Models & Methods That Drive Breakthrough Performance

Veterinary Practice Consultants®
Catanzaro & Associates, Inc.
18301 West Colfax Avenue Bldg R101
Golden, CO 80401
(303) 277-9800

Signature Series

About Veterinary Practice Consultants®

Veterinary Practice Consultants® is part of the largest veterinary-exclusive management consulting firm in our profession - Catanzaro & Associates, Inc. In our twelfth year of serving the veterinary profession, we pride ourselves on remaining independent of any industry obligations and providing veterinary practices with management assistance and instrument is still our only function! Our programs address the real cause and effect relationships in the practice and help you develop plans which allow the changes to become habits!

We have assembled an experienced team of professionals. Each of our associate consultants and authors has a depth of expertise in specific areas of your practice's management and leadership functions. Our team is led by a diversified Board of Directors, chaired by Thomas E. Catanzaro, DVM, MHA, FACHE. Not only is "Dr. Tom Cat" Board certified in healthcare administration by the American College of Healthcare Executives, he is the ONLY veterinarian to have achieved Fellow status in the College; only 10 percent of the more than 30,000 members of ACHE have been awarded the Fellow status. Our team has become known as the international authority on veterinary practice management.

Because every practice is different, we have a variety of services and tools that allow you and your team to access our assistance at the level exactly right for your practice. We're sure you will find the perfect management tool or service in this catalog. At VPC® we don't believe in quick fixes or schoolbook solutions. We are the only consulting firm to publish our beliefs and programs in contemporary literature; our consultants have authored nine veterinary management textbooks (two more are in the works) to share this knowledge with the profession. The tailoring of the programs and procedures to the strengths of YOUR team and the needs of your community & catchment area are the hallmark of our consulting programs!

We are proud of the quality commitment of our clients as well as the services we can provide to support their quest for excellence. We also believe continuous quality improvement (CQI) is required for clients to perceive quality. Remember, clients perceive pride as quality. Pride must be established in the work ethic to ensure continuous improvement occurs within the practice systems.

Our seminars and publications are guaranteed to exceed your expectations - it's that simple! If you'd like a full list of our seminars and publications, give us a call at (303) 277-9800 or visit our web site at www.v-p-c.com. We stand ready to assist you and your hospital team and look forward to working with you.

About Our Consultation Services

Veterinary Practice Consultants® and Catanzaro & Associates, Inc. began in May 1991 when Thomas E. Catanzaro, DVM, MHA, FACHE, and Philip J. Seibert, Jr., CVT, decided a full-time veterinary practice management firm was needed. These coexisting firms are based on a total commitment to quality consulting tailored to each individual practice, built on sound leadership and the power of team-based healthcare delivery.

Because of our professional ethics and standards, we found it necessary to publish our values and beliefs in the three volume textbook series, *Building the Successful Veterinary Practice* (ISUP), so the profession could have a "yardstick" for practice management. We followed with nine additional books through four respected publishers; No other consulting firm has done this. We are the only consulting firm to share this many "no strings attached" information resources with the profession. We have built a diverse team of professionals - some who are still in daily clinical settings, others who concentrate on consulting as a full-time job. We are proud that we have the largest veterinary-exclusive, diplomate-led consulting support team available. We have the skills and capabilities to help any individual, practice, or organization in this profession. Our *Signature Series®* Monographs come with a 3.5" floppy containing tools for personal tailoring for those who wish to "do it themselves." Our approach is a partnership for change, not a "magic bullet" or a simple fee increase solution.

In order to initiate consulting support, we require a signed *"Statement of Agreement"* (SofA) and retainer. If you wish to commit to a consulting relationship, let us know what service you desire and we will fashion a proposal letter and corresponding Statement of Agreement specifically for your engagement. Any on-site services require a travel retainer before we can reserve the consultation dates; The retainer is applied against the total bill for services, which is due and payable upon receipt. After 30 days, any outstanding balance will accrue a 1.5% monthly service charge until paid in full. All payments will be applied first to service charges and then to the oldest outstanding invoice. We'll bill our work against the retainer until it is expended, then you will receive a convenient monthly statement to pay for any subsequent support.

Since we sincerely believe in our ability to help you succeed, we offer this guarantee: you may stop any consulting engagement if you sense we can't work together for the betterment of your hospital. If this happens while we are on-site, you will incur no charges for our time. Only direct trip expenses will be billed. Likewise, we reserve the right to disengage if we feel we cannot help you. Again, only the direct trip expenses will be billed if this occurs while the consultant is on-site.

Whether your practice is at its glass ceiling, a start-up operation, an affiliation of specialists, or a mature one needing to be taken to the next level, we can help. We prefer to help you on-site to meet your team, get a feel for your operation, and build on your strengths. We also honor the desire for distance consulting by providing off-site and "do-it-yourself" tools. As you use this monograph, please remember you're not alone; Anytime you desire further consulting assistance, call for a courtesy phone consultation to discuss how we can tailor a program to meet your needs!

TABLE OF CONTENTS

Overview (Integrated Systems Model) 1
- Change Model 2

Baldrige National Quality Program (BNQP) 4
- BNQP Healthcare Criteria Model 5
- BNQP Criteria List 6
- Ten Self-assessment Steps for BNQP 8
- BNQP Tri-service Model 10

Six Sigma 11
- Six Sigma Target Model 11
- Assessment Process Model 12
- Illustrated Standard Deviation Models 13
- Taguchi Philosophy Models 14
- DMAIC Model 14
- Six Sigma Strategy Model 15
- Six Sigma World Class Model 16
- Six Sigma Effective Results Model 17
- Six Sigma “Green Belt/Black Belt” Model 18
- Six Sigma Problem Solving Model 19
- Calculating Sigma 23

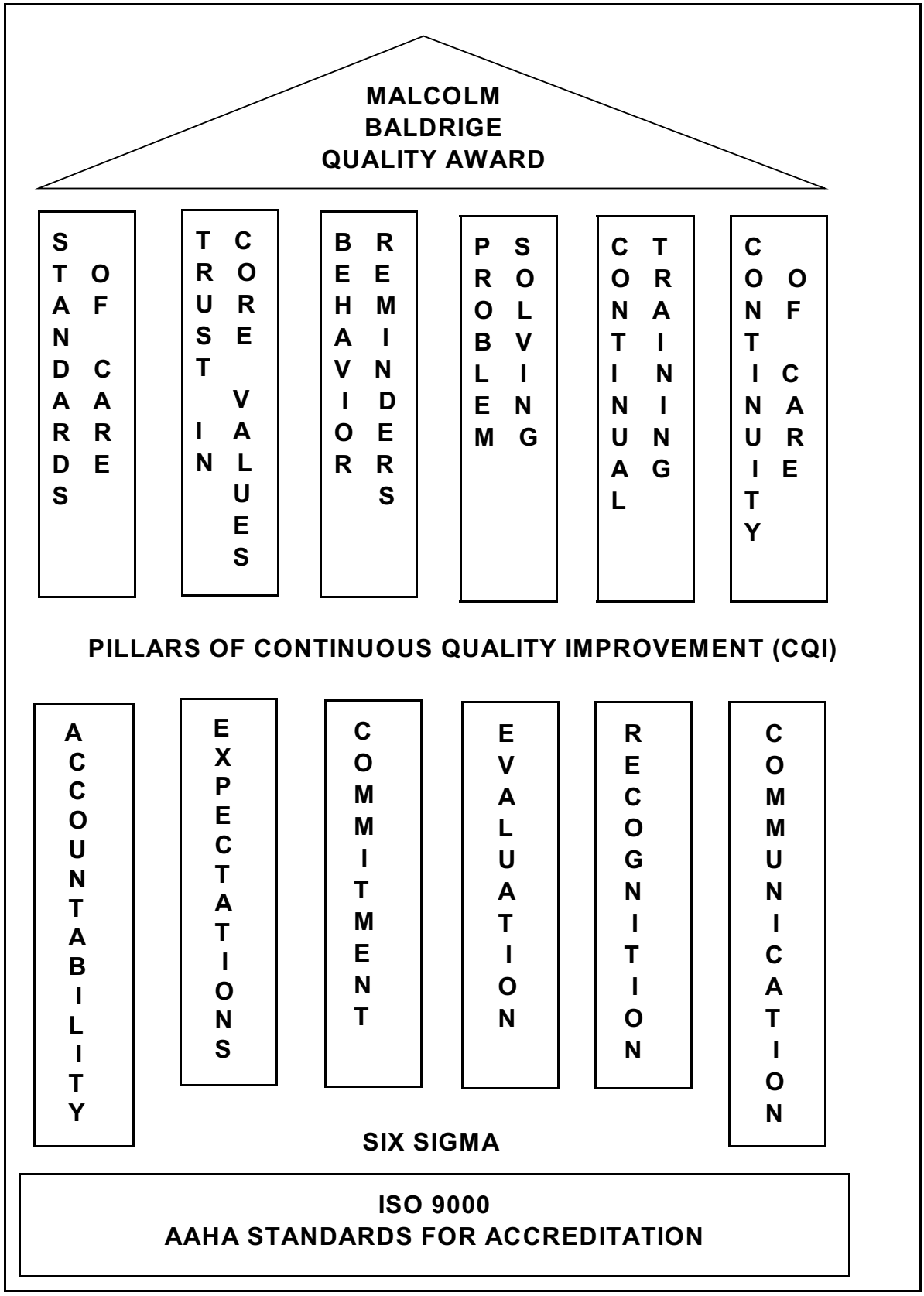
ISO 9000 25
- ISO 9000 - IWA 1 Model 27
- ISO 9000 QA Model 28

Foundations
- AAHA 2003 Standards for Accreditation Categories 31
- Integration of Knowledge Model 32
- Bench-marking 32
- Documentation Control Model 34

Breakthrough Strategy Comparisons 41

APPENDICES

A. Integrated Systems Model 42
B. Practice HAB Culture 43
C. Calculating Sigma Table 44
D. Basic Statistical Terminology 45
E. Standards of Care Example 49
F. Internet References 51


MALCOLM
BALDRIGE
QUALITY AWARD
STANDARDS OF CARE
TRUST IN CORE VALUES
BEHAVIOR REMINDERS
PROBLEM SOLVING
CONTINUAL TRAINING
CONTINUITY OF CARE
PILLARS OF CONTINUOUS QUALITY IMPROVEMENT (CQI)
ACCOUNTABILITY
EXPECTATIONS
COMMITMENT
EVALUATION
RECOGNITION
COMMUNICATION
SIX SIGMA
ISO 9000
AAHA STANDARDS FOR ACCREDITATION

MODELS & METHODS
THAT DRIVE
BREAKTHROUGH PERFORMANCE

$A^2 = G^2$

If you Always do what you have Always done,
You are going to Get what you have always Got.

The veterinary profession has been a static endeavor for so long, we have come to believe that hard work alone makes a practice successful. This is no longer true in the rapidly changing American environment. In 1997, Thomas E. Catanzaro, DVM, MHA, FACHE, wrote the first chapter of *Building The Successful Veterinary Practice: Programs & Procedures* (Volume 2) and titled it, *"The New American Veterinary Practice*." Iowa State Press published it in 1998; Core Values and Key Result Areas were the cornerstones of that chapter.

Times have changed, and while the profession has embraced those initial concepts and brought them into common usage, a new level is now required, just five years later. At the request of Iowa State Press, in 2001, Drs. Catanzaro and Hall wrote, *Veterinary Medicine & Practice - 25 Years in the Future - and the Economic Steps to Get There*, and was published by ISP in 2002. This text shared insights and perspectives about this changing professional environment, and introduced Strategic Assessment and Strategic Response as the strategies required for rapid responses to the fluid dynamics of veterinary healthcare delivery.

Now is the time to look at the next level. The primary model for this monograph is built upon three emerging strategies for healthcare delivery performance improvement. They include:

- ★ A foundation of known quality standards (e.g. **ISO 9000 - IWA 1**), not unlike the new AAHA Standards for accreditation, which have increased from the traditional 300 facility-based standards to more than 850 quality healthcare delivery and facility standards.
- ★ The dynamic process of defect reduction, and performance improvement; it is based upon **Six Sigma**, a statistical assessment of standard deviations from the target result desired (definitions provided in Appendix D). In simplest terms, it is a *"fine old wine in a new bottle":* proven statistical analysis tools + proven project management + cultural calibration = "Getting Better Faster," better financial performance, better team work, and better place to work!
- ★ **Malcolm Baldrige National Quality Award in Performance Excellence** is a combined public-private system used to align effective leadership with

increased value to the clients (customers), improved organizational effectiveness/capabilities, and for developing the descriptors of monitoring the measured results of performance excellence.

Granted, any one of these three performance enhancement models could move any veterinary practice forward, just as any consultant can help any practice move beyond where they are, but this VPC *Signature Series* monograph is integrating the three programs to provide an integrated working model that provides BREAKTHROUGH PERFORMANCE when adopted and implemented.

If you have not read the VPC *Signature Series* monograph, *Strategic Assessment & Strategic Response*, and the discussion of new metrics being required for new programs, please read that system before progressing into this set of models.

THE CHANGE MODEL

We introduced and have used the "change model" in many of our seminars and in our published literature, and this new performance model combines all the facets:

C = D x P x M < costs

C = change = breakthrough performance

D = dissatisfaction/desire = comparison to known quality standards

P = participative process = reduces the standard deviations from the goal

M = modern model = monitored and measured performance excellence

Less than costs = cannot go broke while trying to do better

C When considering change just for the sake of change, don't consider changing. When looking at what you have been doing and comparing yourself to what you were doing, has the technology or knowledge increased faster than your changes? In veterinary medicine, it is said that our knowledge is doubling every 24 months. What is the rate of change being exhibited by your practice? Change occurs because of the three elements of the formula, and since the three factors are each multiplied by each other, if any one factor is ZERO, change will not occur!

D When we enter into a consulting engagement, the average practitioner always wants to know how they compare to other practices we have seen. What we try to do is cause a dissatisfaction with where they are performing, and build a desire to change. When using the new 2003 AAHA Standards for Accreditation, or **ISO 9000 - IWA 1**, which are the new healthcare criteria, as a comparison, discomfort with the level of nonconformance usually causes the desire to improve.

P The need to measure progress is essential, and **Six Sigma** provides a statistically valid assessment model. If you are weak in statistics, please review the 1999 text, *Statistics for Veterinary and Animal Science*, by Petrie and Watson, published by Blackwell Science Ltd., ISBN: 0-632-05025-X, and available from Iowa State Press. **Six Sigma** empowers the team, and uses terminology like: Black Belts (full-time project workers), Green Belts (staff using the programs in their daily routines), Master Black Belts (developers of tools and teaching materials, mentors of the Black Belts), Champions & Sponsors (the leadership which selects the Black Belt candidates, helps identify projects, while removing the barriers to change), and Change Agents (those who drive Six Sigma into the culture of the organization).

M The modern model was created in 1987 by Public Law 100-107, and is a private-public partnership to improve the performance of U.S. organizations; it is called the **Baldrige National Quality Program** (BNQP), named after the 26th U.S. secretary of Commerce, Malcolm Baldrige. It is internationally accepted as providing global guidance in promoting performance excellence and in learning and sharing of successful performance practices, principles, and strategies. The BNQP Criteria for Performance Excellence are self-assessments, and are used for giving feedback to Award applicants.

