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The ACPNet Practice-Based Research Network is involved in a new participatory research study:

An Initiative to Improve Depression Care

This collaborative study with the AAFP and APA will emphasize strategies to monitor and adjust therapy during acute and continuing phase treatment of depression.

Information has already been sent to you by mail and email.

For more information, contact:
PBRN@acponline.org

ACPNet ...News

Vol. 2, No. 1 Fall 2004

From the Staff of ACPNet:

Welcome to ACPNet's newest newsletter. This publication will update you on the latest research and infrastructure developments and accomplishments. With your help, we've made great strides and elicited the attention of important stakeholders in healthcare. In the future, we hope to be an even more valuable resource to you in your research endeavors.

This project is supported by an exploratory grant from the Agency For Healthcare Research and Quality (AHRQ: 1 R21 HS13508) to develop practice-based research networks.

Inside you will find:

- A "Featured Investigator" column that will single out a network physician-investigator who has dedicated himself or herself to the network's success;
- An article review relevant to the research being conducted;
- Part One of our series on purchasing an EMR for your practice; and
- An update on the network, our diabetes management study, and upcoming opportunities.

As we move forward in our development, there will be even more opportunity to become involved in the life of the network. Remember, this is your network! ACPNet exists to provide the support and infrastructure to help you answer questions from your practice. We welcome any questions or comments.

Featured Investigator - Sharad S. Swami, MD

Chronic Disease Management in the Acute Care Setting

We are an internal medicine practice of ten years in a small town of ten thousand residents in Western Oklahoma. With an increasing diabetic patient load, we knew that in order to best serve our patients we had to come up with a flexible, reproducible system of care. We have developed an "assembly line" concept and subsequently upgraded the quality of diabetes care. As a result, we received Oklahoma Outpatient Quality Awards for two consecutive years from the Oklahoma Foundation for Medical Quality (OFMQ), and earned dual recognition for Diabetes and Heart/Stroke from the National Committee for Quality Assurance (NCQA).

Office Setup

One thing that has made our lives easier is the implementation of paperless Electronic Medical Records (EMR). We have been using EMR for the last five years. We also track the parameters of our diabetes patients by using a palm pilot with the Oklahoma Physician Resource Network (OKPRN) Diabetes Tracker System (www.OKPRN.org). A new record is created for each new patient, and all Diabetes Quality Improvement Project (DQIP) parameters are entered into a flow sheet. To meet the goal levels on various parameters, patients are consistently advised to keep their follow up appointments and are scheduled according to guidelines set by the ADA.

You could be the next featured Investigator! We encourage you to share your practice experience with us.
Submit to pbrn@acponline.org

Patient Responsibilities

In addition, we ask all patients to do their "homework": monitor and write down their blood pressure and blood sugar measurements at fasting and two hours postprandial on a specially designed chart. The bottom of this chart lists fasting and postprandial goal levels for daily reference. On the back of the chart is a listing of goals, written out as ABC's: A1c, BP, and Cholesterol.

Practice Tools

Diabetes parameters are made easy to check and control at the point of care. Some in-office procedures that we perform include:

HbA1c

We use a Metrika unit (www.A1cnow.com) to measure HbA1c in our office in the presence of the patient. The patient can hold the Metrika monitor in their hand, giving them time to physically see their results. This helps them understand the importance of A1c and how to interpret its value. Each exam room has a chart showing how A1c values correspond to blood sugars.

We require all diabetic patients to come to the office every three months (March, June, September, and December) to monitor their A1c values. Scheduling visits in this manner helps both the patient and the office staff stay current. Keeping up most patients within this time frame also makes following up a bit easier. In addition, we are considering the adoption of a commercial automated calling program to remind patients of their appointments. When a diabetic patient is checked in, the A1c value is documented in the Diabetes Tracker System described above. The system outputs the patient's A1c trend and allows the physician to easily monitor and adjust therapy if necessary. Diabetes Tracker System also flags overdue patients. During these quarterly visits, we also re-emphasize and enforce lifestyle changes and home monitoring. For patients with high A1c levels, we require that they continue checking their Finger Stick Blood Sugar (FSBS) at fasting and two hours postprandial everyday. Patients with controlled A1c are asked to check FSBS much less frequently.

