Health Care:
***Partial* Organization Chart**
Summer 1998

Board Committees: ——————————— **Board of Trustees** ——————————— Executive Committee
    Finance
    Compensation
    Planning ————————— Strategic Management
    PCSI Committee
    Ethics
    Audit

CEO
W. Boettcher

SVP Med. Grp. Mgt. J. Reuschel	Sr. VP Finance D. Cox	Sr. VP IT W. Montgomery	Sr. VP Patient Services M. Monk	Sr. VP Medical Director P. Mead, M.D.

VP IS Administration A. Wyman	Director Telecommunications K. Fraser

Technical Support R. Eary	Customer Support D. Buermann	Business Systems M.K. Boudewyns	Applications Development F. Harris	Clinical Systems J.Mack

Exhibit 4

Applications Supported by Fletcher-Allen Information Services

System Name	Y2K OK?	Plans for Compliance
IBM Encoder – Medical Records Encoder	?	Unknown
IBM Encoder – Medical Records Encoder M/F	?	Replace – 3M Encoder, IDX Integrated
ANSOS	?	
Applix	Y	Vendor indicates compliance
Bones	?	Retire/Obsolete
Clinical Financial Information System (CFIS)	?	Retire/Obsolete
Clinical Data Editor	?	Retire/Obsolete
Cloverleaf/HCI Interface Engine	?	Vendor indicates compliance
Data Repository – Oacis	?	Vendor indicates compliance
Data Warehouse – Cognos	?	Vendor indicates compliance
Data Warehouse – Data Extracts	?	
Data Warehouse – Metaphor	?	Retire
Data Warehouse – Redbrick	?	Vendor indicates compliance
Dictaphone -Digital Dictation, Enterprise Voice	Y	Vendor indicates compliance
Dictaphone – Enterprise Text	Y	Vendor indicates compliance
ORG Grouper	?	Retire/Obsolete
First Coast - Accounts Payable	?	Retire – by the Year 2000
First Coast - ADT	?	Retire – by the Year 2000
First Coast -Fixed Assets	?	Retire/Obsolete
First Coast -General Ledger	?	Retire/Obsolete
First Coast - Materials Management	?	Retire – by the Year 2000
First Coast -Medical Records	?	Retire – by the Year 2000
First Coast - Order Communications	?	Retire/Obsolete
First Coast - Patient Accounting	?	Retire – by the Year 2000
First Coast- Payroll/Timekeeping	?	Retire – by the Year 2000
First Coast – Surgery Management	?	Replace – ORSOS
First Coast – Work/Wellness, Walk	?	Retire/Obsolete
Global – Accounts Payble	N	Vendor Upgrade – Suite 2000, available 3/9/1998
Global – Fixed Assets	N	Vendor Upgrade – Suite 2000, available 3/9/1998
Global – General Ledger	N	Vendor Upgrade – Suite 2000, available 3/9/1998
Global – Global Link (EDI)	N	Upgrade to Version 5.10 – currently available
Global – Global View Report Writer	N	Vendor Upgrade – Suite 2000, available 3/9/1998
Global – Materials Management	N	Vendor Upgrade – Suite 2000, available 3/9/1998
HIS - Accounts Receivable	?	Retire – by the year 20000
HIS - Address Label System	?	Replace – Under Analysis
HIS - Admitting	?	Replaced – IDX
HIS - Calendar	?	Unknown
HIS -Census Functions and History	?	Unknown
HIS - Charge Entry System	?	Replace – IDX or Meditech
HIS - Common Edit (CEDS)	?	Retire by 2000, when HISS goes away
HIS - Computer Billing (COMU)	?	Retire by 2000, when HISS goes away
HIS - Department Patient Notes	?	Replace – Meditech
HIS - Dietary	?	Replace – Meditech
HIS - Discharge History	?	Retire – by the year 2000
HIS - Discharge Summary	?	Replace – Data Repository
HIS - Emergency Department Log	?	Replaced - IDX
HIS - Event Booking	?	Replace – under analysis
HIS - Financial Decision Support (Feed Payroll)	?	Replace – Peoplesoft
HIS - Game	?	Retire by 2000, when HISS goes away
HIS - Interface	?	Retire by 2000, when HISS goes away
HIS - Lab Order Entry/Results Reporting	?	Replace – Meditech
HIS - Locator	?	Intellidesk
HIS - Monitor	?	Retire by 2000, when HISS goes away
HIS - Notebook	?	Replace – under analysis
HIS - Nurse Appointment Scheduling	?	Replaced - IDX
HIS - Nursing Caredex	?	Replace – Meditech
HIS - Nursing Notes	?	Replace – Meditech
HIS - Office (Policies/Procedures, Word Processing)	?	Retire
HIS - Operating Room Activity	?	Replace – ORSOS
HIS - Order Communications (nursing)	?	Replace – Meditech