<$ Less than cost seems a "no brainer" to many, but in fact, we have seen practices losing money on a procedure or drug and the owners say "they will make it up volume." There is not such thing as a "loss leader" in healthcare delivery, and there is no such thing as losing money on each procedure and making it up in volume. There is only 100 percent in each dollar, and if it costs more to provide than what is collected, it is called NO NET, and dumb business. Also, "costs" can be time as well as money, and it may even be morale in some practices. Change has to be seen as beneficial (to client, patient, staff, or even the practice) for the team to have buy-in.

TAKING THE LAST FIRST

When trying to understand where we are going with this integrated model, the best place to start is the end. How do we measure **breakthrough performance**? The veterinary profession is a conservative bunch at best. When we attempt to "benchmark" excellence, we ask what the average is for the nation, or the State, for our community, or for similar practices. **Average is ONLY the best of the worst, or the worst of the best**; it is NOT a meaningful yardstick of excellence.

As a profession, it appears that we have never found a "benchmark" that acts as a yardstick of performance excellence. As a consulting firm, we have always told our consulting partners (clients) to benchmark against themselves, using their own Standards of Care and the established elements of Continuous Quality Improvement

(CQI). CQI was first described in veterinary medicine in the 1998 ISP text, *Building The Successful Veterinary Practice: Leadership Tools* (Volume 1); it is one of the fourteen essential leadership skills. The veterinary profession needs a system for measuring practice performance(s) against the "best of the best." The Baldrige National Quality Program (BNQP) is now being used by human healthcare facilities as the top benchmark, and that is mainly because it is based on measuring the improvements of self-assessment needs.

A useful overview of the Baldrige National Quality Program (BNQP) is provided at the web site: www.quality.nist.gov/eBaldrige/Step_One.htm as well as in their 69-page publication *Healthcare Criteria for Performance Excellence* (T1116), published in 2003 by the American Society for Quality (800-248-1946, or request by e-mail from asq@asq.org).

Baldrige Performance Excellence is defined as an aligned approach to organizational performance management, effective leadership, delivery of increased value to clients (customers), improved organizational effectiveness/capabilities, and methods to measure and monitor results. Baldrige has published core values:

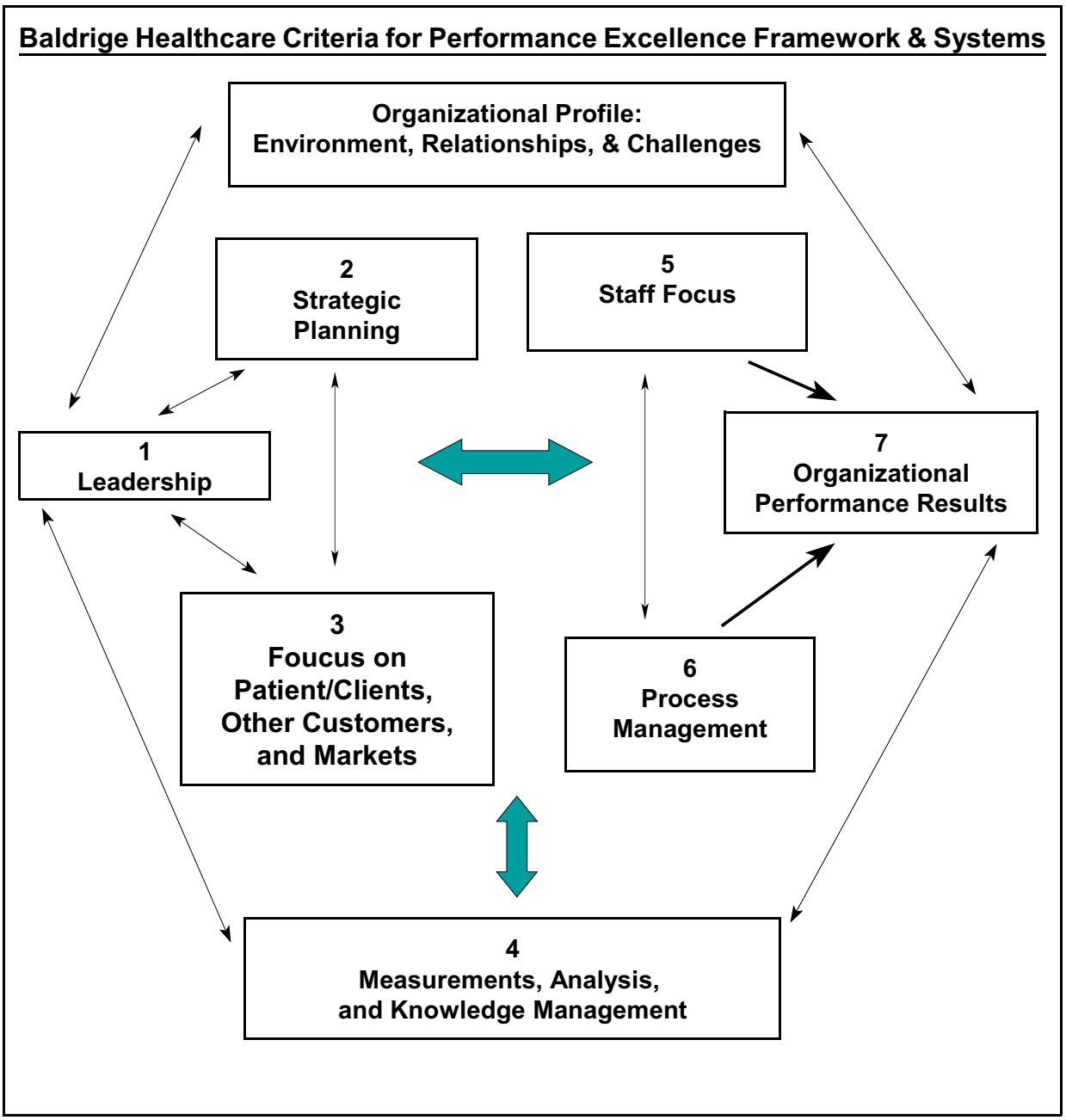
- Visionary Leadership
- Patient-focused Excellence
- Organizational and Personal Learning
- Valuing Staff and Partners
- Agility
- Focus on the future
- Management by Fact
- Managing for Innovation
- Public Responsibility and Community Health
- Focus on Results
- Creating Value
- Systems Perspective

The Healthcare Criteria for Performance Excellence Framework combines the Core Values and BNQP Concepts into seven criteria:

1. Leadership
2. Strategic Planning
3. Focus on patients/clients, other customers, and markets
4. Measurements, analysis, and knowledge management
5. Staff focus
6. Process management
7. Organizational performance results

The above seven factors can be illustrated as a flow chart (an integrated model), some with feedback arrows, and others with directional intensity. While a diagram is often advisable for seeing the relationships, it cannot be considered "the whole story" . . . the rest of the concept is in the print, so read on please.

Organizational Profile - (get your own copy at the National Institute of Standards & Technology website: www.quality.nist.gov/eBaldrige/Step_One.htm) - this sets the context for the way your organization operates. Your environment, key working relationships, and strategic challenges serve as an overreaching guide for your organizational performance management system.



Systems Operations - The systems operations are composed of the six Baldrige Categories in the center of the above diagram that define your operations and the results you can achieve.

- Leadership (Category 1), Strategic Planning (Category 2), and Focus on Patients/Clients, Other Customers, and Markets (Category 3) represent the **leadership triad**. These categories are placed together to emphasize the importance of a leadership focus on strategy and patients/clients/customers. Practice owners set the organizational direction and seek future opportunities for the practice entity.
- Staff Focus (Category 5), Process Management (Category 6), and Organizational Performance Results (Category 7) represent the **results triad**. Your organization's staff and its key processes accomplish the work of the practice entity that yields your performance results.
- All actions point toward Organization Performance Results - a composite of health care, patient/client, other customer, financial, and internal operational performance results, including staff and work system results and social and public responsibility results.
- The horizontal arrow in the center of the framework links the leadership triad to the results triad, a linkage critical to organizational success. Furthermore, the arrow indicates the central relationship between Category 1 (LEADERSHIP) and Category 7 (ORGANIZATIONAL PERFORMANCE RESULTS). The two-headed arrow indicates the importance of feedback in an effective performance management system.

System Foundation - Measurements, Analysis, and Knowledge Management (Category 4) are critical to the effective management of the practice entity, and to a fact-based system for improving health care and operational performance. Measurements, analysis, and knowledge serve as a foundation for the performance management system.

Criteria Structure - The seven Criteria shown in the above figure are subdivided into Items and Areas to Address.

- There are 19 Items, each focusing on a major requirement. Each Item has titles and a point value:

1. Leadership . . . . . 120 points
    - 1.1 Organizational Leadership . . . . . 70 points
    - 1.2 Social Responsibility . . . . . 50 points
2. Strategic Planning . . . . . 85 points
    - 2.1 Strategy Development . . . . . 40 points
    - 2.2 Strategy Deployment . . . . . 45 points
3. Focus on Patients/Clients, Other Customers & Markets . . . . . 85 points
    - 3.1 Patients/Clients, Other Customers & Healthcare Market Knowledge . . . . . 40 Points
    - 3.2 Client & Other Customer Relationships and Satisfaction . . . . . 45 points
4. Measurement, Analysis, and Knowledge Management . . . . . 90 points
    - 4.1 Measurement & Analysis of Organizational Performance, ... 45 points
    - 4.2 Information & Knowledge Management . . . . . 45 points
5. Staff Focus . . . . . 85 points
    - 5.1 Work Systems . . . . . 35 points
    - 5.2 Staff Learning & Motivation . . . . . 25 points
    - 5.3 Staff Well-Being & Satisfaction . . . . . 25 points
6. Process Management . . . . . 85 points
    - 6.1 Healthcare Processes . . . . . 50 points
    - 6.2 Support Processes . . . . . 35 points
7. Organizational Performance Results . . . . . 450 points
    - 7.1 Healthcare Results . . . . . 75 points
    - 7.2 Patient/Client & Other Customer-Focused Results . . . . . 75 points
    - 7.3 Financial and Market Results . . . . . 75 points
    - 7.4 Staff & Work System Results . . . . . 75 points
    - 7.5 Organizational Effectiveness Results . . . . . 75 points
    - 7.6 Governance & Social Responsibility Results . . . . . 75 points

TOTAL POINTS . . . . . 1000 points

Areas to Address - Items consist of one or more Areas to Address (Areas). Organizations should address their responses to the specialty requirements of these Areas.

TEN STEPS for BALDRIGE CRITERIA SELF-ASSESSMENT & ACTION

Organizations have different approaches for applying the Baldrige Criteria in their self-assessment and action exercises. In the BNQP, repetition of application is very common, using the feedback mechanisms of the BNQP process to fine tune measurements and analysis of the organization self-assessment and action plans. As healthcare organizations strive for excellence, they alter their process to become either more formal, or more informal, to achieve the self-assessments goals in the subsequent BNQP application. The basic ten steps are:

Step 1 - Identify the boundaries of the practice to be assessed. This step should ensure that all appropriate areas are included and that data and information are consistently collected from those areas throughout the self-assessment and action activities. In addition, it should ensure that self-assessment and action champions and team members are selected who are representative of these areas.

Step 2 - Select seven champions, one for each *Criteria for Performance Excellence* category. In the healthcare Criteria, the categories are Leadership; Strategic Planning; Focus on Patients/Clients, Other Customers, and Markets; Measurements, Analysis, and Knowledge Management; Staff Focus, Process Management, and Organizational Performance Results. The champions must have both leadership and facilitation skills, as well as widespread knowledge of the practice entity. Enthusiasm and Criteria knowledge are important assets in the self-assessment, planning, and action processes.

Step 3 - Decide on the format for and scope of your self-assessment and action plan. This step should clarify expectations for what is to be accomplished and the resources needed to complete the task(s). Selecting a format to easily communicate the self-assessment results set the stage for future steps. Communicating results of the self-assessment and implementing an action plan enables the organization to enhance alignment and better achieve common purposes.

Step 4 - Practice Owners and Champions prepare the Organization Profile. Depending on the extent of the gaps uncovered, it may be valuable to move to Step 9, ”Develop and Implement an Action Plan for Improvement.” Developing an action plan and implementing improvements to close identified gaps will prepare you to complete a full self-assessment in the future.

Step 5 - **Practice self-assessment techniques with your seven Category champions, using the Criteria Performance Excellence as a guide.** Practicing these techniques will help you learn how to use the Criteria for self-assessment and action. Although you might start with an oral discussion or bulleted report in your first self-assessment and action planning process, in future self-assessments you can progress to a full written response of meaningful measurements, linkages, and analysis of the scope of the perceived results.

Step 6 - **Champions select Category teams; champions and teams prepare a response for their assigned Items.** Each Champion will guide a team (three to five enthusiastic and knowledgeable individuals) through the next steps of the self-assessment and action planning process. Using the member's expertise, each team provides or obtains data and information to respond to the questions in each Category Item of the *Criteria for Performance Excellence* (ASQ publication T1116).

Step 7 - **Share responses between the teams and finalize the findings. Identify key strengths and gaps in Category responses.** Sharing responses should help you arrive at a common understanding of what the practice is doing, reach a consensus on the strengths and gaps in the practice approaches, and share, learn and improve the practice processes, as well as identify overall systemic themes that cut across Categories.

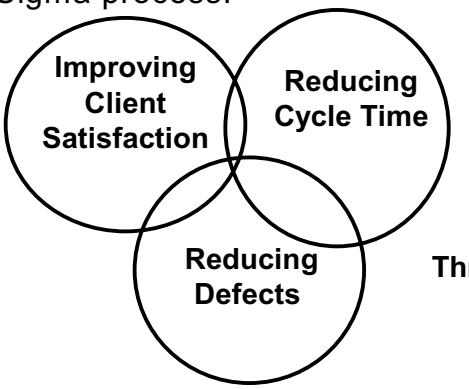
Step 8 - **Prioritize your practice's key strengths and opportunities for improvement.** Prioritization will help you develop an action plan that, most effectively uses available resources. Using the *Organizational Profile* at this point, to maintain a focus on what is relevant and important, helps the teams focus on what is really important for the most effective results. Decision factors are now addressing any resource constraints, strategic assessment linkages, organizational impacts, costs, time required to implement, and people available.

Step 9 - **Develop and implement an action plan for improvement.** The outcome of self-assessment is a road map for improving your practice entity. An improvement action plan will include steps for achieving improved results; the action plan will include both short-term actions to keep the momentum alive, and the top priorities needed to make the results a "mountain top" achievement.

Step 10 - **Evaluate and improve your self-assessment and action process.** Regularly scheduled self-assessment and action are key to ongoing improvement. By improving the self-assessment and action process, teams can reduce cycle time, gather more useful information, improve action plans, and achieve better results.