Lipid profile

We take lipid profiles in our office using a small portable analyzer (www.cholestech.com), which produces duplicate printouts for patients and for our record in minutes. We take time during the visit to explain the difference between "good" and "bad" cholesterol, which helps the patients interpret their own values. The face-to-face explanation serves to reinforce the relevance and importance of goal levels printed on the back of their fingerstick charts.

Blood Pressure

We encourage each hypertensive patient to purchase a home monitor. We have found that suggesting a blood pressure home monitor as a Mother's or Father's day gift instead of cards or flowers is a good technique. We encourage our patients to take their blood pressure measurements at different times during the day, write these down, and then bring the paper back at each visit.

Urine Microalbumin

We do this in our office by automated machine read. The values measured show a microalbumin level of 1) less than 30, 2) between 30 and 300, or 3) greater than 300. Calculated GFR values are figured using www.medcalc.com. The physician tracks the GFR values on all patients with abnormal microalbumin values and adjusts the therapy to get a better GFR result at subsequent appointments.

Foot Exam

A staff member performs the foot exam when a patient is brought into a room. Basic education is given for daily foot care. The physician interprets abnormal results and reinforces the importance of routine foot care. Therapy is discussed, and diabetic shoes are prescribed as needed.

Eye exam

This is encouraged yearly. We try to scan each report from the eye doctor into the chart. We are currently exploring the possibility of a remote in-office eye exam, where an eye exam can be interpreted by a qualified ophthalmologist on the Internet (please contact us if you know a better way). I am wondering why trained Internists aren't allowed to do this simple preventive procedure in their office! I believe this will increase compliance and offer better care.

Immunization

Immunization is routinely done and documented in the patient charts.

Barriers

In our treatment of diabetes, we have found several barriers to practicing good medicine for diabetics. These barriers include 1) lack of a "Best Practice" model to emulate; 2) need for chronic disease management in an acute care setting; 3) no incentive to the physician for education and prevention; 4) pressure to keep physician visits as short as possible; 5) difficulty in changing patients' lifestyles, and 6) eye exam, where we have to depend on another practitioner.

We would like to share with you our "Mnemonic for Diabetes Care," which our staff found very useful:

In the end, our take home message to the patient can be broken into eight parts.

A =	Aspirin; ACE/ARB; A1c
B =	BMI
C =	CAD; CVA; Cigarettes; Cholesterol medicines
D =	Depression; Dental; Diet monitoring
E =	Eye; Exercise
F =	Feet; Flu (and pneumonia) shot
G =	GFR (Glomerular Filtration Rate), urine microalbumin
H =	Home BP and FSBS monitoring
I =	Impotency/Libido

(continued next page)

(continued from page 5)

We first asked every physician to review a list of standards of care relevant to diabetes care in their practice, and to consider the percent of patients in their care that could adequately meet each standard. This survey was intended to 1) get a gauge of what each physician feels is an achievable goal, and 2) create a record of their personal opinions to enable them to compare their data against their judgments during the study.

Using a randomization protocol, each participant was then asked to select 25 patients from their records, and to conduct a baseline chart review using our abstraction form. The items on the abstraction form included basic demographic information and standard diabetes process (e.g., lipid profile conducted) and outcome (e.g., triglyceride value) measures. After a 2-month data collection period, we assembled data from more than 1000 patients over several thousand patient encounters. All data was sent de-identified to the ACPNet office in Philadelphia, where we entered the records into our newly minted network database, and began data analysis. After analysis, each participant received a 12-page report which summarized his or her baseline diabetes management data in tabular and chart format (see sample on page 6). Each chart had two bars for each demographic or standard of care measure, one of which was the physician's personal data and the other which represented the mean value of data from all participants together. The graphs allowed the physicians an easy method of viewing their data and comparing it against their counterparts' results. Of course, since we know the differing severity of our members' patient panels, the results were not meant as a mark of success or failure, but rather as a personal benchmark for progress over time through the study.

All of the participants will have 6 months to review the data before we return in the spring to collect our 6-month follow-up chart abstraction. We'll keep you updated in our next newsletter about the progress of the study group.

Update: Hanover Project on Diabetes Management

As you may remember from the last ACPNews issue, ACPNet staff has been working with a small rural community in Central Pennsylvania to assess and improve diabetes management. After overcoming obstacles retrieving baseline data from the data center, the project is again underway. Participating physicians received individualized reports comparing their diabetes management, based on key indicators, with that of their peers. In a few weeks, Jolene Chou, a member of the ACPNet team, will give a presentation on baseline results of this group and compare them with national and regional benchmarks. Some local healthcare organizations are also invited to attend give input from their perspectives. In addition to results from the Project, this evening get-together will include a presentation on an EMR system that the community-based physicians are encouraged to adopt. The infrastructure upgrade can potentially enable this local primary-care network to rapidly assess quality of care, conduct quality improvement studies, and encourage community-based participatory research in health care.

