"There can be no greater justification for performance measurement than its power to impact that which it is measuring."

–Vahe Khzanjian PhD

MEASURING HOSPITALIST PERFORMANCE:

METRICS, REPORTS, AND DASHBOARDS

A WHITE PAPER WRITTEN AND PRODUCED BY

The Society of Hospital Medicine's
Benchmarks Committee

August 2006

shm Society of Hospital Medicine

10th CELEBRATING TEN YEARS

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MEASURING HOSPITALIST PERFORMANCE:
METRICS, REPORTS, AND DASHBOARDS

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INTRODUCTION

INTRODUCTION

The rapidly-evolving specialty of hospital medicine is at the forefront of many of the changes now occurring in the way inpatient care is delivered in the United States. With these changes comes an increasing demand for accurate, detailed information on the quality and efficiency of our clinical practices. Both as a specialty, and as individual physicians and practices, we strive to demonstrate value through the provision of high quality, efficient, patient-centered care. To do so successfully demands a focused and rigorous approach to performance monitoring and improvement

In 2005, the Society of Hospital Medicine's Benchmarks Committee set out to identify best practices in performance monitoring for hospital medicine groups, and to document current thinking about specific performance metrics and how they should be evaluated, presented and used. Taken collectively, these metrics can form a "dashboard" that can be used by hospital medicine groups and the organizations in which they work to track performance.

In attempting to monitor their performance, hospital medicine groups focus on several questions, the most common of which are:

1. What aspects of performance should we monitor?
2. How and where do we get the information we need?
3. What should we do with the information once we have it?

This White Paper attempts to address these and related questions. The goal of this document is to help hospitalists develop a common language and conceptual framework for monitoring performance that can be readily employed by individual hospital medicine groups. Our intent is to make general recommendations based on best practices, not to set standards or to dictate the specific content and format of reports and dashboards. These recommendations may then be adapted by each practice to achieve its performance monitoring objectives.

PROJECT APPROACH

The SHM Benchmarks Committee started with the first question: *What aspects of performance should be monitored?*

In order to come to consensus on this issue, the committee engaged in a modified Delphi process. Each committee member was asked to submit a list of the most important performance monitoring metrics for hospitalists. This information was shared with the entire committee in a comprehensive, blinded format by omitting identification of who said what. Using Delphi rank ordering methods, committee members then prioritized the metrics to produce a final list of the top ten metrics for evaluating hospital medicine practice performance. The top ten list of metrics generated by this process are shown below.