What is an example of this process? In the self-assessment, a human hospital found that only 67 percent of their MI patients had received beta-blockers, while cardiology doctrine was stating it should be 100 percent. The hospital changed their nursing protocols and achieved 100 percent beta-blocker dispensing, just by taking the prescription out of the doctor's decision process. In another case, the hospitals nosocomial infection control policy was that all surgery patients should receive preventive antibiotics within four hours post-surgery, yet it was not happening. Again, the hospital changed their nursing post-surgery protocols and achieved 100 percent preventive antibiotic administration within 4-hours (see www.creative-healthcare.com for applications of Six Sigma in human healthcare delivery). Success in a companion animal veterinary practice is most defined by client perceptions. Some practices use 20-20 hindsight, while others actually ask their clients, as outlined in the ISP text, *Building the Successful Veterinary Practice: Innovation & Creativity* (Volume 3), with the Council of Clients. A diagram of the expectation would look like:

By now, your head is probably spinning, mainly because the Baldrige Criteria is based on measuring, quantifying, and assessing improvements in excellence of performance; it is a yardstick of measuring excellence, but is NOT the process of improvement needed. It is for this reason that the improvement process needs to be based on an enhanced system of change analysis, and that is why we are introducing your practice to the Six Sigma process.



Three Main Six Sigma Targets

SIX SIGMA

Six Sigma is perceived as a smarter way to manage a business, or a veterinary practice (which is supposed to be a business). It is defined as:

1. A statistical MEASURE of the performance of a process or a product.
2. A GOAL that reaches near-perfection for performance improvement.
3. A SYSTEM OF MANAGEMENT to achieve lasting business leadership and world class performance

Six Sigma actually puts the client first and uses facts and data to drive better solutions. Six Sigma efforts target three main areas:

- Improving client satisfaction
- Reducing cycle time
- Reducing defects

Improvements in these three areas usually represent: an increase in net income, a dramatic cost savings, higher client retention, the capture of new markets, and the building of a reputation for top-performing services. Yes, like Continuous Quality Improvement (CQI), it is improvement-focused, yet it offers three key characteristics that some intuitively knew and practiced, but seldom measured:

1. ***Six Sigma is client focused.*** It is almost an obsession to keep external client needs in plain sight, driving the improvement effort.
2. ***Six Sigma projects produce major returns on investment.*** At GE, where it became a cornerstone, the CEO, Jack Walsh wrote in the annual report:

   > *We did not invent Six Sigma - we learned it. The cumulative impact on the company's numbers is not anecdotal, nor a product of fancy charts. It is the product of 276,000 people executing and delivering the results of Six Sigma to our bottom line: in 1998, cost savings of $400 million and returns of more than $1 billion.*

3. ***Six Sigma changes how management operates.*** It is much more than improvement projects. Practice owners and medical directors, as well as staff leaders throughout the healthcare organization, are learning the tools and statistical assessment concepts of Six Sigma: new approaches to thinking, planning, and executing to ACHIEVE RESULTS. In a lot of ways, Six Sigma is putting into practice the notions of working smarter, not harder.

Six Sigma is a statistical measure, where the lowercase Greek Letter sigma - σ - stands for standard deviation. Standard deviation is a statistical way to describe how much variation exists in a set of data, a group of items, or a process. The

assessment process looks at OUTCOME standards and change impact rather than just internal processes.

SIX SIGMA ASSESSMENT PROCESS EXAMPLE

FACT: The practice controls the client clinical access by an appointment log.

FACT: The Practice team recognizes the "social contract" for the doctor(s) to see the patients at the time appointed (actually within 5 minutes of the appointment).

FACT: The Pfizer client study (35,000 to 37,000 per year over three different years) reflected that 85 to 87 percent of the clients wanted to be in-and-out of the consult room in 20 minutes or less.

ASSUMPTION: If 68 percent of the clients were seen on time, your process is at only a "2 sigma" level.

ALTERNATIVE: If you were to see 93 percent on time, which sounds good, you would be operating at only a "3 sigma level"; most American businesses tend to strive to operate at the 3 to 4 Sigma level ("good enough").

GOAL: If you get 99.4 percent seen on time, you're operating at a "4 sigma" level.

σ	Defects Per Million Opportunities
1	687,672.15
2	308,770.21
3	66,810.63
4	6,209.70
5	232.67
6	3.40

ULTIMATE: To be "Six Sigma", you would need to see 99.9997 percent of the clients on time.

Keep in mind that the Sigma measure is looking at how well you're meeting the client needs. Sigma measure focuses on the paying clients. Many other measures, from ACT, to staff salary, to overhead to sales volume, have been traditionally used to measure a veterinary practice, but they are NOT related to what clients really care about nor what makes your practice "special" in a client's mind.

We could use the Sigma measurements to compare inpatient dental anesthetic times, or even computer close-out time for each day, since they are critical activities effecting the practice's business, even though they are two very different outcomes.

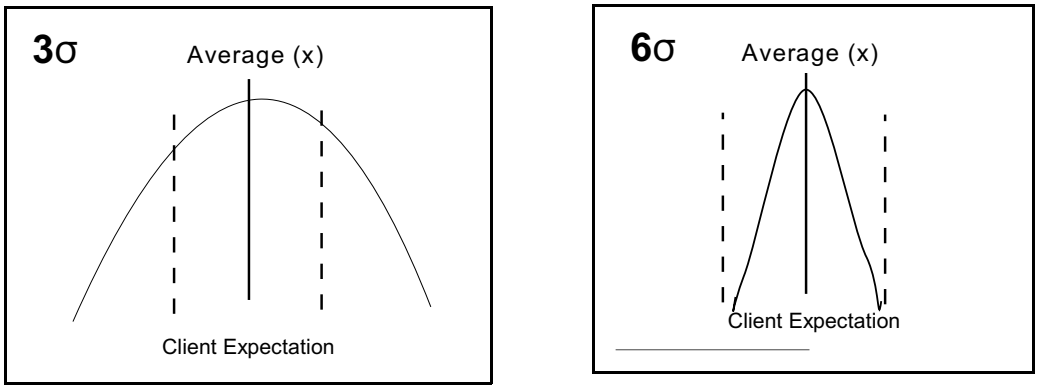
With reference to the above example, even if it would take a long time for your practice to do a million appointments, don't worry. This scale is just a projection of the number that would happen if you did!

The first step in calculating sigma, or in understanding its significance, is to grasp what your clients expect. Exceeding client expectations is what differentiates any practice in the modern competitive marketplace of veterinary medicine alternatives. "Exceptional service" occurs when client perceptions perceive their expectations have been exceeded (i.e., the formula: ECS = CP - CE). In the language of Six Sigma,

client requirements and expectations are called CTQs (critical to quality).

Even if you are on the right track, you'll get run over if you just sit there!
Will Rogers, humorist

Six Sigma Illustrated



Wide Variance **Slim Variance**

Six Sigma is data driven. When a practice violates important client expectations, it is generating defects, complaints, and cost. Healthcare research tells us that a client who received "exceptional service" will tell five or six others, and we also know we only hear from one out of 11 unhappy clients. The challenge is EVERY unhappy client tells a dozen more people, and each of those tells five more. When data is derived from events in the form of measurements, it becomes actionable information.

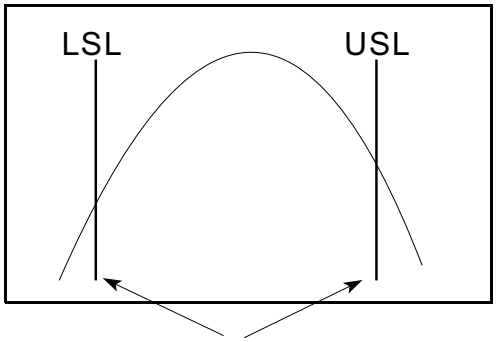
What level of data does your practice view data?

- We only use experience as perceived by the doctor(s), not data.
- We collect data but never look at it as a team.
- We collect data, but just look at the Average Client Transaction (ACT).
- We collect data, look at the numbers, but talk only about gross sales.
- We group data by doctor, so we can compete and compare internally.
- We use our data to form charts and graphs, but talk about ACT and gross.
- We use sample data and generate trend assessments for discussions.
- Our sample data is used to generate descriptive statistics.
- We use sample data and generate inferential statistics.

You don't fatten the cow by weighing it more often!
Six Sigma Factoid

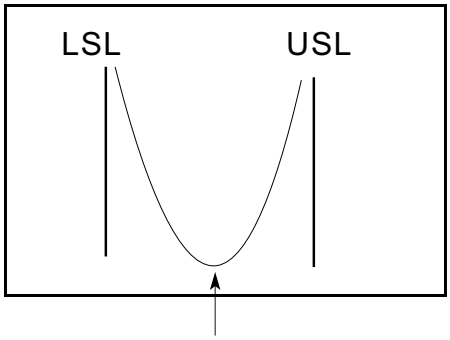
Six Sigma is a philosophy and a culture, client-centered, and in veterinary medicine, with high levels of patient advocacy. Traditionally, it has been a "goalpost mentality," with lower specifications limits (LSLs) as well as upper specification limits (USLs), and we still expect the best of the best to miss sometimes; Six Sigma is a Taguchi Philosophy, where any deviation from the target causes loss to the community, and therefore variation is evil.

Traditional Philosophy



Goal-post Mentality
Anything outside the specification limits represent acceptable quality losses.

Taguchi Philosophy



Variation is Evil!
Any deviation from the target causes losses to society.

Six Sigma embraces proven project management systems, with the same basic five components (and a lot of internal nomenclature we already know):

Define	Measure	Analyze	Improve	Control
✦Problem Statement	✦Data Integrity	✦Chi Square	✦Multifactor Exper	✦Control Plans
✦Project Goal (CRAM)	✦Measurement	✦*t* - Testing	✦Brainstorming	✦SPC
✦Benchmarking	✦Capacity est.	✦Regression	✦Simulations	✦Maintenance
✦Collect data	✦Refinement	✦Hypothesis Tst.	✦Mistake-proofing	✦Sustain gains

Keeping clients happy is good, and it is profitable. A five percent (5%) increase in client retention has been shown to increase PROFITS more than 25 percent in the multi-visit per year companion animal hospitals.

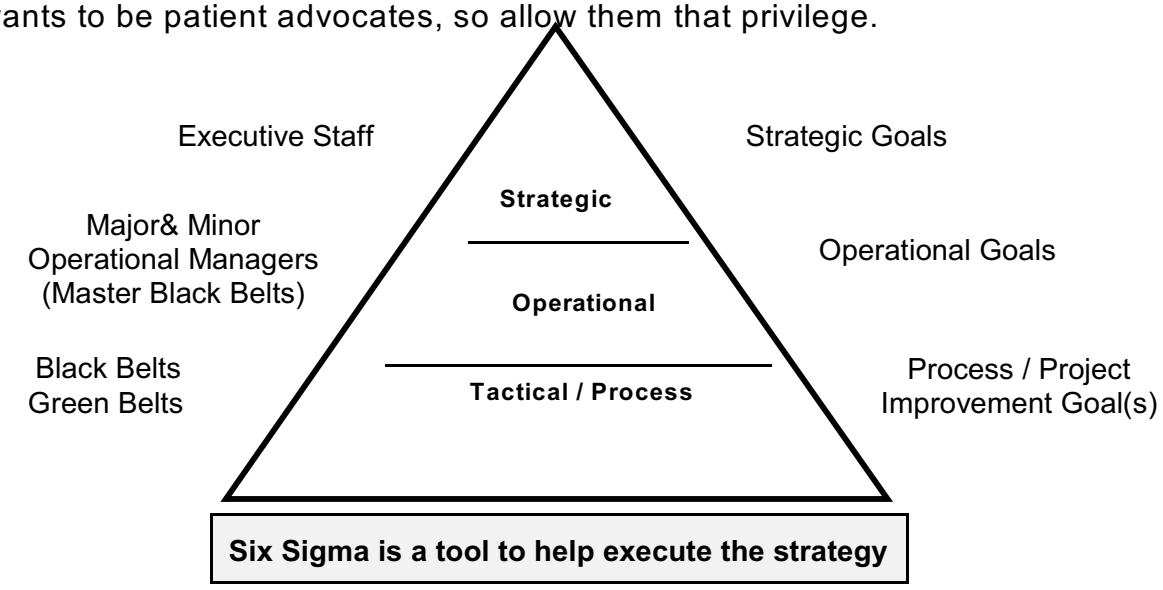
It is estimated that most veterinary practices lose 15 to 20 percent of their revenues each year due to ineffective, inefficient processes - although some practices neglect of client-centered patient advocacy suggests that is even higher.

Six Sigma provides a goal that applies to both product and service activities and that sets attainable, short-term goals while striving for long-range business objectives. In the future, statistical assessments will likely drive your practice programs, but right now, to get a team-based buy-in, don't wait, and don't just take my word for it, **test**

it on two programs starting today:

- **Nutrition** (*currently, only about 20 percent of the patients nationally stay on their prescription diets*) - every prescription diet patient is IMMEDIATELY assigned to a nursing staff member to follow and bring back at least once a month for a courtesy weigh-in or recheck nursing appointment.
- **Post-natal Care** (*currently, only about 56 percent of the patients nationally stay on an initial immunization schedule*) - every puppy or kitten patient is IMMEDIATELY assigned to a nursing staff member to follow and bring back on the prescribed schedule. This person calls a day in advance to remind the client of the appointment. Any failure to appear as expected gets a phone call from the nurse, saying something like, *"The doctor and I missed you and Powderpuff today, is everything okay at your house?"*

These two programs have traditionally been assigned by the doctor to the client to self-monitor, and as such, lower compliance has been seen. Remember the examples we used in human healthcare, when something was a critical (CTQ), it was assigned to an individual staff member to ensure completion. Doctors are very hard to train in wellness medicine principles and procedures, but most all veterinary staff wants to be patient advocates, so allow them that privilege.



Six Sigma is also a management system. A significant difference between Six Sigma and seemingly similar programs of the past years is the degree to which the practice's leadership plays as a key role in regularly monitoring and recognizing public program results and accomplishments. When Jack Welch introduced the Six Sigma program at General Electric, he told senior executives that 40 percent of their annual bonus would be based on their involvement and success in implementing the Six Sigma programs at GE. This turbo-charged the focus of most all the executives immediately. Training was given a major boost, and thousands of teams became trained in very short order.

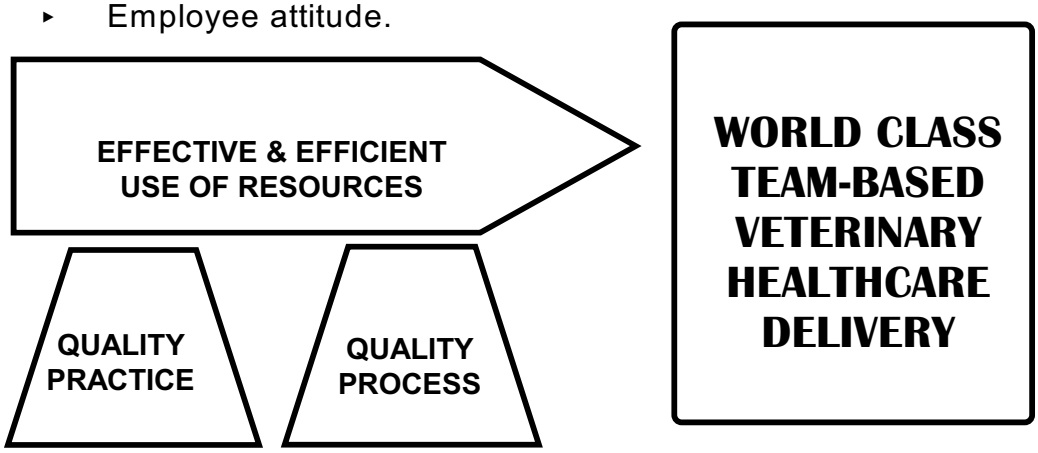
But training alone is NOT Six Sigma. Six Sigma is a management system which answers the following questions:

- Who are the champions and sponsors?
- Who will be the team members that want accountability/responsibility?
- What are the top level goals and strategy of the practice?
- Who are the significant practice clients we are targeting?
- What are the core competencies/processes of the practice?
    - What are the key macro-processes?
    - What are the enabling processes?