HIS - Patient Appointment Scheduling	?	Retire/Obsolete
HIS - Patient Billing	?	Replaced – IDX
HIS - Patient List Print Programs – Nursing	?	Replace – Meditech
HIS - Payroll	?	Replace – PeopleSoft
HIS - Pharmacy	?	Replace – Meditech
HIS - Physician Patient List – Nursing	?	Replace – Meditech
HIS - Problem Analysis and Recording	?	Replace – under analysis
HIS – Program Inventory	?	Retire by 2000, when HISS goes away
HIS - Radiology	?	Replace – IDX Radiology, Mid-1998
HIS - Remittances	?	Retire by 2000
HIS -Report Writers	?	Retire by 2000, when HISS goes away
HIS - Security/Program Inv.	?	Retire by 2000, when HISS goes away
HIS -Surgical Preference Card	?	Replace – ORSOS, mid 1998
HIS - Tele Process Management (CPVT)	?	Retire by 2000, when HISS goes away
HIS - Time/Attendance (Part of Payroll)	?	Replace – One Staff????
HIS - Tumor Registry	?	Replace -CANSURFAC
IDX – ADM (Upgrade Tool), V. 8	N	Upgrade to New Release – Version 8.4 in 1998
IDX –Billing/Accounts Receivable, V. 7	N	Upgrade to New Release – Version 8.4 in 1998
IDX – Chart Completion	N	Upgrade to New Release – Version 8.4 in 1998
IDX –Chart Tracking, V. 7	N	Upgrade to New Release – Version 8.4 in 1998
IDX –Correspondence Log	N	Upgrade to New Release – Version 8.4 in 1998
IDX –DBMS/Report Writer/AES V. 7	N	Upgrade to New Release – Version 8.4 in 1998
IDX – EDI V. 8	N	Upgrade to New Release – Version 8.4 in 1998
IDX - Encounter Form Generator (EFG), V. 7	N	Upgrade to New Release – Version 8.4 in 1998
IDX – EPMS (Sched. To ADT/HPA Link)	N	Upgrade to New Release – Version 8.4 in 1998
IDX – Hospital Patient Acc. (ADT/HPA), V. 8	N	Upgrade to New Release – Version 8.4 in 1998
IDX – Interfaces	N	Upgrade to New Release – Version 8.4 in 1998
IDX – Managed Care Systems, V. 8	N	Upgrade to New Release – Version 8.4 in 1998
IDX – Patient Scheduling (Sched)	N	Upgrade to New Release – Version 8.4 in 1998
IDX – PCS (Paperless Coll), V. 7	N	Upgrade to New Release – Version 8.4 in 1998
IDX – Radiology	N	Upgrade to New Release – Version 8.4 in 1998
IDX –Reporting Modules (home grown)	N	Upgrade to New Release – Version 8.4 in 1998
IDX – Security Plus, V. 7	N	Upgrade to New Release – Version 8.4 in 1998
IDX – Turnover Tool (TUS), v. 7	N	Upgrade to New Release – Version 8.4 in 1998
IDX – Vipor Ver 1.1	N	Replace – Data Repository
Medical Staff Info (Horizons)	?	Upgrade to New Release, available January 1998
Meditech	?	Vendor upgrade – Available mid-1998
OBNet Obstetrics Record	Y	Dinela indicates compliance
OBbScan 4	?	Unkown
ORSOS	?	Upgrade to new release, available June 1998
PAS Abstraction	?	Replace – New app. To access IDX
Peoplesoft – Benefits Administration	Y	Vendor indicates compliance
Peoplesoft –HR Management System	Y	Vendor indicates compliance
Peoplesoft – Payroll	Y	Vendor indicates compliance
Peoplesoft – Restrac (Applicant Tracking)	Y	Vendor indicates compliance
Phycom – C/O Compass (Utilization Review)	?	Vendor is working on a release
Resource Scheduling (Fanny Allen system)	?	Retire/Obsolete
Smart Mailer - Lettership	?	Unknown
STIX	Y	Vendor indicates compliance
VTMEDNET (Email)	?	Replace – email package