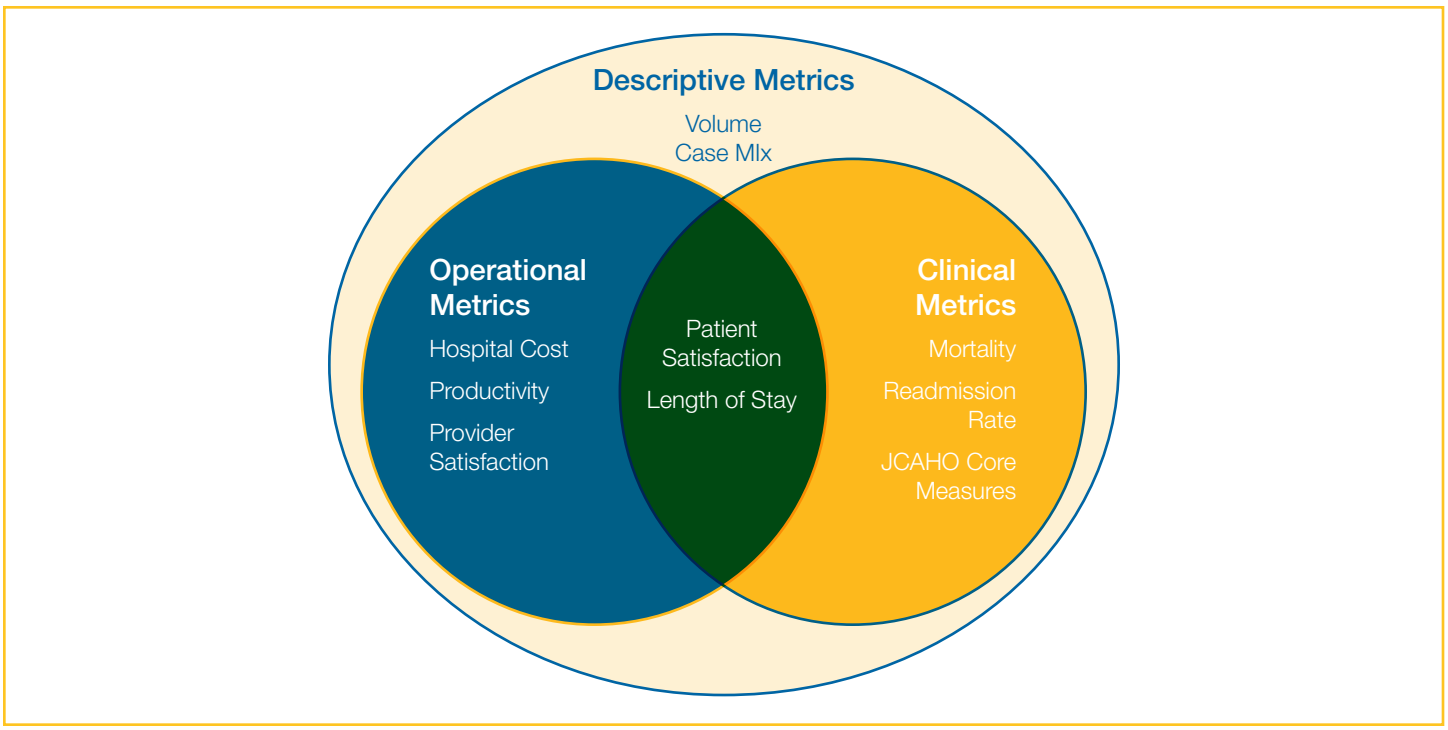


Figure 1. The Ten Key Performance Metrics for Hospitalists

Volume and case mix are considered descriptive metrics because they do not measure hospitalist performance in and of themselves, but they inform, support, and explain the analysis of operational and clinical metrics. Operational metrics include items such as hospital cost, productivity (by individual physician and by group) and provider (usually referring physician) satisfaction. Clinical metrics include mortality, readmission rate, JCAHO core measure compliance and similar items. Metrics such as patient satisfaction and length of stay may be considered measures of both operational and clinical performance.

Once the ten consensus metrics were identified, each metric was assigned to a committee member who drafted a two-page discussion of that metric. Each metric discussion includes the following components:

Description of the metric – A brief definition of the metric as it relates to evaluating practice performance.

Subsidiary metric components – Subsets or dimensions of information related to the metric that are often analyzed and reported.

Why this metric is important – A discussion of the questions answered by the metric, who the stakeholders for this metric are, and how monitoring of this metric can benefit the practice.

Data sources – From whom or from what information systems the information for this metric is typically obtained.

Unique measurement and analysis considerations – A discussion of the issues unique to each metric that may impact the monitoring and reporting of results.

Potential practice interventions – Actions that hospitalists can take, either in response to the data or to improve performance relative to this metric.

Sample metric report – One or more sample reports showing how this metric might be presented to track hospitalist performance.

The Top Ten Performance Metrics are presented in Section Two of this report.

Collecting and analyzing the data necessary to monitor hospitalist performance can be technically complex, particularly when evaluating quality and clinical performance. The metric discussions are not meant to be all-inclusive or detailed discussions of the technical aspects of the metrics; instead, they are intended to provide practical information to guide practices in designing their performance monitoring systems. We have provided references for additional information on the more technical topics. Finally, the committee addressed how key data points resulting from the analysis of multiple metrics can be distilled into a concise performance summary or dashboard.

Suggested Approach for Hospitalist Performance Monitoring

These ten consensus metrics can represent a starting point for practices that wish to develop a comprehensive performance monitoring and reporting process. Each hospital medicine group can then choose what to measure, based on the priorities of the practice and its hospital or other sponsoring entities.