The practice leadership system involves accountability for results and ongoing reviews to ensure results. This places the doctors, managers, and coordinators into a guiding position for the practice's business goals.

Starwood Hotels, which owns and operates the Westin, Sheraton, and several luxury resort hotels, launched the first Six Sigma program in the hospitality industry. Their managers at all levels were being held accountable for a variety of measures, including:

- Customer satisfaction
- Key process performance
- Scorecard metrics on how the business is running
- Profit-and-loss statements
- Employee attitude.



Six Sigma Intensified & Illustrated

A Six Sigma healthcare system has been working in a $300 million annual revenue triple-hospital complex in Kentucky: 430-bed acute care hospital in Bowling Green, a 105-bed long-term care facility in Scottsville, and a primary/secondary day-surgery practice complex in Franklin. This complex provides open heart surgery, cancer treatment, neonatal intensive care, psychiatric services, home health, EMS, Managed Care, primary care walk-in clinics, OP rehabilitation center, 12 physician practice affiliation, and even a free clinic. They have evolved three primary Healthcare Quality Initiatives, emphasizing:

CUSTOMER SERVICE/SATISFACTION

- reduced wait times
- consistent service
- enhanced reputation in community

DELIVERED QUALITY CARE

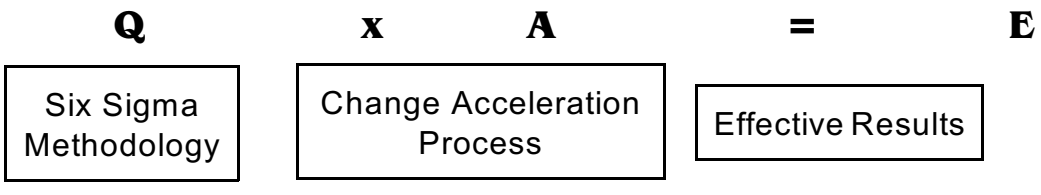
- reduced medical errors
- increased patient safety
- use of appropriate technology

AT LOWER COST

- increased productivity
- decreased cost through reduced variation
- reduced waste of limited resources

After adopting the Six Sigma system and watching the changes, this healthcare complex has revised their vision to state: *"By the year 2004, be proudly recognized by our employees, patients, clients, community, physicians and payors as the unquestionable leader in health care and service, providing flawless quality never before achieved in the healthcare industry*." Concurrently, their strategic focus changed to three key factors (and three new assessment systems): Customer satisfaction (Press Ganey Scores); Quality - Timeliness of Service (Rolled "Z score" of Core Processes); and Efficiency (Cost per unit). This healthcare complex understood from the very beginning that 62 percent of all Quality Initiatives fail from lack of attention to the CULTURE and PEOPLE SIDE of change. They said:

The effectiveness (E) of the result is equal to the Quality (Q) of the solution times the Acceptance (A) of the idea

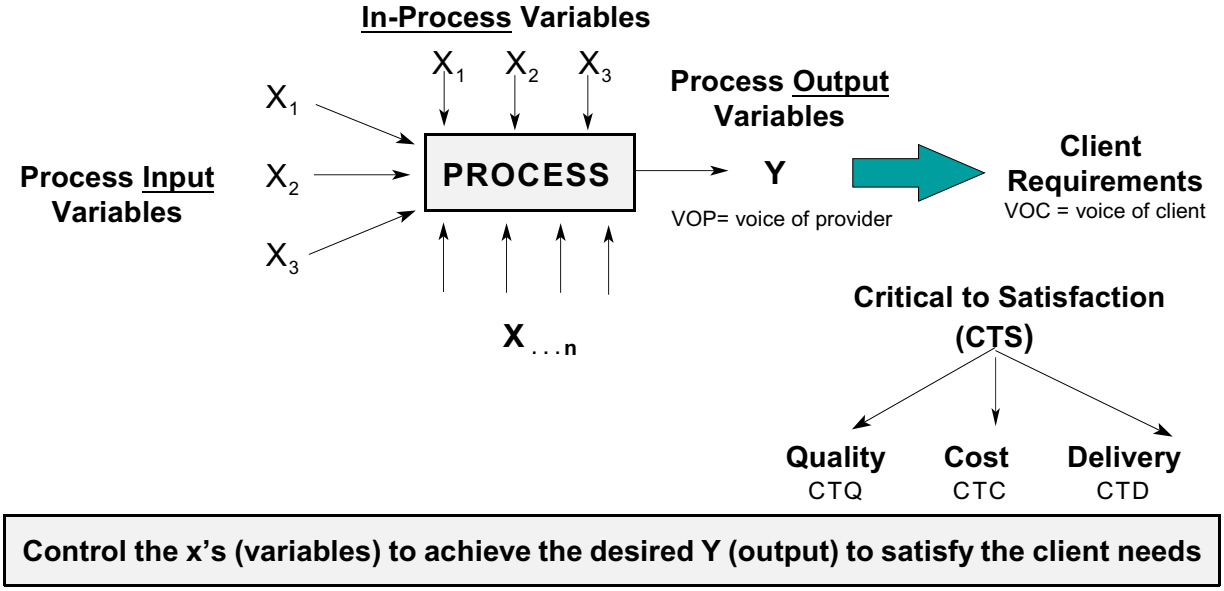


As a management system, Six Sigma is NOT owned by the senior leadership (although their role is critical), nor is it driven by middle management (although their participation is key to success). The ideas, solutions, process discoveries, and improvements that arise from the Six Sigma Systems are placed in the front lines of the organization.

- ✓ the more responsibility put into the hands of the Consultation Room doctor, the better the diagnostics and medical records,
- ✓ the more responsibility put into the hands of the Client Relations team, the better the client bonding and return rates;
- ✓ the more responsibility put into the hands of the Outpatient Nursing team, the better the client education and subsequent acceptance of "needed" care;
- ✓ the more responsibility put into the hands of the Inpatient Nursing team, the better and more timely the quality patient care; and
- ✓ the more responsibility put into the hands of the Animal Caretaker team, the better the patient surveillance, as well as cleanliness and facility maintenance.

As a practice strives to put more responsibility and accountability for outcomes in the hands of the staff who are working directly with clients and patients, the changes start becoming client-centered instead of the traditional provider-centered perspectives. A Six Sigma System combines both strong leadership and grassroots energy and involvement. As such, the benefits are not just financial; people at all levels find a better understanding of clients, clearer processes, meaningful measures, and powerful improvement tools which make their work more effective, less chaotic, and usually more rewarding.

Six Sigma is Process Improvement. In the Iowa State Press text, *Building The Successful Veterinary Practice: Leadership Tools* (Volume 1), we introduced fourteen leadership skills which can be taught, and with repetitive reinforcement, can be learned and incorporated in the practice culture. This is not an easy task, and should not be taken lightly, or even tried as a "test." Either you want to change the practice culture, or you do not. Do not start this with a promise that your staff and methods can return to the past. It is a commitment of major magnitude. Consider the process as a new mathematical formula:



Control the x's (variables) to achieve the desired Y (output) to satisfy the client needs

SIX SIGMA PROBLEM SOLVING PROCESS

Like a true consulting fog-factor, we have added to the alphabet soup of your life using the contemporary Six Sigma jargon . . . LSL - Lower Specification Limit, USL - Upper Specification Limit, CTS - Critical To Satisfaction, CTQ - Critical To Quality, CTC - Critical To Cost, CTD - Critical To Delivery, and a host of new terms: Champions, Sponsors, Green Belts, Black Belts, Master Black Belts, Change Agents, C-R-A-M goals (challenging, realistic, attainable, and measurable), S-M-A-R-T objectives (specific, measurable, attainable, realistic, and time-managed), etc. Some will "turn off" because of the new nomenclature, but like new metrics, if you do not change the jargon when you change the metrics, you will find that slipping back to your old system is a very comfortable regression process.

So let's add another set of letters to your vocabulary. The most important string of letters you will need to ever learn is probably DMAIC (pronounced duh-MAY-ick). Improvement, problem-solving, and process-design teams will be the most visible and active components of the initial Six Sigma effort, and they will all use DMAIC. When the boundaryless team is brought together, their inherent diversity needs to accept a common process, or model, so all can share. That is DMAIC. DMAIC is a Six Sigma process: **D**efine, **M**easure, **A**nalyze, **I**mprove, and **C**ontrol. It is a flexible but

powerful five step process for making improvements happen and stick.

Several broad phases apply to the life cycle of almost all teams, and although some of the phases may be modified, or the sequences may be adjusted, it also applies to the Zone Teams (see the VPC *Signature Series* monograph, *Zoned Systems & Schedules*, www.v-p-c.com), Six Sigma Teams and DMAIC Teams:

PHASE 1 - Identifying and Selecting the Project - Clarity in definitions and direction are critical, as are predeterminations of priorities and success measurements for the expected outcome. Some planners define a good project by the "two Ms": meaningful and manageable. The CRAM or SMART criteria can also be used to add clarity to the project. Remember, "realistic" pertains to the environmental limitations and latitudes, while "attainable" applies to the individual's skill and knowledge to assume accountability for achieving the desired outcome.

PHASE 2 - Forming the Team - Concurrent with problem identification comes the identification of the team (and team leader - Black Belt or Green Belt). In larger veterinary practices, the Black Belts will likely come from the administrative team, while in virtually all practices, the Green Belts are coordinators from within the specific or affected zone(s). This is NOT the place to put an idle slacker. When someone is selected for one of the teams, it means they are viewed as someone with the "smarts" and the "energy" to be some real contributors, with "boat-rocking" potential.

PHASE 3 - Developing the Charter - This is a written guide to the problem or project, typically drafted by the Champion, Sponsor, or Change Agent. It is added to and refined by the project team. In fact, most "learning teams" modify their charter over time, as the team members' skills and strengths are brought to bear on the project/problem. It is no different for a DMAIC Team.

PHASE 4 - Training the Team - In most veterinary practices, training is pointing in a direction and handing someone a job description or thick SOP (Standard Operating Procedures) or Protocol Binder. In Six Sigma, training is a high priority, and learning is a check-and-balance mandate (application phase shows competency). The focus is on the skill set, and on a DMAIC Team, it is the analytical process and measurements which increase effectiveness; this training can require one to four weeks, depending on the statistical methods selected for assessment and analysis. For best effect, adult training is done in sequential, yet short, phases, so it is "learn and apply" in a series of experiential learning opportunities. Most DMAIC Teams plan a two-to-five week teaching/learning then apply on-the-job, after the first week of statistical training.

PHASE 5 - Doing Implementation of Solutions and Revising - Nearly all teams are accountable for their own implementation process, with the coach on the sideline. On a DMAIC Team, the Green Belt, or possibly a Black Belt, is a player coach. Seldom does a team hand-off their program to someone else. Teams develop project plans, training, pilots, and procedures for the solutions, and are responsible for both putting them in place AND ensuring they work as expected - by measuring and monitoring - for a meaningful period of time.

PHASE 6 - Sharing the Solution - Eventually, every team disbands, and in some cases, new players join the team and the direction changes. On a DMAIC process, there is a formal point in time where the DMAIC Team hands-off the solution to the official owner (the practice Zone). The Zone team then accepts accountability for CQI to sustain the gains and improve the processes further. The DMAIC Team will then disband, and take their new skill set and experiences back to their own sphere of influence to continue CQI within their own zone.

"What," you may ask, "*makes DMAIC different from or better than the other problem-solving techniques?"* The first point to remember, Six Sigma is an OLD WINE in a new bottle; it may be the same model you are using. The second point to realize is that if you are asking this question, you are already practicing one of the key skills of Six Sigma management: **asking good questions BEFORE you seek change.**

If you see DMAIC as just a set of letters, or steps, it is not better. What needs to be realized is that it is an integrated step in a much larger process, and it gains importance by developing the people who work through the six phases listed above. The biggest differences or advantages of DMAIC probably boil down to seven basic core competencies (there are more with each attempt, but they will vary):

1. *Measuring the problem* (no assumptions); you must validate the facts.
2. *Focusing on the client* (not doctors); without clients, no practice can survive.
3. *Verifying root cause* (team agreement is inadequate); prove cause with facts.
4. *Breaking old habits* (no minor adjustments); real change requires creativity.
5. *Managing risks* ("bugs" will occur); testing & perfecting with common sense.
6. *Measuring results* (no gut feelings); verify real impact with real facts/data.
7. *Sustaining change* (no reversion); nurturing and support by entire team

The traditional production model has always been published and discussed as a three-factor process:

INPUT → PROCESS → OUTPUT

But in healthcare delivery, it has four factors which must be addressed:

INPUT → PROCESS → OUTPUT → OUTCOME

Since we already know that in veterinary healthcare delivery, we must address client satisfaction (the front door must swing), we know there is a step past the output of a cured animal. The OUTCOMES which must be addressed include:

- Satisfied/Happy Client
- Satisfied/Proud Staff
- Net Income From Procedure(s)

So if we apply the Six Sigma logic to the original appointment problem we proposed, and you ask “What would be a good measurement method for the on-time appointment problem?”, we can show you the actual Sigma determination process:

CALCULATING SIGMA

Figuring the sigma for most processes is pretty easy. A calculator or computer is helpful, but no advanced math is really needed. What is needed is basic data and definitions for the following:

- The "unit" or item being delivered to the client
- The "requirements" that make the unit good or bad for the client
- The number of requirements, or defect opportunities, for each unit

For example, with on-time appointments, our unit is a point in time, the appointment. The four main ingredients are: doctor on time, schedule on time, rooms available, and outpatient nurses available.

We collect data from one doctor for one month, which is 400 appointments. We find that the doctor was late 41 times, the schedule was wrong 3 times, rooms were filled 7 times, and the OPN was missing 13 times. To calculate sigma, we take the total number of defects counted, divide by the total number of units, and multiply by the number of defect opportunities:

$$\frac{(41 + 3 + 7 + 14)}{400 \times 4}$$

This gives us 65 ÷ 1600, or 0.040625; this is called "defects per opportunity" (DPO).

As you recall, we usually consider 1 million opportunities, so that would be 40,625 defects per million opportunities (DPMO). Now look up that DPMO number in the Appendix C Table to find out what sigma it represents. In this case, the appointment process is performing at about 3.25 sigma (on time about 96 percent of the time).

In most companion animal practice, having an appointment schedule that is "on time" 96 percent of the time is good enough . . . unless you consider the 65 unhappy clients, who each will tell 11 more (715), who each will tell five more (3575) . . . if these were potentially available clients (only 55 percent have animals), this is about a one doctor workload loss (i.e., expect 4000 population per one FTE doctor), unless they are all stewards of companion animals, then you have lost a two-doctor staffing opportunity from just one months of 96 percent on-time appointments.