Exhibit 5

Year 2000 User Assessment: Business Application System Questionnaire
(Distributed to Departmental Managers, Fall 1997)

Author of Information: Today's Date:

Department:

General Information
System Name:
Sub System Name:
System or Sub-System Function:

Is your department the primary user of the system (Y/N)?
        If no, provide the name of the supporting department:

What is the current status of the system (active, obsolete, under development)?
        If under development, provide the go-live date:

Is this system supported by information services (Y/N)?
        If yes, provide name of the IS support person:

Vendor Information
Was the system purchased from a vendor (Y/N)?

Vendor Name: Vendor Address:

Key Vendor Contact: Phone Number:

Known vendor plans for making the system Year 2000 compliant?

System Strategy
Is there a formal plan to replace, convert or retire the system?:

Replace, convert or retire initiative name (fill out separate sheet):
        Initiative scheduled completion date:

Known Year 2000 Problems:
Are you aware of any Year 2000 problems with your system? (Explain)

Technical Information:
Outside Interfaces (list organization names):

Hardware Platform (mainframe, mid-range or PC):

** Return to Bob Sadlemire, Information Services, 1BTVSQ, Phone 1-8409

Exhibit 6

Excerpt from the VHAseCure.net^{TM} Service Web Site. (http://www.vha.com/2000/main.htm)

Countdown to 2000

Are Your Organization's Electronic Information
and Biomedical Systems Ready?

As 2000 approaches, organizations are racing to determine whether their computer-based information systems will work after the millennium – including the biomedical equipment relied upon by health care organizations. Many computer operating systems and software applications have been designed to recognize only two-digit numbers denoting years, causing the systems to treat the year 2000 as 0.

VHA and a group of member health care organizations are collaborating to devleop a subscription database service that will allow VHA members to contribute information about their approaches to the problem and draw on the experiences of other VHA members.

The database service will be housed on VHAseCure.net^{TM}, VHA's private extranet also available by subscription to VHA members-only.

The database will focus on manufacturers and vendors of biomedical and information systems equipment use by participating health care organizations. Detailed information will explain the date-change effect on the equipment's use.

Subscribers will be able to submit equipment listings electronically. Their information will be loaded into the database and matched against existing equipment data. If there is a match, subscribers will receive information about their equipment to help them address the date-change problem.

VHA organizations collaborating to develop the database service include Community Hospital, Indianapolis, Ind., Clarian Health Partners, Indianapolis, Ind., St. John's Hospital, Detroit, Orlando Regional HealthCare System, Orlando, Fla., The Queens Medical Center, Honolulu.

For more information about VHA's Year 2000 Collaboration, contact VHA using the <u>Feedback</u> form.

VHA Members: Use the <u>Feedback</u> form for access to a database of VHA business partners offering 2000-bug solutions for biomedical and other equipment.

More Information:
<u>Download free, practical guidance on the 2000-compliance issue</u>.

<u>Links to other 2000-compliance sites on the World Wide Web.</u>