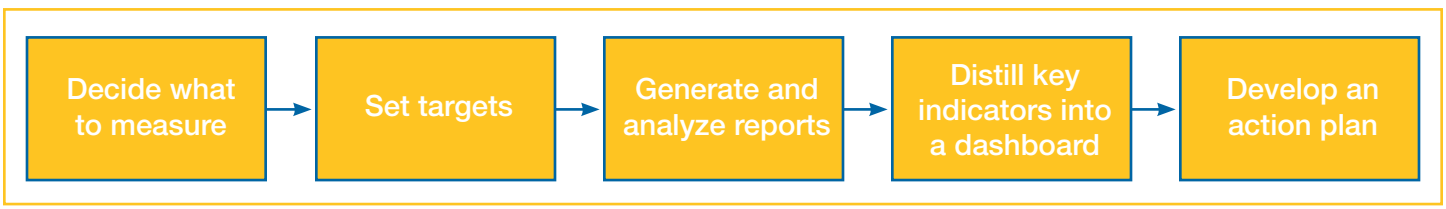


Figure 2. Process for Measuring Hospitalist Performance

In order to achieve effective performance monitoring, each practice should undertake a process similar to the one outlined below and noted in Figure 2 on the previous page.

Decide what to measure. In deciding what metrics to measure, consider the following questions:

- What were the original drivers for the development of the hospital medicine group?
- What does the hospital (or other sponsoring organization) expect to achieve in return for program financial supporting?
- What do patients, payors, regulators, and other stakeholders want to know about the program?
- What are the high-priority issues currently confronting the practice?

Set targets. Once a practice has decided on its basic metrics, it is necessary to set performance targets or goals so that the practice can measure its actual performance against desired performance targets. Such targets may be expressed as a floor (or ceiling) threshold, such as "at least 85% pneumovax compliance" or an ideal range of performance, such as "case mix-adjusted ALOS between 3.2 and 4.0 days."

Generate and analyze reports. The practice must know where to obtain the necessary data, and understand enough about how the data are collected and reported to be confident in the degree of accuracy and validity. Often the required information is generated from hospital information systems, and the reports are voluminous and full of extraneous data items that make it difficult to focus on the key findings. It is important that the practice take the time to work with the individuals generating the data to create the most useful reports possible, to review and analyze the reports in detail on a regular basis, and to fully understand what the reports are saying about the practice and its performance.

Distill key indicators into a dashboard. Because reports are often complex, voluminous and overly detailed, it is important to select a handful of key business indicators, perhaps ten to twenty, and to summarize them in a dashboard. A dashboard is a summary document, usually one to two pages long, that displays the most important practice performance indicators. It should be produced on a regular basis, such as monthly or quarterly, and should display the key indicators in a simple, easy-to-read format that allows readers to quickly discern whether or not actual performance for the reporting period met the targets. The dashboard may include the following:

- The target performance level or range as well as the actual performance for each indicator, and/or
- A graphic display of:
  - The performance trend over time, perhaps indicated by up and down arrows
  - Whether actual performance meets the target for each indicator, for example red, green and yellow lights

Samples of hospital medicine dashboards are included in Section Three of this report.

When deciding what to include in a dashboard, consider the following:

- What single parameter or item of information is the best indicator of the practice's performance for the metric under consideration?
- Which key parameters need to be monitored on a regular or ongoing basis, as opposed to an as-needed basis, to know whether the practice is meeting its goals?
- Which parameters are essential for guiding the practice in taking actions to improve its performance in core areas?