Membership Update

The membership of ACPNet has again grown, thanks to our presence at Annual Session and our web-based membership form. We now boast a mailing list of well over 600 physicians across the United States, over a third of whom have participated in an initial demographic survey. This level of support is helping gain ACPNet national recognition in the practice-based research field, and we hope to continue recruitment over time with your help.

Projects on the Horizon

We're pleased to announce that ACPNet is beginning its second major study - an Initiative to Improve Depression Care. In this initiative, ACPNet will collaborate with the American Academy of Family Physicians and the American Psychiatric Association to study a range of strategies that primary care practices can use to improve depression care. The project is based on principles of participatory research (in which all participants are both learners and researchers), and will involve team-based management, learning sessions, and plan-do-check-act cycles. Although the project will focus on improving depression care, the fundamental change processes will be adaptable to other chronic conditions as well.

The aims of the project are:

- To identify and test simple office interventions to enhance depression care during both the acute and continuing phase treatment of depression; and
- To examine characteristics of office practices (values, structures, and processes) that are associated with initial adoption and ongoing maintenance of these innovative strategies.

Recruitment for this study is currently open to all ACPNet members. A recruitment letter and email, highlighting the responsibilities and benefits of participation, has been mailed to you. Please contact us if you would like more information on this opportunity or would like to sign up.

For questions, comments, or suggestions, contact:

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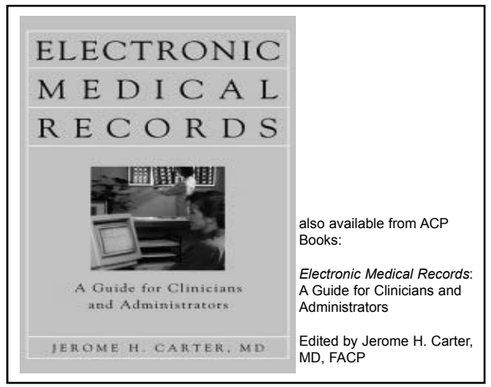
Tools and Techniques:

Purchasing An EMR, Part I: What To Look For In A System And Using Available Features

With the number of patients per practice increasing each year, physicians and their support staff are struggling to manage an unwieldy collection of medical records. The disorganized nature of traditional paper records also contributes to the staff's workload. Further frustrating attempts to operate efficiently is the lack of standardized data entry between different agencies within the health care system. Fortunately, the implementation of an Electronic Medical Record (EMR) system may rectify many of the data management problems that medical staffs encounter. After the initial investment, an EMR can cut transcription costs, storage costs, and time spent managing paper forms.[1] The key to implementing a successful EMR system is to purchase an EMR that addresses the needs of your practice, can be upgraded in the future at a reasonable expense, and is versatile enough to integrate different information platforms.



also available from ACP Books:

Electronic Medical Records: A Guide for Clinicians and Administrators

Edited by Jerome H. Carter, MD, FACP

When purchasing an EMR for your practice, it is important to identify the needs of your practice: determine who will use the EMR and for what purpose it will be used.[2] The range of functions required of an EMR will determine the cost of the initial investment and future upgrades. For example, in a generic model, the EMR is first used by front desk personnel to verify patient appointments and insurance information. During the preliminary checkup, a nurse then adds vital measurements to the patient file and any patient complaints. Once the physician examines the patient, he or she updates the database file or coordinates any required prescriptions with the pharmacy, lab, or specialists. With a sufficiently advanced EMR, patient data is then sent to billing, which is interfaced with a medical payer.[3] In summation, a good EMR provides the physician and other support staff with an interface to the front office. Front office staff should be able to schedule patients for multiple nurses and physicians, and schedule callbacks. To ensure HIPAA compliance, make sure the EMR can keep a log of any staff members who access the EMR patient files.[1]