SIX THEMES OF SIX SIGMA

We can distill the critical elements of Six Sigma into six themes. These principles - supported by the many tools and methods presented in this VPC Signature Series monograph series, will give you a preview of what can happen in your practice.

- **THEME ONE - GENUINE FOCUS ON THE CLIENT**
  As mentioned, most organizations launching Six Sigma have often been appalled to find out how little they really understand about their clients. In Six Sigma, client focus becomes a top priority, measurement starts with client satisfaction and client compliance. Improvements are defined by their impact on client satisfaction and the client's perception of value.

- **THEME TWO - DATA & FACT DRIVEN MANAGEMENT**
  Six Sigma takes the concept of management by fact to a new, more powerful level. Too many veterinary practices base their decisions on outdated assumptions and opinions; the discipline of Six Sigma measurements begins to clarify what factors are key to gauging performance, and then gathers data, and analyzes the variables.

- **THEME THREE - PROCESSES ARE WHERE THE ACTION IS**
  When a veterinary practice focuses on delivering services, measuring performance, improving efficiency, and running the practice like a business, new process improvement systems are required. If you do not use new metrics at the "in the trench" level, positive change will not occur. Six Sigma efforts convince leaders and managers, particularly client-centered practices, that mastering processes is a way to build "world class" competitive advantages in delivering "world class" value to the clients and patients.

- **THEME FOUR - PROACTIVE MANAGEMENT**
  While the term has been overused, "proactive" simply means acting in advance of events rather than reacting to them. In actual practice, it means making new habits out of what are usually neglected business practices: defining ambitious goals in writing, reviewing/revising them frequently, setting clear priorities inside and outside the practice scope, focusing on problem prevention rather than firefighting, and questioning WHY we do things instead of blindly defending them. Far from being boring or overly analytical, being truly **proactive** is a starting point for creativity and effective change. Six Sigma will encompass new measurement tools, and new operational practices, that replace reactive habits with a dynamic, responsive, and caring style of management.

- **THEME FIVE - BOUNDARY LESS COLLABORATION**
  Years before launching Six Sigma, Jack Welch was working to break down barriers and to improve teamwork at GE. His mantra for Six Sigma was "boundarylessness"; the opportunities for collaboration were huge, and he wanted NO ONE to enter a turf protection posture, so he had to establish a new paradigm to allow Six Sigma to be most effective. Too many dollars are lost every day because of disconnects and outright competition between informal and formal groups which should be working for a common cause: providing exceptional value to clients.

- **THEME SIX - DRIVE FOR PERFECTION; TOLERATE FAILURE**
  When we say that Six Sigma drives to perfection, and then say failure must be tolerated, it sounds like a dysfunctional position, but they are actually complimentary. No one stumbles, unless they are moving. In healthcare, stasis means death, and in veterinary healthcare delivery, stasis means death, even if you do not realize it. New ideas and different approaches always involve some risk. If people who see alternatives are too afraid of the consequences of mistakes, they will never try. The techniques we will review for improving performance include a significant dose of risk management, so the downside of setbacks or mistakes should be limited. The bottom line is that a practice that makes Six Sigma its goal will have to keep pushing the envelope, to be more perfect, while being willing to accept and manage occasional failures.

SO WHERE DOES YOUR PRACTICE STAND ? - you may be saying to yourself, *"We're already doing some of those things."* Remember, we have noted that much of Six Sigma is not new: in fact, many of our consulting partners (clients) will tell you these type program assessments and "new" healthcare programs have already been implemented with our practice-specific, tailored, Transition Plans. What is new is the integration we offer in this VPC ***Signature Series*** monograph, bringing leadership and three separate quality-based management programs into a coherent strategy for implementation.

So what do all these diagrams and models mean? In simplest terms, the statistical process is used to monitor key factors, and when something starts deviating from the target, it is assessed by the leadership and assigned to a "green belt" team to find out why AND to take corrective action. Bear in mind that Six Sigma is a gradual process. It starts with your dream, and a vision. A goal of near-perfect delivery of services, and superb client satisfaction must be part of the process. The Core Values must lead to inviolate Standards of Care, which are implemented with outstanding medical records providing a Continuity of Care that prevents embarrassment of the provider (past or present), staff, or clients. The pillars of Continuous Quality Improvement (CQI) must be in place, and practiced on a continuing basis; the staff must believe the Pillars of CQI are real.

ISO 9000 - IWA 1 - QUALITY MANAGEMENT STANDARDS

ISO 9000 is a generic International Standard that describes the requirements for establishing, maintaining, and continually improving the Quality Management System.

- A **Quality System** is the organizational structure, responsibilities, procedures, processes, and resources for implementing Quality Management.
- **Quality Management** is that aspect of the overall management function that determines and implements the **Quality Policy**.
- The **Quality Policy** is practice-specific. A well-defined set of integrated systems, processes, standards, and tools, to drive doing the **right things** right - **all the time**.

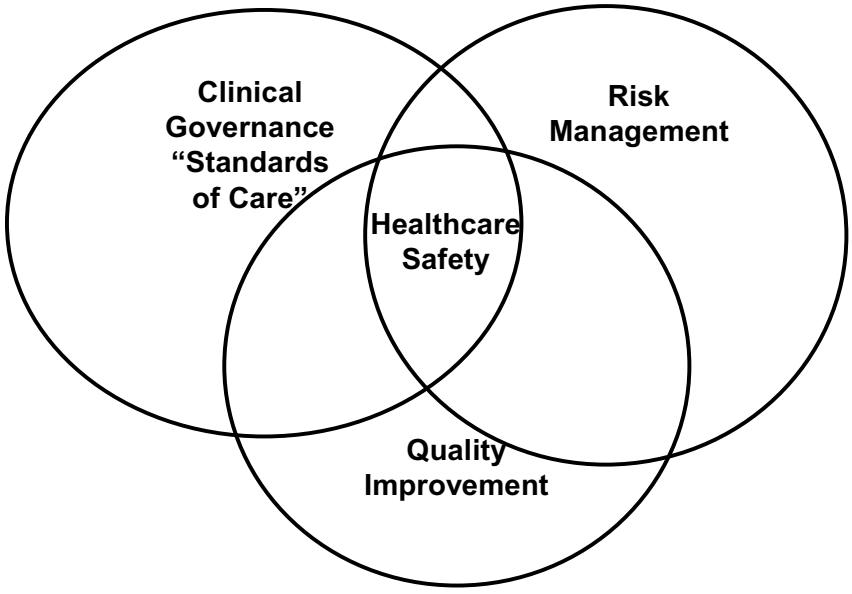
Guidelines for implementing ISO 9000 quality management systems in the healthcare sector were published by ISO (International Organization for Standardization) on 20 September 2001 as its first "International Workshop Agreement" (IWA).

- IWA 1, *Quality Management Systems - Guidelines for process improvements in health service organizations*, 68 pages, priced at 74 Swiss francs, is available from ISO national member institutes (a complete list is posted on ISO's Web site: www.iso.org) and from ISO Central Secretariat (sales@iso.ch).
- The guidelines are based on ISO 9004:2000, *Quality management systems - Guidelines for performance improvements*. For a wide selection of North American ISO 9000 resources, contact: www.aqapress.com/pCat90.html.
- IWA 1 contains much of the text of ISO 9004:2000, supplemented by specific guidance for its implementation in the healthcare sector. The document provides a framework for the design and improvement of process-based quality management systems by healthcare organizations. The guidelines are voluntary and they are not intended for certification or accreditation.
- IWA 1 is based on an earlier draft jointly developed by the American Society for Quality (ASQ) and the Automotive Industry Action Group (AIAG), which is a global industry association representing automotive companies, including the "Big Three" - Ford, Daimler Chrysler and General Motors (the healthcare costs to these three companies are $8 BILLION a year for insurance and healthcare coverage of their employees). As a major employer, the automotive sector deals with thousands of healthcare providers and spends substantial amounts on healthcare programs.
- The generalized implementation of ISO 9000 quality management systems by healthcare establishments is seen as a means of rationalizing client-supplier relationships and an opportunity to improve the quality of healthcare while reducing the costs.

The IWA-1 draft was considered by healthcare sector stakeholder groups represented at an ISO workshop on 18-19 January 2001 in Detroit, Michigan, USA. The workshop was co-hosted and organized by the Standards Council of Canada and Canadian Standards Association (SCC/CSA) who hold the Secretariat of ISO/TC 176, the ISO technical committee responsible for the ISO 9000 standards.

At that meeting, approximately 135 healthcare experts from 20 countries discussed and improved the guidelines (the Institute of Medicine (IOM) 2001 Report stated*, "Americans now invest annually $1.1 trillion, or 13.5% of the USA GDP in the healthcare sector*," so we know there is a major interest in higher productivity driving lower costs). This was followed by a 60-day consultation and vote period on the guidelines ending on 30 March, 2001. The consultation period was adopted to give participants adequate time to receive input from their respective stakeholder groups.

An International Workshop Agreement is one of several new alternatives offered by ISO to developing International Standards for cases where swift development and publication takes priority. Compared to the traditional ISO process of developing International Standards through the technical committee structure, IWA's are developed in open workshops and organized by an ISO member body. The IWA was first introduced under the designation of Industry Technical Agreement (ITA), but this was modified to reflect the fact that ISO's work addresses not only the needs of industry, but also those of numerous stakeholder groups in society as a whole.



MODEL OF ISO 9000 - IWA 1

ISO-9001 Quality Assurance Model

Administration & Control		Product Realization		Support Activities
Management Responsibility	Quality System	Client/Customer Focus	Design & Development	Improvement (Corrective Action)
Documentation Requirements	Control of Nonconforming Services	Purchasing	Client Relations	Monitoring & Measuring
Control of Monitoring & Measuring Devices	Monitoring & Measurement of Services	Planning & Service Provisions	Monitoring & Measuring of Products	Human Resources
Control of Nonconforming Product Disposition	Quality Policy & Objectives	Handling, Storage, Packaging, Preservation & Delivery	Production & Service Provisions	Analysis of Data

ISO 9000 PROGRESSION INTO HEALTHCARE

Michael Stoecklein, ASQ's healthcare market development manager, and Mickey Christensen, Health Care Division standards committee chair, developed an overview in *Quality Progress* (Volume 35 • Issue 9 • September 2002) of the Institute of Medicine's 1999 report *To Error Is Human: Building a Safer Health System*. They report that there has been an increasing interest in trying to identify and use methods to help reduce errors and improve safety while simultaneously improving a healthcare organization's operating margin. Other industries have proven ISO 9000 is a very powerful quality management tool, and some healthcare service organizations have found it can help provide better healthcare systems and reduce the incidence of avoidable adverse events.

- ASQ's Health Care Division and the Automotive Industry Action Group collaborated to develop ISO 9004:2000-based document guidelines for process improvements in health service organizations. ASQ's Health Care Division helped lead the group effort in drafting the document. At an international workshop in 2001 (mentioned above), attendees modified the

draft, which was later accepted for publication by the International Organization for Standardization (ISO). After the workshop in Detroit, the attendees voted to publish the ISO IWA-1 document.

- The IWA-1 document can be used by healthcare organizations to implement an ISO 9000 quality-based management system and make accreditation with other agencies easier, thereby minimizing the number of resources required to comply. IWA-1 contains much of the text of ISO 9004:2000 but also includes specific guidance for its implementation in the healthcare sector.
- The guidelines are voluntary and not intended for certification or accreditation. Copies of the IWA-1 document and the reports published by the Institute of Medicine are available from ASQ Quality Press, http://qualitypress.asq.org.
- ASQ has also developed a training course, IWA -1 - Train the Trainer, and some training materials. For course schedules, go to:
  www.asq.org/ed/courses/descriptions/iwahealthcare.html.
- In addition, ASQ recently began hosting quality conversations on a variety of topics, the most recent being one about Six Sigma in healthcare. To read a copy of the transcript, go to:
  www.asq.org/ed/qconvs/062002sixsigmahc/index.html

LAYING THE FOUNDATION

We are well aware that any building is built upon a sturdy foundation, and if only one footing of the foundation starts to break down, the structure becomes unstable. In the 1998 Iowa State Press text, *Building The Successful Veterinary Practice: Leadership Tools* (Volume 1), there are only four chapters (the Introduction is "Nurturing You Leadership Competencies," and the "Pillars of CQI" are in Appendix B showing the fourteen key leadership skills):

- Chapter 1 - The Foundation: Attitude of a Leader
- Chapter 2 - The Framework: Skills of Leadership
- Chapter 3 - Closing The Structure: The Glue That Holds it Together
- Chapter 4 - Inside Finishing: Sharing the Vision & Power with Others

We have many "foundation publications" in this profession, and most of them are economic in nature, focusing on the economic concern of the current practice owners. While this is noble and normal for the veterinary profession, responding and operating by a doctor-driven set of values, it is NOT being client-centered, nor is it being patient advocates. **Good medicine is good business.**

The **"Mega Study**," circa 1999, was sponsored by AVMA, AAHA, and AAVMC (the Joint Steering Committee which defines the study and assessed the findings), and it gave us the key factors for client selection of their veterinarian (ranked in order):

1. Veterinarian is kind and gentle
2. Veterinarian is respectful and informative
3. Reputation of veterinarian for high-quality
4. Past experience with veterinarian
5. Range of services
6. Location
7. Convenient hours
8. Recommendation from friends or neighbors
9. Price

While the above nine factors were published as part of the survey data, they were NOT included in the six major summary findings of the "Mega Study." The National Commission on Veterinary Economic Issues (NCVEI) was also the offspring of that major study of this profession. The NCVEI provides the Internet access (www.ncvei.org) to the EXAM ROOM, an economic site for comparing your veterinary practice on multiple fiscal and operational factors (they started with the ninth most important factor for client selection of veterinarians, which seems unusual until you look at the above list . . . it is the ONLY issue easy to quantify by traditional means).

The AVMA publishes the *Economic Report on Veterinarians and Veterinary Practices*, as well as veterinary-specific Pet Ownership and Demographic studies, and AAHA publishes Financial Productivity Pulsepoints as well as a Veterinary Fee Reference survey.