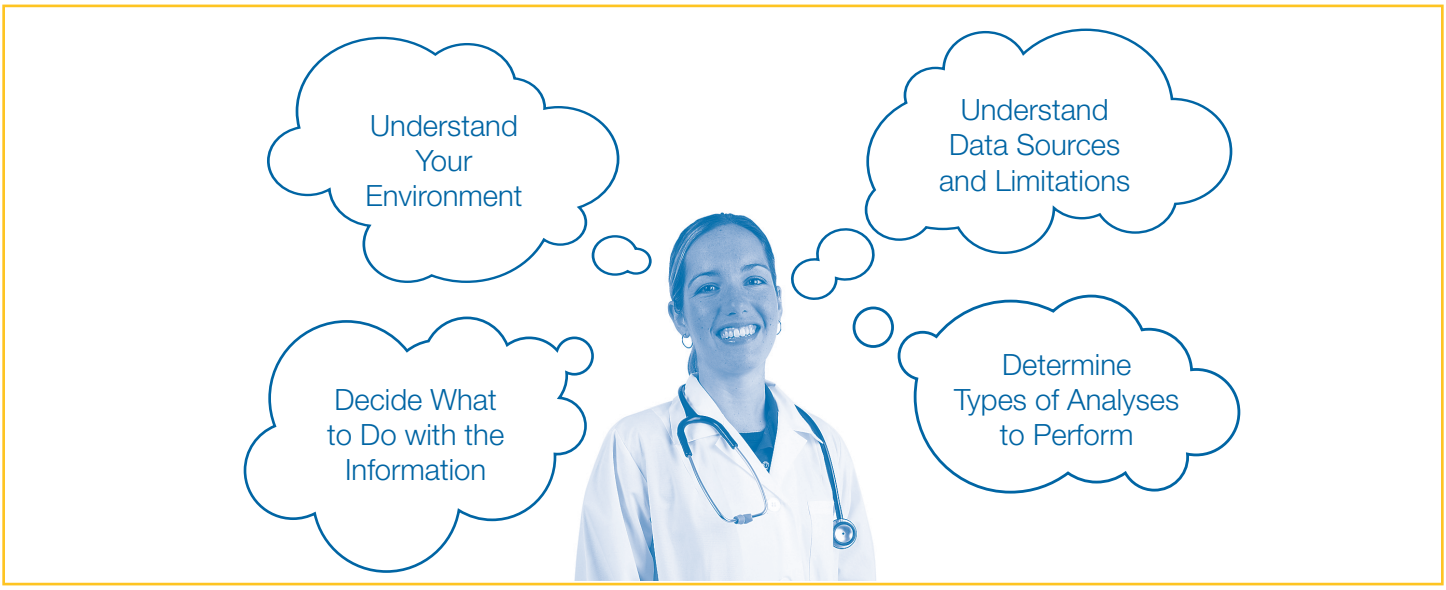
Develop an action plan. The primary reason for measuring performance is to identify opportunities to improve it. Both detailed performance reports and the summary dashboard create opportunities to adopt a mindset of continuous performance improvement. Secondary reasons for measuring performance may include demonstrating the value created by hospital medicine programs as follows:

- Documenting different levels of performance by hospitalists when compared with a non-hospitalist peer group.
- Calculating a return on investment (ROI) for the hospital or other sponsoring organization in terms of improved quality and resource utilization, or incremental patient volume and revenue.

In summary, it is important to have a specific action plan for how the performance monitoring information and the summary dashboard will be used to make decisions, improve performance and demonstrate value. Questions to be addressed in developing the action plan should include the following:

- With whom will this information be shared? In what format?
- What specific steps should be taken to improve performance for individual metrics?
- How will decisions be made about performance improvement priorities and resource allocation?
- How will this information be used to help further the interests of the hospital medicine practice?

GENERAL CONSIDERATIONS FOR HOSPITALIST PERFORMANCE MONITORING



Understand Your Environment. Every hospital medicine practice operates in a unique environment with its own culture, language, goals, concerns, priorities, analytical methodologies, and operational habits. It is important for a hospital medicine group to understand the interests of the organizations in which they work, and to communicate using terms, definitions and analyses that are consistent with existing practices.

For example, some practices consider length of stay in terms of how many days a provider saw the patient in the hospital. Hospitals, on the other hand, usually count days of stay as of the midnight census. Consequently, the hospital-defined length of stay will almost always be one day shorter than the number of days the patient was seen by a hospital medicine provider. Similarly, many physician practices tend to refer to their professional fee receipts from third party payors as gross revenues. But hospitals may use the term “gross revenue” to refer to their billed charges, not what they actually collect. These definitional differences should be reconciled to avoid misinterpretations of data, erroneous action plans, and potential miscommunication with interested parties.

It is also important for hospital medicine practices to incorporate an understanding of the potential differences between the terms and analytical methods they use compared with those used in reporting external benchmark data. One of the most common pitfalls is the failure to distinguish between work RVUs (wRVUs) and total RVUs. Additional terms potentially requiring clarification may include billable encounters, full time equivalent, total compensation, and benefits expense, among others.

In summary, it is important for practices to understand and effectively articulate the differences in terminology and analytical approaches used by various entities. This will enable practices to explain potential differences between their performance metrics and those generated using other methods.

Understand Data Sources and Limitations. Because the information used to monitor and evaluate performance depends on the underlying data, practices should understand the limitations of these data sources. Common sources of performance data include the practice's billing system and hospital and health plan information systems. Hospital information systems typically include the Admission/ Discharge/Transfer (ADT) system, one or more clinical information systems such as lab, radiology and pharmacy systems, nursing information systems, computerized physician order entry or CPOE systems, and the hospital billing and financial systems. Some hospitals also have a clinical data repository that integrates data from several systems in a centralized database used to generate reports and analyses.