The front office interface capability of an EMR is only one small fraction of its intra-office communication potential. Many EMRs enable physicians and practice staff to improve follow up and supplemental care. When deciding on what vendor to purchase an EMR from, you should find a system that can prompt medical staff to issue patient reminders for health management and also allows the reminders to be altered according to needs of the physician and patient. Similarly, some EMR systems can provide a mailable version of the prompted reminder, taking into account designated treatment plans/protocols and prevention. Also available with some systems are printable physician's notes for work and school, insuance forms, referrals, and letters. If you do a fair amount of research, you should try to find an EMR that provides access for more than one person at a time and allows charts to be opened at multiple office locations. Multiple access points may also be helpful if the system also allows physicians to schedule an appointment independently of the front office.[1]

For easier research, a feature of some EMRs allows you to access a patient summary sheet with immediately relevant information. This allows for easy updates of patient problems and medication changes. The process of updating information includes inputting information from external sources. Depending on the system, it may be possible to include electronic signatures for reports, notes, lab data, and information from supplemental studies. Physicians can also import hospital discharge summaries and consultation reports. In order to add information from outside sources, you need a very flexible database.[1]

A versatile EMR should have the ability to scan paper documents into charts that are easy to review; data can be incorporated into charts via standardized protocol.[1] It is also possible to incorporate images, such as X-rays and MRIs - specialized printers that can reproduce lab images are available. Before you buy an EMR, be sure to make a note of what image and text files a particular EMR supports and what types of printers are compatible.[2] The ability to transfer and integrate files is an important characteristic of the general EMR architecture. Initially, a smaller electronic system may be adequate, but it is likely that even the best EMR will require an upgrade at some point. With this in mind, choose an EMR that stores text as a common template Word document that is compatible with other standardized protocols. The common template allows information to be transferred between EMR databases and enables the transfer of information to other physicians involved in a patient's care.[1] Standardized code may also eventually help to alleviate inconsistencies in the billing process.[4]

After determining how your EMR will be used, careful decisions must be made regarding the architecture of the database. In order to build an effective system, you should decide what type of network your practice requires, how wide a range of function you will need and how much research you will conduct. Also, determine the proportion of manual input versus dictation that best suits your needs. Some systems facilitate voice-recognition software, although such software is often less accurate than manual transcription and in some instances may be more time consuming.

If you want to access your EMR from multiple locations, you can choose to run either your own intra-office computer network or an Application Service Provider (ASP). With an ASP that is rented from a vendor, you can access data from external locations and the service provider supplies security and networking functions. However, using an ASP also means that your data is managed outside of the practice.[1] Depending on your needs, it may also be more cost effective in the long run to avoid rental fees and external management by establishing your own network. The data would be managed in-house, but you would need to invest in the initial database construction and maintenance.

The range of function available in an EMR is normally determined by the cost of the system. More expensive systems offer the widest versatility of function. It is vitally important to identify how an EMR would be used in your practice before you purchase it. By determining what functions you want the EMR to perform, you can avoid paying for expensive upgrades to an inadequate system or purchasing an unnecessarily complex system that operates below capacity.[1]

Research capabilities are also a very important feature to consider. Depending on how much research you plan to conduct and to what degree of detail, you will need to choose between free-text input and coded entry.[3] Coded entry allows the user to input information directly into the database. It is also conducive to expansive search and query functions. Unfortunately, it can be time consuming due to a lot of individual item selection and mouse clicking.[1] Furthermore, static options force a determination of what information will be included and what information will be excluded.[3] Conversely, free text makes data input easier, more natural, and more efficient. The data entered is also more precise since the input options are not fixed. The downside is that due to a lack of uniformity in the coding of data, the ability to query and search information is very limited. Since free-entry and coded entry text both have benefits and shortcomings, weigh the amount of research that you are likely to conduct against the need for an efficient system. Finally, regardless of which input format you decide to use, make sure there is a mechanism to protect the integrity of your data. If you use an ASP, the vendor controls any technical operations. However, if you decide to run a network, make sure you find out what types of technical support are available.[1]

When you purchase an EMR, inquire as to what kind of technical support is available and when support available. If technical support is offered only during business hours, rather than twenty-four hours a day, you may encounter some problems obtaining help if your practice is in a different time zone from the vendor or support company. It is also important to find out if the EMR vendor provides their own technical support or relegates the responsibility to a subcontractor. The vendor will undoubtedly be more knowledgeable than a subcontractor about their product and any associated problems and solutions. Keep in mind that, unlike technical support for domestic products, technical support for commercial systems usually costs extra money. Find out how much technical support will you receive for a given price.[2]

One final technical consideration is licensing for your EMR. Vendors may use various methods for distributing licenses. The two most common licensing methods provide either one license for the entire practice site or one user per license. Before deciding on a vendor, ask about the amount of access that one license provides. In addition to usage limitations, inquire about the length of time it takes for a user license to be released after a user exits the database or after a system failure. A license "hang-up" can cause inconvenient delays in your practice.[2]

In our next newsletter, Part II of this EMR series will discuss how to integrate information in different medium using standardized data codes and the application of open-source software in cutting EMR costs.