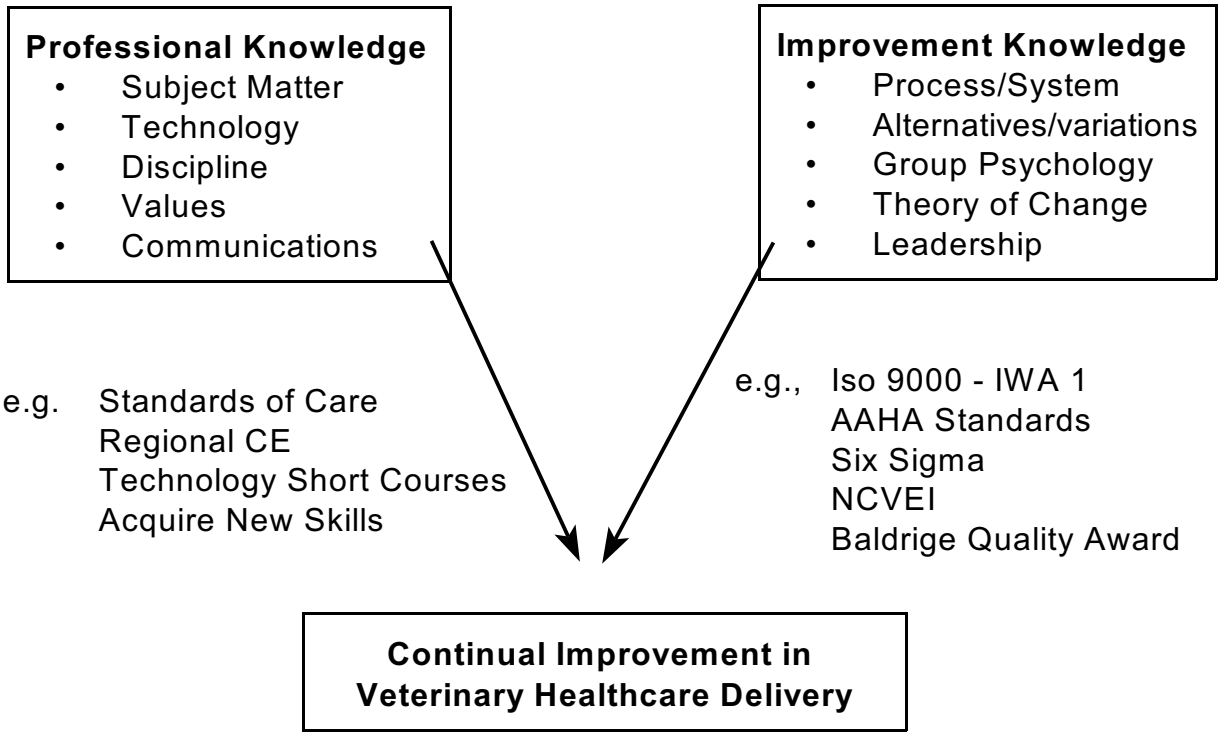
The American Animal Hospital Association (AAHA) has just taken the lead back with their new 2003 Standards for Accreditation. AAHA is dedicated to *"Healthy Practices: Healthy Pets*," and its purpose is to enhance, support and cultivate a veterinary community that offers the highest level of companion animal care and career satisfaction for all practice team members. They have published three distinct elements in their mission:

- Enhance the abilities of veterinarians to provide quality medical care to companion animals.
- Enable veterinarians to successfully conduct their practice and maintain their facilities with high standards of excellence.
- Meet the public's needs as they relate to the delivery of companion animal veterinary medicine.

Finally, someone is addressing the first eight criteria for clients selecting veterinary practices, and they have done it without invoking “small animal” into their nomenclature. AAHA has moved from 300 facility and medical record standards to an integrated set of 850 quality care, quality facility standards, forming the FOUNDATION for **Standards of Care** and thus **Continuity of Care** in team-based veterinary healthcare delivery. The major sections of the new 2003 Standards for Accreditation include:

- QUALITY CARE
  - Anesthesia
  - Contagious Diseases
  - Dentistry
  - Emergency
  - Pain Management
  - Patient Care
  - Surgery
- DIAGNOSTIC & PHARMACY
  - Diagnostic Evaluation
  - Diagnostic Imaging
  - Laboratory
  - Pharmacy
- MANAGEMENT
  - Client Services
  - Continuing Education
  - Human Resources
  - Leadership
  - Safety
- MEDICAL RECORDS
- FACILITY
  - Exam Room
  - Housekeeping
  - Satellite

AAHA also offers accreditation in eight specialty categories: Avian, Dental, Feline, Mobile Clinic, Central Hospital, Emergency & Critical Care, House Call, and Surgical. We are NOT promoting joining AAHA; that is NOT our intent, they are a cutting edge professional organization addressing the eight leading factors for client selection of veterinarians and veterinary practices, and have less than 20 percent of the practices in North American as members . . . This says that while practices want break through performance, **true "bench-marking" has not entered veterinary medicine yet**.



Integration of Knowledge Model for Enhancing Breakthrough Performance CQI

BENCH-MARKING

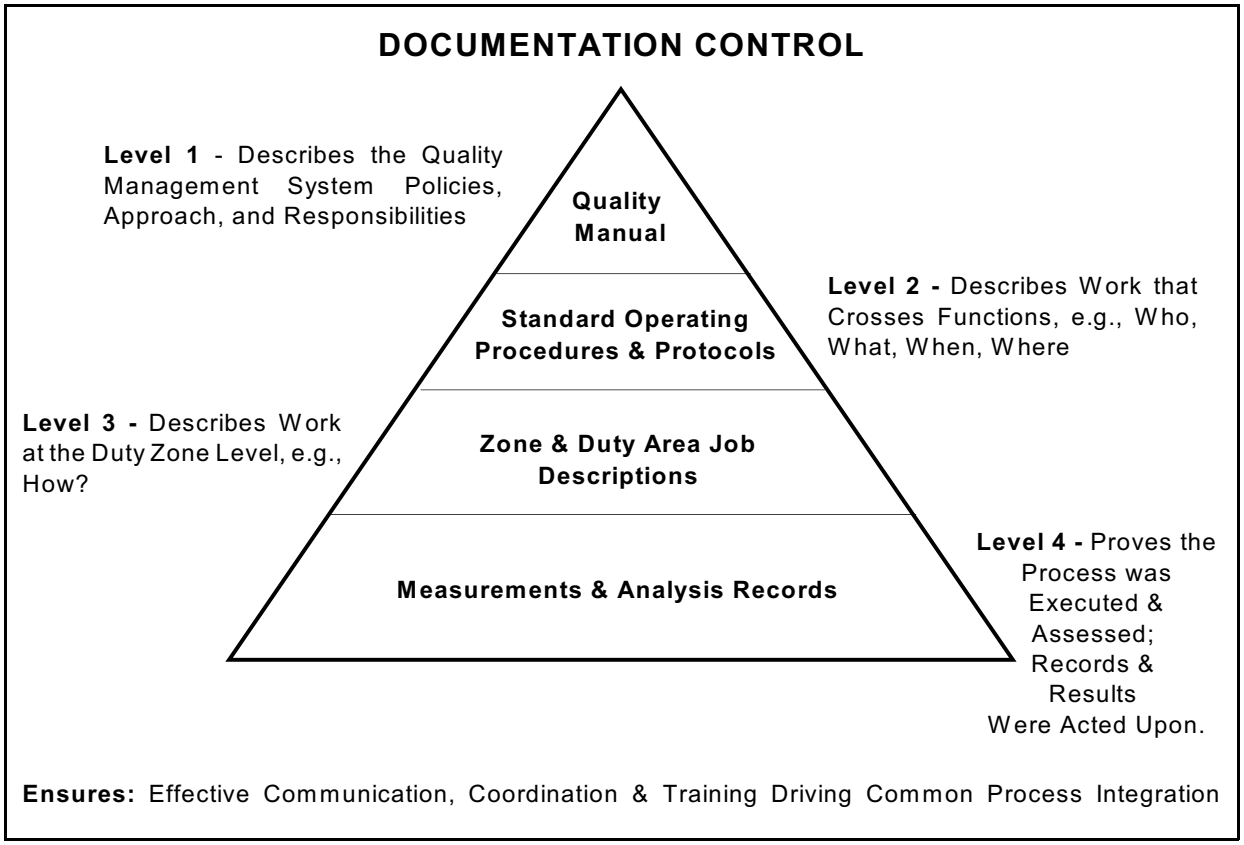
Environmental pressure to cut cost and to increase productivity has given a new face to practice improvements in the form of continuous quality improvement and a need for effective bench-marking of excellence. Globalization has forced different types of production industries to resort to reducing the operating cost and maintaining production cost to a level where it remains competitive. Human healthcare was forced to look at their efficacy by an insurance disaster called managed care, and veterinary healthcare delivery must look at its efficacy based on too low a client access rate, a poor fee structure, underpaid staff, and underpaid professionals.

- Exponential rise in the cost of delivery of veterinary healthcare services, price competition, and market realignment are the major factors that are forcing practices to scrutinize their business processes and to redesign them in a manner that would not only help to keep the prices competitive but also help

in delivering quality care to the patients.

- In the early eighties, service environment design and service process design were more focused on clinical effectiveness and technical efficiency. In the late nineties, the focus included patient customer service excellence along with clinical components. The methodology of veterinary healthcare purchase is gradually shifting from the traditional cash and carry model to third party supplementation (Care Credit®, Veterinary Pet Insurance® [VPI®], etc.). To show how low veterinary fees actually are, VPI payments through their insurance premium reimbursement schemes accounted for about 60 percent of the paid premiums in 2001, while human healthcare reimburses 103% to 105% of the collected premiums, and survives off the float money investments. That is one of the main differences between "risk sharing" of pet insurance (indemnity insurance) and "risk transfer" of casualty insurance.
- In such an environment, a problem-solving approach that emphasizes radical redesign of business process to achieve dramatic improvements in critical contemporary measures of performance such as cost, quality, service and speed. The elements of the Six Sigma concepts previously provided are constrained by past economic bias, as well as a lack of total service experience, so a veterinary practice should start to focus on seamless service to clients across various functional areas of practice.
- The process of breakthrough improvement of performance is to obtain gradual, incremental improvement in Six Sigma procedures before launching a major attack on bias, prejudice, and paradigms of our veterinary traditions. In the veterinary healthcare industry, the most dynamic change has been technology. With each change in technology, the methodology of service delivery changes. For example, the VPC *Signature Series* monograph, *High Tech Needs High Touch in Program Delivery*, discussed how new technology acquisition brings new capabilities to business, thereby raising the competitive bar and the need to improve client communication on the benefits and services now available. High touch caring becomes more mandatory with increased technology.
- The major factors that are forcing practices to utilize new concepts are:
    - Delivery of improved service quality to clients
    - Reduced bottlenecks in delivering timely care to patients
    - Improved financial performance by leveraging professional time
    - Improved clinical performance
    - Need to increase doctor and staff compensation
    - Adoption of a competitive benefit program for all staff
    - Pressure to comply with forensic and regulatory requirements
    - Need to remain competitive with other practices.

To initiate a foundation set of standards, a veterinary practice team must jointly establish **Inviolate Core Values**, **Quality-based Standards of Care**, and an **Innovative Future Vision** based on **bench-marking the "best of the best**." The use of "average" in veterinary literature is a pathogenic management concept which needs to be eliminated from existence, but since it is easier than really making the determination of EXCELLENCE, it will likely remain. As an example, the *Veterinary Economics*© reports on the *Successful Practice Profiles* reflect numbers which have been generally exceeded by most all of the Veterinary Practice Consultants® consulting partners (clients) during the first year of transition plan implementation of team-based quality healthcare delivery. So what needs to be done first?



Before seeking outside benchmarks, a practice must establish it's own baseline, so meaningful measurements beyond gross and average client transaction value are needed. New metrics are needed for new programs (review the VPC ***Signature Series*** monograph, *Strategic Assessment & Strategic Response,* for details on establishing new metrics). If a baseline set of measurements has not yet been established, consider using the VPC ***Signature Series*** monograph, *Profit Center Management,* and the accompanying diskette, for a baseline set of key factors. Once you know where your practice is, then you can determine where you want to go. That is where bench-marking, and this VPC ***Signature Series*** monograph on BREAKTHROUGH PERFORMANCE, starts to come into play. Let's look at the bench-marking process:

1. Identification of Benchmarks

- Very few veterinary practices have the ability, or the management skill, to seek out the “best-of-the-best” to benchmark.
- Based on cost center analysis and revenue generations in various programs, it becomes very important to identify which programs or habits need bench-marking. For example: Waiting time is high in client’s minds, but seldom a major practice issue.
- ISO-9000, ISO IWA-1, NCVEI, and AAHA, offer only starting points for developing a continuous quality improvement to become a veterinary industry benchmark for others.

2. Objectives of Bench-Marking Indicators

- Increase service level to existing clients
- Adopt a Recovered Patient/Recovered Client Program
- Increase new client outreach for after their first visit
- Reduce total appointment process cycle time
- Enhance patient advocacy for deferred and symptomatic care
- Raise community awareness of services available
- Increase visits per pet per year for all client companion animals
- Reduce waiting time for doctors by high-density scheduling
- Increase day care drop-offs for dual income families
- Reduce specific low productivity activity cost
- Reduce inventory handling/maintenance costs

3. Methodology definition

- Practice teams to undertake projects and tools to be used for problem analysis and solution testing are to be decided next.
- E.G., in case of problems relating to waiting time for outpatient appointment, the team comprising of the key players, e.g., Client Service Specialists, Outpatient Nurses, Project Manager, an associate doctor (not tied to paradigms of the past), and maybe even consultants, should be constituted.
- A variety of tools are available for business process assessments, ranging the foundation references provided above, to Six Sigma, to workflow diagrams to computerized simulation models.
- E.G., in case of high density scheduling, the team can actually work from the

VPC *Signature Series* monograph, *Zoned Systems & Schedules*, with the FIVE PHASE skill and confidence-based development plan in the appendix, and on the accompanying diskette, to find an alternative process sequence.

4. Standardizing New Processes and Their Strategic Analysis

- Some benchmarks are made available in the veterinary literature for various activities carried out by practices. These benchmarks can be analyzed for application to individual practice projects.
- A number of practices in the US have implemented concepts of breakthrough performance, and have been recognized in the professional periodicals as well as at meetings and roundtables. These case studies can be utilized for learning and to avoid commission of repetitive mistakes.
- Some veterinary-specific consultants offer assistance in developing practice change models, strategic assessment and response models, and/or creative program-based services for enhancing quality healthcare delivery. Some other consultants often appear as gimmick of the month, or only fee-schedule-based mentors. Some consultants have even published text books so the leadership of a practice can review the philosophies and approaches most often utilized.

5. Development of solution

- Once the problem is analyzed and all key decisions are made, the team can then start working on solutions.
- Test programs and alternatives are conducted and predetermined standards for measuring the outcomes monitored.
- In cases of appointment waiting time, the new sequence of activities in the process can be tested in a modified planning/test environment to have an approximate idea of new waiting time.

6. Implementation

- If using the Six Sigma prototype, the project green belt coordinates the implementation.
- In cases of appointment exercise, the training and development plan in the VPC *Signature Series* monograph, *Zoned Systems & Schedules,* phase one is "behind the scenes," and phase two is simply the doctors allowing the nursing staff to do more, under their developmental guidance. As we explain, at the end of each phase, the doctor statement of "*we trust you at this skill level*," is the requirement BEFORE the next phase of development is initiated.
- In cases of appointment exercise, in phase 3 of the IPN and OPN development plan, the new process models need implementation of computers and

developing a computerized module for appointments.

- Implementation of computerized modules may take a small bit of overtime if the midday slow period does not occur like usual. The process can be shifted from manual to computerized completely only when the system settles down.

Factors contributing towards successful bench-marking:

- Perception and awareness of practice leadership on bench-marking.
- Measurement process which can only succeed if the top leadership is committed.
- Bottom-up acceptance of new Six Sigma measurements to monitor the breakthrough performance.
- Recognition of Six-Sigma as a contemporary tool to breakthrough performance
- Information technology, computers, and communications.
- Continuous quality improvement as a necessary prerequisite for the more intense process of breakthrough performance development.
- Organizational redesign will likely be necessary to support breakthrough performance and the new statistical measurement systems.
- Standards of Care, and commitment to developing statistically sound measurements for measuring performance, from the top down.