The limitations of physician billing data include the completeness and accuracy of the charge capture and coding processes used to record billing data from the point of service to the point of entry into the practice's billing system. Billing systems typically only capture billable charges and so do not reflect clinical interventions, such as second patient visits in the same day, for which a charge cannot be generated. Thus these systems may tend to under-represent the value of the work performed by the practice. Some hospital medicine practices have created internal codes to record these valuable but non-billable encounters. However, provider compliance with capturing this information is often low.

Hospital data systems may be limited by their means of data entry, which often relies on manual entry by hospital clerical staff such as admitting clerks, unit secretaries, and quality assurance and medical records staff. Therefore data regarding admitting and attending physicians, consultants, compliance with protocols and core measures may be subject to data entry errors and should be evaluated for accuracy before inclusion in a practice's dashboard. Similarly, the design of hospital information systems may preclude an accurate assignment of which of the many physicians caring for a patient is actually responsible for a hospitalization, or for specific associated costs or outcomes. For example, is the fact that multiple duplicate lab and x-ray orders were generated the responsibility of the attending physician – or one or more of the consultants? Which hospitalist should be credited with core measure compliance when there were three hospitalists who cared for the patient during the stay?

For comparison and benchmarking purposes, the primary data sources include reports published by independent organizations such as the Society of Hospital Medicine, the Medical Group Management Association and others. Other sources of external benchmark data include hospital data reported to the Medicare system, and independent clinical data repositories that some hospitals participate in, such as Solucient, Premier, VHA, and the University HealthSystem Consortium (UHC).

Finally, data from all these sources may be limited by the challenging logistics of obtaining the data. For hospital medicine groups without a practice manager or in hospitals without dedicated decision support staff, it may be very difficult to obtain the needed reports, even though the raw data are available in one or more information systems.

Determine Types of Analyses to Perform. Practices undertaking performance monitoring should consider the many options available for evaluating the performance of individual physicians compared with their practice peers and available benchmarks, and which metrics are the most appropriate for evaluating group performance. Certain metrics will be used to describe both individual and group performance. The narratives on the top ten metrics in this paper provide some guidance in describing individual vs. group assessment. For example, a practice will need to decide whether a metric can be accurately attributed specifically to an individual, or to the group in aggregate. Metrics for which it is difficult to assign individual responsibility, such as length of stay or core measure compliance, may be better suited to group evaluation. The same applies to metrics that require large numbers of observations in order to be statistically valid, such as mortality and readmission rates, which may only be available in small numbers at the individual level.

Common ways of looking at performance data for both individuals and groups are listed below:

- Individual physician performance
  - Personal performance trended over time; for example, in quarterly increments or this period vs. year to date, and against the same period in prior years
  - Against internal peer group for the same time period
  - Against internal goals or established external benchmarks
- Hospital medicine group performance
  - Group performance trended over time; for example, in quarterly increments or this period vs. year to date, and against the same period in prior years
  - Against a non-hospitalist peer group within the same institution, if one exists, for the same time period, such as DRG- or case mix-adjusted medical admissions by non-hospitalist internal medicine physicians
  - Against other hospital medicine groups within the same institution, if they exist, for the same time period
  - Hospital medicine groups that are part of a larger entity such as a multispecialty medical group or a hospital medicine management company will be able to perform peer group comparisons within their larger organizations, including comparisons across multiple institutions, as well.
  - Against internal goals or established external benchmarks
  - Hospital medicine groups in other similar organizations
  - Benchmarks published by professional societies such as SHM, or in the scientific literature
  - Third party data vendors

What To Do With All This Information? The analysis of performance data is likely to generate a large amount of information, which then must be distilled and summarized into reports and dashboards to enable a group to improve its performance.

The first step is to perform a high-level assessment of the information to evaluate whether it is a plausible representation of your current situation. In other words, does the information make sense, based on what you know about your practice? Or is there something about the reported results that does not look quite right? Common problems include errors in the source data, inaccurate data field definitions, misunderstood report parameters, and small sample sizes. Any of these may lead to inaccuracy and imprecision.

Once the reports have been assessed for plausibility, the next step should be to carefully evaluate the information in the reports to determine its meaning for your practice's performance. Some useful questions to ask include:

- What are the two or three key take-away points from this report that will be relevant next week, or next month?
- In what areas is individual or group performance not meeting targets?
- What are the performance trends? Is performance improving or declining over time?
- What decisions can be made on the basis of this information?
- What can be done to improve performance in these areas?