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2. Meyers JS. *Electronic medical records: 10 questions I didn't know to ask*. Fam Pract Manag. 2001 Mar;8(3):29-32. [PMID: 11317846].
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PBRN News Update

It's been a rewarding few months for the network. Our principal study is well underway, our membership has grown, and we have new projects on the horizon.

Scientific Policy is now *Scientific Policy and Quality*

Due to the copious amount of work at Scientific Policy, our department has split into two new departments: Scientific Policy and Quality, and Clinical Programs. The Scientific Policy and Quality Department will retain coordination of ACPNet, and its expanded functions will include oversight of the College's new Performance Measures Subcommittee.

Diabetes Management Study Update:

Since our last newsletter, we completed the recruitment phase for our diabetes management research study, and have entered the study phase of the project. A total of 41 internal medicine physicians in 20 states across the country are participating in this study; our first group of 32 network members began data collection in late May of this year, followed by a smaller group of 9 physicians shortly thereafter.

(continued on page 7)

Questions or comments?
Send an email to: pbrn@acponline.org
Or call us at 800.523.1546, ext. 2603

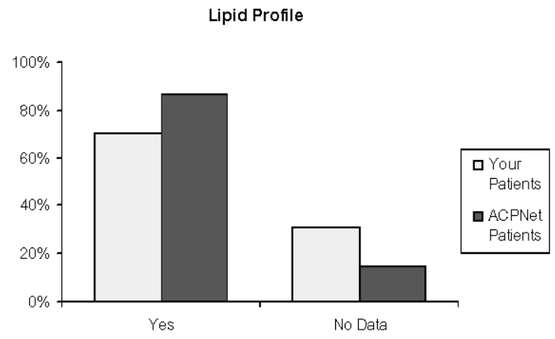
Sample Data from Diabetes Report

5. Lipid Profile (Last 12 Months)

a) Process: Frequency of Lipid Profile

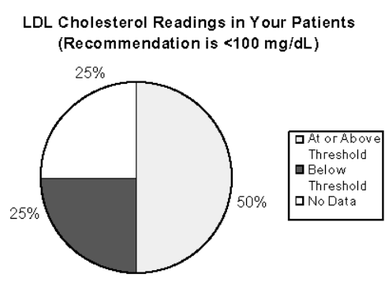
	Your Patients		ACPNet Patients	
Yes:	18	72.0%	756	84.0%
No Data:	7	28.0%	144	16.0%
Total:	25	100.0%	900	100.0%

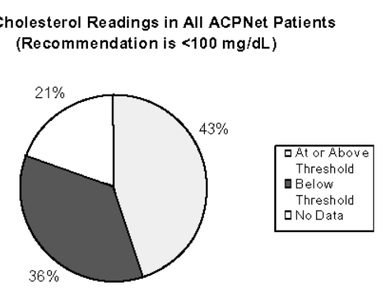
Adult patients with diabetes should be tested for lipid disorders annually for fasting serum cholesterol, triglycerides, HDL cholesterol and calculated LDL cholesterol levels. If all values are within acceptable limits, the clinician may consider obtaining this lipid profile less frequently.



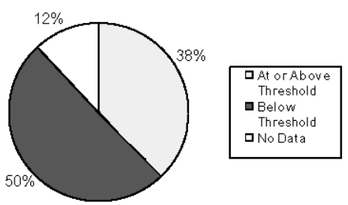
b) Outcome: Based on Most Recent Lipid Profile Results

LDL Cholesterol

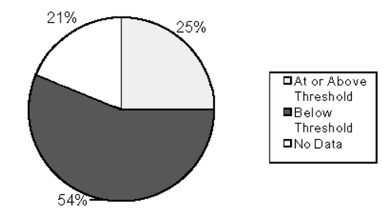




Triglyceride Levels in Your Patients
(Recommendation is <200 mg/dL)



Triglyceride Levels in All ACPNet Patients
(Recommendation is <200 mg/dL)



Although there is no firm evidence-based target or threshold, a standard recommendation of therapy for adult patients with diabetes is to lower LDL cholesterol to <100 mg/dL (<2.60 mmol/L) and triglycerides to <200 mg/dL (<2.30 mmol/l). In patients with diabetes and established CVD, a very low LDL level (<70 mg/dL) may be considered. People with diabetes who have triglyceride levels >1,000 mg/dL (>11.3 mmol/L) are at risk of pancreatitis and other manifestations of the hyperchylomicronemic syndrome. These individuals need special, immediate attention to lower triglyceride levels to <400 mg/dl (<4.50 mmol/L).