Common factors responsible for unsuccessful breakthrough performance:

- Lack of leadership development/commitment in the knowledge and skills of the Models & Methods for Breakthrough Performance.
- Lack of cooperation/buy-in from staff (often inadequate acceptance lead time).
- Insufficient staff training and skill development.
- Lack of “practice culture” enthusiasm and interest in change.
- Lack of access to information (e.g. bench-marking data).
- Lack of new resources which leads to problems in acquisition of technology and skills.
- No top leadership support in trying to implement solutions generated by Green Belts and Six Sigma Teams.
- Low practice priority for change or improvement.
- Time consuming selection and training of employees in Six Sigma.
- Internal control not well defined under the new Six Sigma processes.

- Bench-marking goals set too low, or not measured accurately.
- Staff turnover, which is a major distractor because new staff takes time to undergo the basic orientation and training BEFORE they are asked to understand the Six Sigma processes, bench-marking, and drive to breakthrough performance.
- Implementation, which becomes difficult if the staff is too new to understand the Core Values, Standards of Care, Continuity of Care, and the pillars of Continuous Quality Improvement (CQI).

Breakthrough simulation of service-based processes:

- Simulation of service-based process is very difficult when the leadership defines everything by "money" or "doctor needs." **The practice must become client-centered patient advocates.**
- Both the practice flow and resources (to an extent) are human-based assets. **Each person must be identified as having essential strengths.**
- In cases of most practices, the arrival of new clients is highly variable and current clients arrive as trained by the practice. **In most all cases, the consequence of being late for an appointment needs to be "two yes options" (e.g., next available appointment, inpatient admitted as an emergency, or a day drop-off if it is an established patient rather than a "squeeze in").**
- In the last few years, a few facilitation tools have been published to aid implementation of service-based processes. AVMA, AAHA, and the VPC publications at www.v-p-c.com are excellent resources. **The staff MUST be given the resources and specific training to fully participate.**
- Discrete event-based service-based practice tests are powerful tools which use experiential data to allow the team to monitor the client/patient flow through various practice programs, services, or systems. **The practice culture must accept the new measurements as essential improvements to client-centered healthcare delivery by patient advocates who speak ONLY of "needs" of the animal.**

In a service industry like veterinary medicine, good process management can provide a requisite cutting-edge which can become a competitive advantage over other service providers in the market. Business process bench-marking may not be necessarily easy. It can be labor-intensive in the initial phases, especially if there is no experienced consultant to facilitate the process. In case of computerization changes in the practice, i.e., admission and appointments in a practice, the cost of installing appropriate computers and implementing a software package can be very high, but at the same time computerization reduces processing time, saves

manpower, and also helps in strategic control (which may not be possible in a manual system). This can help the practice to save money while developing breakthrough performance programs.

In the VPC ***Signature Series*** Monograph, *Leadership Action Planner*, we introduce a series of tools that help the leadership develop their Core Values, and then provide the same tools for future project planning by the practice teams, so there is a continual reinforcement of the Core Values and Vision with each program developed.

PUTTING THE MODEL TOGETHER

The foundation of the practice plan is as essential as the measurements of improvement. With less than 20 percent of the veterinary practices in North American subscribing to AAHA for external monitoring of their quality healthcare delivery, it is often a breakthrough just to establish the baseline **standards of care** as inviolate expectations in a multi-doctor practice. In a multi-owner practice, the owners and managers need to work through the tools and procedures of the VPC ***Signature Series*** Monograph, *Leadership Action Planner*, to ensure the core values, mission focus, and vision are not only held in common, but have also been shared with the team. These "commonly held" core values, mission focus, and vision must be based on five to ten years in the future, NOT the mistakes of yesterday.

Getting a set of the new AAHA *Standards for Accreditation* does not commit you to subscribing to the AAHA survey system, but it does give the staff of your practice a set of guidelines to start from. Then get a set of the ISO 9000 - IWA 1 Standards, and task each hospital zone coordinator (i.e., as described in the VPC ***Signature Series*** Monograph, *Zoned Systems & Schedules*) to use the zone team to combine and refine the two sets of standards. Over a 30-day period, the zone coordinator coordinates and facilitates the zone team in the combining of the two sets of standards, three key "change model" things are occurring:

1. They are becoming aware of the things they are not doing (*discomfort*) and are writing the things that they should be accomplishing (model).
2. They are all participating in developing the new model(s) (*desire to change*).
3. The zone coordinator is assuming the role of a "Green Belt" implementation specialist, while the practice manager is assuming the role of a Black Belt (*mentor for success*), and the practice leadership is reinforcing the process as sponsors, champions, and Master Black Belts.

Once there is a common set of practice-tailored standards by zone, the zone coordinators meet with the practice manager (the "Black Belt" of Six Sigma changes), and the standards are combined into a single set of hospital "standards for change." It is at this point where the newly revised program-based (income centers) budget

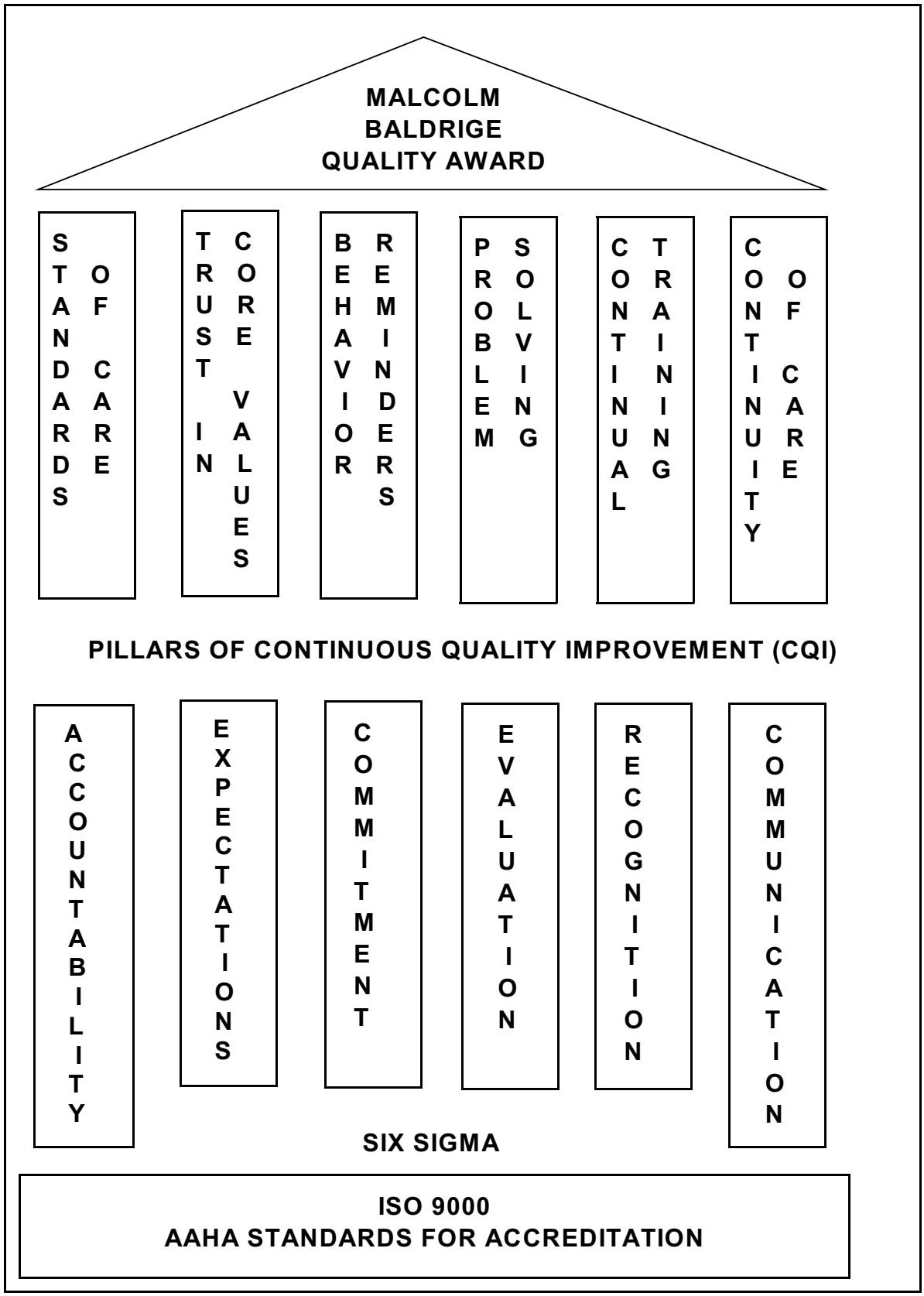
must be integrated to ensure the resources required are funded, and the zone coordinators (now the “Green Belts” for Six Sigma changes) can see the cause and effect of the programs and improvements on the potential liquidity. Staff compensation and benefits are two budget line items that need to be tied to a percentage of the practice gross. As the gross increases, so do the available dollars in that budget line item. The budget will be reviewed quarterly by the zone coordinators (Green Belts), and adjustments addressed.

The reality of this entire concept is that it will change the practice culture. It will chase some “and this too shall pass” staff members away, because once started, it cannot be reverted to the old paradigms. The old paradigms linked to “we have always done it this way” will be proven to be income reducers. The new statistically based improvements will be proven to be beneficial for clients and patients, the core reason most all of the staff and doctors entered this profession. This will be the trip into the future, and it will be exciting. The knowledge and experience “voids” will appear on your horizon, and you will need to seek a guide, usually called a consultant or subject matter expert. Do not go it alone when you do not need to. Have a fun trip, and celebrate the discoveries regularly!

BREAKTHROUGH STRATEGY COMPARISONS

ISO 9000	BALDRIGE	SIX SIGMA	2003 AAHA
Management Responsibility	Leadership	Ownership Leadership	Structures With Functions
Resource Management	Staff Focus	Practitioner Certification	Practice Focused Functions
QMS Planning	Strategic Planning	Strategic Assessment &	Patient-Focused Functions
Product Realization	Process Management	Response	
Customer Focus & Satisfaction	Focus on Patient Care, & Clients	Voice of the Client	Client Service
Measurement, Analysis, & Improvement	Information, Analysis, & Feedback	Statistical Methodology	+/- AAHA_ Accreditation
	Organizational Recognition Performance Results	Business Results	Staff Pride

APPENDIX A


MALCOLM
BALDRIGE
QUALITY AWARD
STANDARDS OF CARE
TRUST IN CORE VALUES
BEHAVIOR REMINDERS
PROBLEM SOLVING
CONTINUAL TRAINING
CONTINUITY OF CARE
PILLARS OF CONTINUOUS QUALITY IMPROVEMENT (CQI)
ACCOUNTABILITY
EXPECTATIONS
COMMITMENT
EVALUATION
RECOGNITION
COMMUNICATION
SIX SIGMA
ISO 9000
AAHA STANDARDS FOR ACCREDITATION

APPENDIX B

"NEVER FORGET YOUR PRACTICE CULTURE"

Acquiring a pet may be the only opportunity a human ever has to choose a relative.

As our veterinary practices develop new ways of talking to our clients, remember to stress the verbal culture change within your staff that is needed to change their traditional mind set:

- healthcare plans (left column), NOT estimates (right column)
- resort managers, not kennel masters
- animal caretakers/pet partners, not kennel kids
- comfort rooms, not empty exam rooms
- whelping center suites, not large runs
- hospice care suites, not large runs; a nursing/hospitalization alternative to boarding
- VIP Suites (very-important-pet), not large runs
- exploration zone; not exercise yard
- pet family reunions
- free "yappie hour" with purchase of Kong toy (fill with food before feeding)
- memorial services
- over-40 programs for mature pets, not "geriatric exams"
- affection connection
- holy-mutt-ra-mony breeding programs
- people time with play time
- doggy day care; lay like a dog as fun time
- canine eat-sleep-play routine = stop-drop-roll
- pet showers, pre-departure cleansing baths
- "Every Pet Deserves A Pet" awareness programs
- restoring puppy kisses, not "doing dentals"
- *"Dogs, Cats, & Kids"* video by Wayne Hunthausen for canine socialization
- Bayer Pet Ecosystem Management VCR.

Anthropomorphic characteristics can be capitalized upon to create an awareness to get clients to listen to the needs of their pets. This concept, and these phrases, are not a gimmick, they are a communication necessity! The Iowa State Press text, *Promoting the Human Animal Bond in Veterinary Practice*, provides a major amount of substance for the practice culture to adopt above nomenclature.

Concurrently, the VPC *Signature Series* monographs (www.v-p-c.com) provide very specific development of team-based philosophies for changing the practice culture.

APPENDIX C

CALCULATING SIGMA		
Yield (%)	**DPMO**	**Sigma (σ)**
6.68	933,200	0
10.56	894,400	0.25
15.87	841,300	0.50
22. 66	773,400	0.75
30.85	**691,500**	**1** σ
40.13	598,700	1.25
50.00	500,000	1.50
59.87	401,300	1.75
69.15	**308,500**	**2** σ
77.34	226,600	2.25
84.13	158,700	2.50
89.44	105,600	2.75
93.32	**66,800**	**3** σ
95.99	40,100	3.25
97.73	22,700	3.50
98.78	12,200	3.75
99.38	**6200**	**4** σ
99.565	4350	4.125
99.70	3000	4.25
99.795	2050	4.375
99.87	1300	4.5
99.91	900	4.625
99.94	600	4.75
99.96	400	4.875
99.977	**230**	**5** σ
99.982	180	5.125
99.987	130	5.25
99.992	80.00	5.375
99.997	30.00	5.50
99.99767	23.35	5.625
99.99833	16.70	5.75
99.999	10.05	5.875
99.99966	**3.4**	**6** σ

APPENDIX D

BASIC STATISTICAL TERMINOLOGY

DATA - if there are "***n***" observations on the variable "***x***", then there is a data set.

AVERAGE (central tendency) - a measure of location of a set of observations which describe central tendency, e.g., mean, median, mode. In the definition used by Dr. Tom Catanzaro, Veterinary Practice Consultants®, for veterinary practices, it is defined as:

The best of the worst, or the worst of the best;
no one should ever want to be either in veterinary healthcare.

- **Mean (arithmetic mean $\equiv \bar{x}$) -** a measure of location; it is the sum of the observations divided by the number of observations in the set. If the continuous variable is "***x***" and there are "***n***" observations in the sample, then the sample mean (pronounced "X bar") would be:

$$\bar{x} = \frac{\sum x}{n}$$

  The mean has the disadvantage that its value is influenced by outliers. An OUTLIER is an observation whose value is highly inconsistent with the main body of data, and when excessively large, will increase the mean, if very small, will decrease the mean. The mean is an appropriate measure of central tendency if the distribution of the data is symmetrical (the mean is pulled to the right - increased in value - if the distribution is skewed to the right, and pulled to the left - decreased in value - if the distribution is skewed to the left).

- **Median -** a measure of location; it is the central value in a set of ***n*** observations which have been arranged in **rank order**, i.e., the observations are arranged in increasing or decreasing order of magnitude. The arithmetic mean and median are close or equal in value if the distribution is symmetrical.