After the reports have been evaluated in detail, a group can then move on to identify a handful of meaningful, actionable data elements from each report, and to create a simple, graphic summary document or dashboard to enable anyone in the organization to gain a quick sense of overall performance. Finally, it is worth repeating that the whole point of performance monitoring and reporting is to ensure a high level of performance for the hospital medicine group and its individual hospitalists. The dashboard and its underlying detailed reports should be routinely used to identify opportunities for improving performance, and to develop specific action plans to enable a group to develop and sustain the desired level of quality and performance.

SECTION TWO:
TOP TEN PERFORMANCE METRICS

PERFORMANCE METRIC ONE: VOLUME DATA Gale Ashbrener	
Description of Metric	Volume data are measurements indicating "volume of services" provided by a hospitalist group or by individual hospitalists. Volume data, in general terms, are counts of services performed by hospitalists. Such data are often used as indicators for staffing requirements, scheduling plans, and workload capacity. Certain volume information can be useful for dashboards as descriptive indicators, although not all types of volume data are typically reported on dashboards.
Subsidiary Metric Components	Subsidiary metric components may include: • Census (as defined by billable encounters or alternatively, by number of unique patients seen) • Number of admissions (inpatient and/or observation) • Number of consults • Number of discharges • Number of patients seen in the ER, treated and released (no admission) • Number of ambulatory visits • Number of family conferences • Number of Relative Value Units (RVUs)
Why this Metric is Important	Volume measurements are important descriptors of the scope and scale of the hospital medicine practice. They provide insight into how the practice is evolving, and play a vital role in supporting staffing ratio decisions, schedule design, workload evaluation, and capacity management. Volume measurements can also provide enlightenment regarding daily and weekly variations in workload, as well as seasonality trends, that may require schedule and staffing adjustments.
Data Sources	Data sources will vary depending on the sophistication of the hospital and the data capture methods employed by the hospital medicine group. Possible data sources: • Hospital IT systems, including ADT (admission/discharge/transfer), billing, and/or clinical information systems • Hospital medicine service billing system • Health plan data systems • Manual data capture by the hospital medicine group

Unique Measurement and Analysis Considerations	Volume data obtained from some hospital IT components (such as clinical information systems) may be based on medical record abstracts. The quality of this data may vary with the thoroughness and accuracy of the abstractor. Abstracting often fails to reliably capture all consults and procedures, for example. If the hospital medicine group has effective charge capture and coding processes, its billing system will usually be the most reliable source for volume data. Hospital medicine practices may calculate **census** in different ways. A common definition of census is the number of billable encounters per day. For example, if the patient was admitted in the morning and a procedure was performed by a hospitalist in the afternoon, this constitutes two billable encounters. However, some groups may instead define census as the number of unique patients seen that day. The number of ***admissions*** may be useful as a dashboard measurement to indicate whether volume is increasing or decreasing over time, thus validating workload and capacity assumptions. This measurement may also be useful in predicting seasonal trends for staffing and scheduling purposes. Tracking admissions by age cohorts or by insurance type may have value in forecasting future needs; however, changes in the hospital's payor mix may or may not affect the hospital medicine group. Knowing the peak admitting days of the week and times of day is important in schedule design. Thus, these data points may be more useful for schedule design than for incorporation into a dashboard. Noting minimum and maximum admissions by day of the week may also have value in schedule design. Many volume measures, such as census and number of admissions, may be inherently flawed due to lack of acuity evaluation in the measurement. But as an indicator these measure have value in estimating staffing needs, evaluating workload and capacity, and designing schedules. High census per hospitalist on some days may not necessarily indicate the need for more staff. High census or a very low census on some days could indicate a need to reevaluate the schedule (too few or too many physicians working on certain days of the week or during certain times), or it might simply be a function of unanticipated volume fluctuations.
Potential Hospitalist Interventions	From a utilization management perspective, an increase in the number of admissions may not necessarily indicate a need for more staffing; it may indicate a utilization issue. For example, if inpatient admissions increased but observation admissions decreased this might suggest that some inpatient admissions may have been more appropriate as observations. Chart review can be conducted to evaluate admission appropriateness. Volume data can suggest opportunities to adjust staffing to make the practice more effective, such as adjusting staffing by time of day, by day of week, or seasonally. Volume data such as discharges by time of day can suggest opportunities for the hospital medicine service to add value to the organization by supporting resource utilization and patient flow initiatives. Accurate volume data can also be utilized in demonstrating the practice's value to the sponsoring organization, and to suggest marketing opportunities for the practice.