Percents for Your Patients based on the 25 patients submitted. Percents for All ACPNet Patients based on the 900 total patients in the ACPNet Database.

1. Diabetes is progressive but controllable.
2. Diabetes is preventable in your family.
3. Diabetes is a circulatory disease.
4. Know and follow your ABC's (A1c, BP, and Cholesterol).
5. The eye is the window towards kidney disease.
6. The teeth are the door to heart disease (especially important for smokers).
7. More walking = less medicine, Less walking = more medicine
8. You change your oil in your car every three months, even it's running well. We check your A1c every three months, even when you're doing well. Don't wait until break down, check your A1c!!!!

Thank you,

Dr. Swami and Staff
email: kkrv123@hotmail.com

Classic Article Reviews:

Building Measurement and Data Collection into Medical Practice

Nelson, EC, Splaine ME, Batalden PB, and Plume SK.
Ann Intern Med. 1998 Mar 15; 128(6):460-466.
[PMID: 9499330]

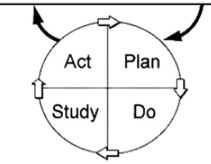
This article reviews some of the elements critical to performing quality improvement internally. It was originally published as part of the *Physicians as Leaders in Improving Health Care* series in Annals in 1998, a series intended to help physicians develop the skills necessary to deploy their clinical and professional expertise in the redesign of healthcare. By your participation in ACPNet, you have already demonstrated an interest in and dedication to these topics. So, if you find the following quotations to be a concise description of our common goals, please share it with another member of your practice!

- ❖ Measurement and improvement are two sides of the same coin.

- ❖ Clinicians can use data to improve daily clinical practice:
  1) seek usefulness, not perfection, in the measurement;
  2) use a balanced set of process, outcome, and cost measures;
  3) keep measurement simple (think big, but start small);
  4) use qualitative and quantitative data;
  5) write down the operational definitions of measures;
  6) measure small, representative samples;
  7) build measurement into daily work; and
  8) develop a measurement team.

- ❖ Consider your practice aims (What are we trying to accomplish?), measures (How will we know that a change is an improvement?), and practical changes (What changes can we make that we think will lead to an improvement?)
- ❖ Incorporate the Plan-Do-Study-Act cycle. Measurement methods are described in the Plan step; data are gathered in the Do step; information is analyzed in the Study step; and key measures are monitored in the Act step.
- ❖ Avoid the temptation to demand complexity in your internal measurement and analysis. Stick to a small-scale, rapid-cycle, iterative approach.
- ❖ Build measurement into daily work by developing a measure ment team. Teams lighten the workload, add knowledge, and boost morale.

What are we trying to accomplish?
How will we know that a change is an improvement?
What changes can we make that will result in an improvement?



- ❖ The following approaches to using data for improvement are recommended:
  1) begin with curiosity about outcomes or a need to improve results;
  2) try to avoid knee-jerk, obstructive criticism of proposed measurements. Instead, propose solutions that are practical, goal-oriented, and good enough to start with;
  3) gather baseline data on a small sample and check the findings. Collect both quantitative and qualitative data;
  4) try to change and improve the delivery process while gathering data;
  5) plot results over time and analyze them by using a control chart or other graphical method;
  6) refine your understanding of variation in processes and outcomes by dividing patients into clinically homogeneous subgroups (stratification) and analyzing the results sepa rately for each subgroup; and
  7) make further changes while measuring key outcomes over time.

This article delves into each item in greater detail, and we highly recommend reviewing the full article if this summary interests you. Contact us at pbrn@acponline.org if you would like an electronic copy.

This newsletter edits Featured Investigator columns for style only; therefore, the comments or endorsements by the Featured Investigator do not necessarily represent the views of ACPNet or the American College of Physicians.