  - *If n is odd*, the median is found by starting with the smallest observation in the ordered set and counting until $(n + 1)/2^{th}$ observation is reached. This is the median.
  - *If the n is even*, the median lies midway between the central two observations.

  The advantage of the median is that it is not affected by outliers or if the distribution of the data is skewed (median is less then mean if the data is skewed to the right, and greater than the mean if the data are skewed to the left). A disadvantage of the median is that it does not incorporate all the observations in its calculations, and is hard to handle mathematically.

- **Mode -** a well known but infrequently used measure of central tendency defining the most commonly occurring observation in a set of observations. The mode often has a different value from the mean or median. The modal group, or modal class, is the group or class into which most observations fall in a histogram (e.g., the most common litter size for a breed of dog).
    - **unimodal -** a distribution which has a single mode or modal group
    - **bimodal -** a distribution which has two humps (two modal groups) separated by a trough, even if the frequency of occurrence in the two modal classes is not equal.

HISTOGRAM - a two dimensional diagram illustration of the frequency distribution of a continuous variable. Usually the horizontal axis represents the units of measurements of the variable, while the vertical indicates the frequency for that class.

MEASURES OF DISPERSION - There are a number of measures of the spread of the data, each of which has different attributes:

- **RANGE -** the difference between the largest and smallest observations, although it gives undue weight to extreme values and will therefore overestimate the dispersion of most of the observations if outliers are present. The range tends to increase in value as the number of observations increases.
- **VARIANCE -** this is determined by calculating the deviation of each observation from the mean (the term LARGE is if it is far from the mean, and SMALL if it is close to the mean). Some are positive numbers and some are negative numbers, so the effect of the sign of the deviation can be annulled by squaring every deviation, since the square is always positive. The arithmetic mean of these squared deviations is called the variance;

$$s^2 = \frac{\sum (x - \bar{x})^2}{n - 1}$$

  The variance uses every available observation, and is a sensible measure of spread, it is not intuitively appealing. We rarely calculate the variance from first principles in this age of hand-held calculators and computers, so we will make no attempt here to show the mechanics of the calculation.

- **STANDARD DEVIATION (abbreviated SD, or σ = sigma) -** this is defined as the square root of the variance. The standard deviation may be regarded as an average of the deviations of the observations from the arithmetic mean. It is often denoted by an ***s*** in the sample, estimating σ in the population, and is given by:

$$s = \sqrt{\text{variance}} = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$$

The standard deviation uses all the observations in the data set. It is the measure of spread whose dimensionality is the same as that of the original observations, i.e., it is measured in the same units as the observations. The SD is of greatest use in relation to a symmetrical distribution of data. "Normal distribution is four times the standard deviation (mean ± 2 SD), and gives us the range of the majority of the values in the population.

ANOVA - analysis of variance -a powerful collection of parametric statistical procedures for the analysis of data, essentially comparing the mean of various groups of data. It relies on separating the total variation into its component parts which are associated with defined sources of variation.

GAUSSIAN DISTRIBUTION (Normal Distribution) - a continuous probability distribution. It is a unimodal bell-shaped distribution and is approximated by many biological variables.

CHI-SQUARED (x^2) distribution - A continuous probability distribution which is often used in hypothesis testing of proportions.

CHI-SQUARED (x^2) test for trends - a specific chi-squared test used to determine whether there is a linear trend in proportions classified by an ordinal variable.

REGRESSION COEFFICIENT (β = true value of a regression coefficient, while ***b*** refers to an estimated regression coefficient) - this usually refers to the coefficient which corresponds to the explanatory variable in a simple linear regression equation, i.e., it is the gradient or slope of the line (β estimated by *b*)

CORRELATION COEFFICIENT (ρ) - this measures the degree of linear association between two variables; if it is non-parametric, it is called a **rank correlation coefficient.** Rank correlation coefficient measures the association (not necessarily linear) between two variables which may be ordinal.

HYPOTHESIS TESTING - the process of formulating and testing a proposition about the population using the sample data.

- **NULL HYPOTHESIS *(H_0)* -** The term given to the proposition that is under test in a hypothesis testing procedure. In general, it is expressed in terms of no treatment effect, e.g., no difference in means (slope is zero). We reject the null hypothesis if $P < 0.05$.
- ***P*-VALUE -** The *P*-value in a hypothesis test is the probability of obtaining the observed results (or more extreme results) if the null hypothesis is true. In most all cases, the P-value is determined by computer output.
- **DECISION -** whether or not to reject the null hypothesis; usually, but not necessarily, reject H_0 if $P < 0.05$. Note that when there is no linear relationship

between the two variables, both the slope β , and the correlation coefficient ρ, are equal to zero.

t*-TEST (single group, paired, and unpaired) -** these are significance tests based on *t*-distribution (**SE*b = standard of error of a statistic *b*):

- ***t*-distribution** is a continuous probability distribution; the distribution is symmetrical about the mean, and is characterized by the degrees of freedom.

$$\textbf{Test}_{11} = \frac{b}{\textbf{SE}(b)} \text{ with n - 2 degrees of freedom}$$

- **Test statistic** is the difference in the sample means divided by its estimated standard error. Most computer packages will perform this calculation, but it is useful to have its derivation. The test statistic follows the *t*-distribution:

$$\textbf{Test}_2 = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{s^2 \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

with $n_1 + n_2 - 2$ degrees of freedom

where, for the *i* th sample *i* = 1, 2
n_i the number of observations
$\bar{x}_i$ is the sample mean
s_i is the estimated standard deviation,
and the pooled estimate of the variance = $s^2 = \frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}$

- **degrees of freedom** (***df***) - the number of independent observations contributing to the value of a statistic, i.e., the number of observations available to evaluate that statistic minus the number of restrictions on those observations. As the degrees of freedom increase, it becomes more like a Normal Distribution.

APPENDIX E

Standards Of Care

Each practice must develop a "standards of care" which every member of the staff can depend upon as what is being told EVERY client by EVERY doctor at EVERY VISIT, or is being practiced as INVIOLATE VALUES.

What is provided below is just one sample.

Effective immediately, specific **healthcare standards of care** must be initiated at _____ Animal Hospital (__AH) by Dr. _____ and any other doctor, associate, part-time, or relief doctors (these are *terms of employment*):

- Any animal entering __AH will have the **client concern** documented as the first medical record entry, whether it be electronic or Progress Note paper. Each **client concern** will show an **Assessment**, reflecting what the client was told about what was being treated.
- If a doctor orders any wellness screening (laboratory, imaging, etc.), the "assessment" of the testing results will be shown on the progress notes. Every "consultation" will have a S-O-A-P (or H-E-A-P) of the episode, and each S-O-A-P or H-E-A-P will reflect a 12-system PE (normal or abnormal will be recorded, and abnormal explained), including a ***pain assessment score***, ***sequential weight with a body score***, and ***dental grade*** (0, 1+, 2+, 3+, or 4+), whether it be electronic or Progress Note paper.
- Each provider will start to use the word "need" instead of recommendation. When a "need (❑)" is stated, the room will fall silent until the client talks (the box ❑ denotes a "need"). The client response to each "need (❑)" will be recorded inside that first box as: W = waiver, D = defer, A = appointment, or X = do it. If the "need (❑)" silence must be broken by any __AH staff member/doctor, the statement must be similar to, *"Is this the level of care you want for Spike today?"*
- All diagnostic screening (results) will be formally assessed on the Progress Notes; sequential testing will ALWAYS be scheduled, and assigned to an attending nurse to follow, when any value/assessment is atypical.
- Inpatient admissions will be overtly entered into the Progress Notes with a patient/case-specific **Hospitalization Consent** Form, with an ***Anesthetic Risk Assessment*** (Levels1-5) and a preemptive pain management program prescribed, appropriate to the expected outcome of the case.
- Inpatient care will be recorded on the white board in the treatment area (new format may be needed to include the new scoring programs), and while anyone

can write on the white board(s), only the senior inpatient nurse is allowed to erase the white board(s). Erasure by the senior IPN will indicate the services and/or products have been entered into the medical record, whether it be electronic or Progress Note paper, and also on the open invoice.

- All "needs (❑)" will be recorded, and all healthcare delivery will be recorded as it is done, whether it be electronic or Progress Note paper (dictation by the doctor and writing by the nursing staff is acceptable, and preferred for surgery cases, so that during closure, the records are written by the attending surgery nurse, and ready to be signed by the time the doctor "pops gloves"). No shift ends if there is ANY workload pending documentation; all healthcare documentation is completed BEFORE any shift ends, doctor or nurse. There is no excuse for loss of continuity of care.
- The number of visits per year per pet will become part of the __AH narrative for each client contact, and the next contact or return will be established as an expectation BEFORE the client departs our facility.
  - Any problem NOT RESOLVED during the __AH episode must be entered on the master problem list, and assigned an attending nurse to follow telephonically until the condition/concern is resolved, which includes atypical laboratory values, unresolved dental grades, nutritional body scores, etc.
  - No animal will be allowed to depart __AH without being one of the three Rs (**recall** - phone them, **recheck** - schedule them, or **remind** - mail to them), and the appropriate 3Rs will be entered into the computer BEFORE their departure.
  - Any deferred or symptomatic care will be assigned an attending nurse to telephonically follow the case until the condition/concern is resolved.
- Each doctor will schedule at least one grade 1+ dental prophy each shift, one grade 2+ dental a week, and one other dental for SIX per week minimum; any new doctor will do the same.
- The respective Zone Coordinators are unilaterally accountable for ensuring a review of the 2003 AAHA Standards for Accreditation on a continuing basis, and alerting the practice leadership to any resources needed to reach 100 compliance. Concurrently, each quarter, the Green Belt (coordinator) of each practice zone will ensure that at least one Standard will be assessed by Six Sigma, and an improvement program initiated. Black Belt assistance will be made available whenever requested.

APPENDIX F

REFERENCES

American Animal Hospital Association (AAHA)
www.aahanet.org

American Veterinary Medical Association (AVMA)
www.avma.org

Baldrige National Quality Program (BNQP):
www.quality.nist.gov/eBaldrige/Step_One.htm
www.quality.nist.gov/Healthcare_Criteria.htm

IOM Reports:
qualitypress.asq.org/perl/catalog.cgi?item=P926

ISO 9000
www.aqapress.com/pCat90.html
www.iso.ch

ISO IWA 1:
qualitypress.asq.org/perl/catalog.cgi?item=T300
www.aiag.org

National Commission on Veterinary Economic Issues (NCVEI).
www.ncvei.org

Six Sigma In Healthcare:
qualitypress.asq.org/perl/catalog.cgi?item=P927

Six Sigma For Managers by Greg Brue; McGraw Hill-Trade, 2002.

The Six Sigma Way Team Fieldbook by Roland Cavanagh; Robert Neuman; Peter Pande; McGraw Hill-Trade, 2002. ISBN: 0071373144.

Veterinary Hospital Manager Association (VHMA)
Certified Veterinary Practice Manager (CVPM) - vhma@caphill.com
www.vhma.org

VPC Publications (www.v-p-c.com)

- VPC *Signature Series* Monographs
- Text books
- Free Safety Newsletter
- Free Management Newsletter

WORK SHEETS (On Diskette)

BRAINSTORMING:

If brainstorming has been discussed as a way to determine Six Sigma Project Goals, then we would suggest reviewing the ISP text, *Building The Successful Veterinary Practice: Innovation & Creativity* (Volume 3), for details on mind mapping.

We find mind mapping starts lateral thinking faster than any other outlining system, and provides virtually no limits in the documentation of Brainstorming. Always remember, when brainstorming, there are NOT any value judgements during the "development of ideas" stage. There may be additions for linkages, but no value judgements for "good" or "bad" ideas . . . at this point they are just ideas. Vetoes, or "*. . . we have tried that before*" are never heard during the brainstorming sessions.

WORK SHEETS:

We find that even the best mind map has problems of moving from the spider web of free thought to the implementation plan. The attached nine forms were developed for forming core values, vision, and mission focus. They are also used for PROGRAM PLANNING, which allows the same forms to reinforce core values, vision, and mission focus into each project being implemented.

- **PROJECT PLANNING TABLE** - we use 90 days since that is the time frame most Americans work best. We decided on "measurements of success" before we start, so the team knows the desired outcome. Written plans do not openly help it come to life, but a Plan A and a Plan B allows immediate flexibility when a speed bump or blockage occurs.
- **BUY-IN GRID** - we use this tool to ensure the Green Belt and Black Belt agree, as well as the project team
- **MOTIVATION REFLECTION WORKSHEET** - this is where the client-centered patient advocacy becomes a reality. The veterinary practice of the future is client-centered and not doctor-centered, and this work sheet helps keep that focus.
- **STRETCHING REFLECTION WORKSHEET** - this is where the Green Belt and implementation team reinforces the client-centered patient advocacy. It looks at the outliers of the Six Sigma process and develops strategies for addressing the internal resistance which has caused them.
- **TARGET ACTION LEADER (Green Belt) REFLECTION** - this recalibration and mission focus worksheet for the leaders, and in Six Sigma, the "in the trench" leader is the Green Belt, supported by a Black Belt from the administrative team.
- **VISIONING FOR THE FUTURE** - this is another milestone for the implementation team. After plan A and plan B are written, and the implementation team has started working on the project(s), it is important to do another strategic assessment to ensure the practice and environment has not changed.

- **VISION STATEMENT** - projects can have vision statements as well as practices, and it is often useful when the implementation team is handing off operations to the zone team to ensure there is a shared project/procedure/program vision.
- **REFLECTIONS ON YOUR ENABLING POWER** - projects have a Plan A and Plan B, and so should the hand off to the respective Zone Team. It is often useful when the implementation team has a detailed plan for handing off operations to the zone team to ensure there is a shared accountability for outcome expectations, as well as continued Six Sigma measurements.
- **POWER PROFILE** - This is a Black Belt tool for use when a project/program is getting stalled and the Green Belt's drive and motivation to achieve becomes under review. There are many reasons for diminished results, and often, it is external to the Green Belt and the Black Belt must facilitate leveling of the playing field.
- **VALUES INTO ACTIONS** - three examples are provided, but without the Six Sigma measurements, since each practice is a unique setting, and establishes their improvement internally.
- **CONTRIBUTION REFLECTIONS** - This is a Green Belt tool for use when a project/program is getting stalled and the team's drive and motivation to achieve becomes under review. This can also be used to assess the Zone Team before hand-off, to facilitate their acceptance and continuation.

Signature Series® Monographs

The contents of diskettes accompanying the *Signature Series*® Monographs contain data files and not self-running programs.

Where applicable, the diskette may contain files in the following formats: MS Word®, WordPerfect®, Excel®, QuattroPro®, & QuickBooks®. A legitimate copy of the applicable program must be available and installed in order to utilize the tools on the diskette. Technical support and or/instructions on utilizing programs must be obtained from the program vendor. VPC® does not provide instructional assistance on the use of any word processor, spreadsheet or other third party program.

The files on the diskette are "working" examples of the forms or tools explained in the monographs. Individuals or practices purchasing a monograph may modify, use and distribute the tools on the diskettes and in the monographs without limitation within the practice.