SAMPLE REPORTS – VOLUME DATA

Example One (Gale Ashbrener)

ADMISSIONS

Admits by PCPs vs Day Hospitalists vs Night MDs

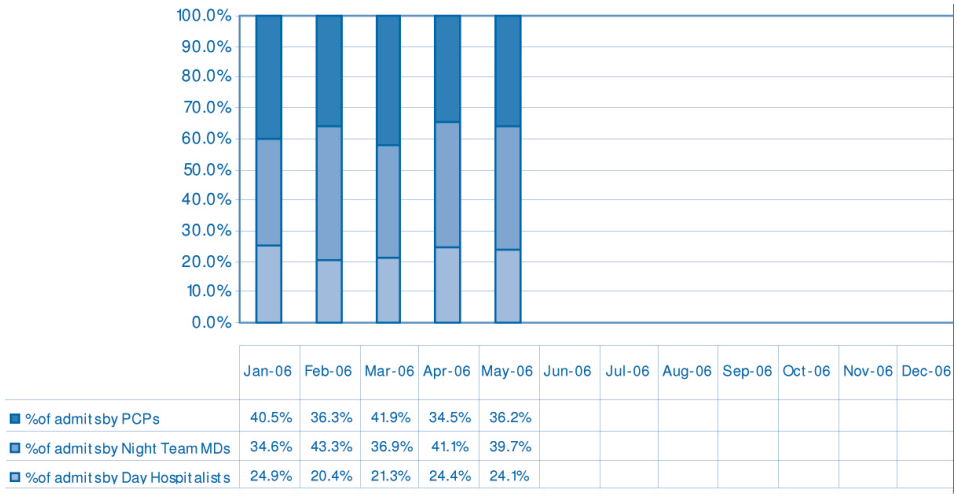
Month	Jan '06	Feb '06	Mar '06	Apr '06	May '06	Jun '06	Jul '06	Aug '06	Sep '06	Oct '06	Nov '06	Dec '06
Admits by Day Hospitalists	158	119	123	142	146							
Admits by Night MDs	220	252	213	239	241							
Admits by PCPs	257	211	242	201	220							
% of admits by Day Hospitalists	24.9%	20.4%	21.3%	24.4%	24.1%							
% of admits by Night Team MDs	34.6%	43.3%	36.9%	41.1%	39.7%							
% of admits by PCPs	40.5%	36.3%	41.9%	34.5%	36.2%							
Minimum Admits	12.0	11.0	11.0	9.0	10.0							
Average admits/day	20.5	20.8	19.3	19.4	19.6							
Maximum Admits	36.0	30.0	31.0	34.0	35.0							
Total Admits	635	582	578	582	607							
Days/month	31	28	30	30	31	30	31	31	31	31	30	31

Admits by Age

Month	Jan '06	Feb '06	Mar '06	Apr '06	May '06	Jun '06	Jul '06	Aug '06	Sep '06	Oct '06	Nov '06	Dec '06
< 65	391	345	401	437	423							
>= 65	244	237	177	145	184							
>= 65 and < 85	220	213	160	137	170							
>= 85	24	24	17	8	14							
Total	635	582	578	582	607							

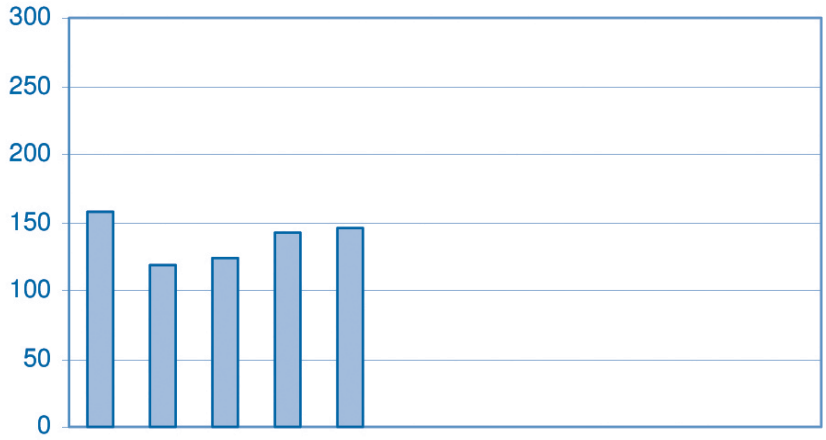
Note: Data is for illustrative purposes only. The data above is an example of data capture and calculations used to produce the following 3 charts. Data is ususally recorded/captured at end-of-month. Subsequent monthly charts, in the form of dashboard, would then produced. Depending on data capture systems available, data capture may be manual or from an automated system or a combination thereof.

% OF ADMITS BY PCPS, DAY HOSPITALISTS AND NIGHT MDS



This chart, noting % of admits by hospitalist "groupings" such as Primary Care Physicians vs. Day Team Hospitalists vs. Night MDs, may be an indicator of schedule review needs, staffing needs, or population pattern shifts. For example, a significant increase in admissions by the Night Hospitalists might be an indicator that physician staffing and/or scheduling should be revisited.

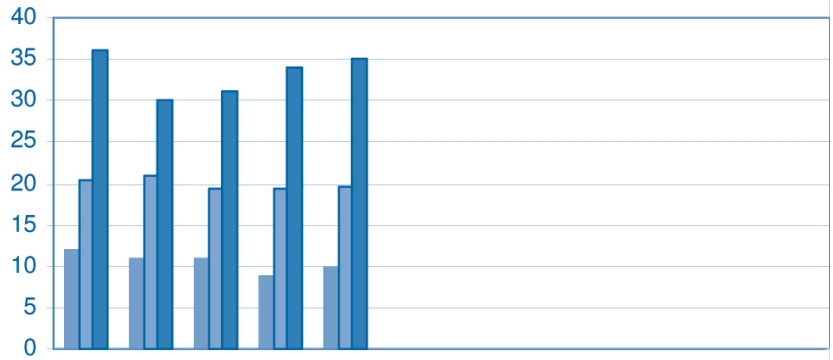
TOTAL ADMISSIONS BY HOSPITALISTS



	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06
Admits by Day Hospitalists	158	119	123	142	146							

This example represents a more focused reporting of admissions per month for the Hospitalist Day Team. An increase in the number of admissions over time may warrant a review of staffing and/or scheduling. Admissions per month might also be tracked over a longer period of time with comparisons of current year to prior years.

MIN, AVG AND MAX ADMISSIONS PER DAY

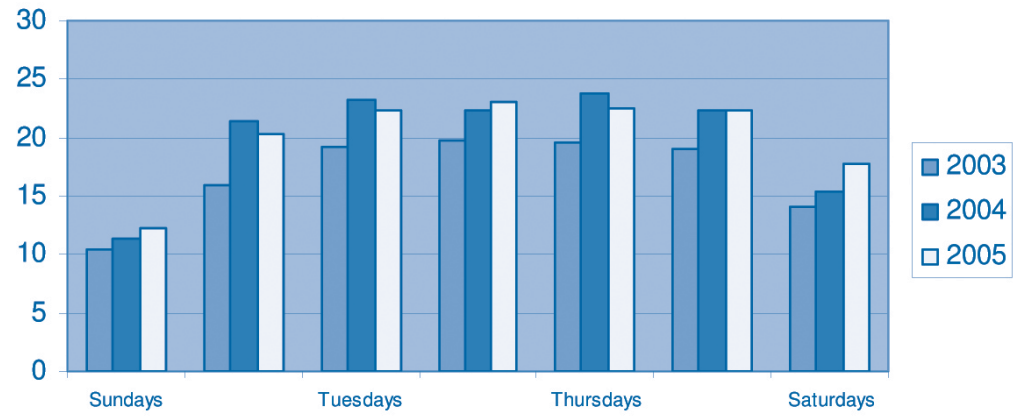


	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06
Minimum Admits	12.0	11.0	11.0	9.0	10.0							
Average admits/day	20.5	20.8	19.3	19.4	19.6							
Maximum Admits	36.0	30.0	31.0	34.0	35.0							

Minimum and maximum admits are indicators of the peaks and valleys in admissions that affect Hospitalist groups and are important measures to monitor on a routine basis. Average admits per day, although a critical measure, may not give the entire picture of workload on a given day. Average admit measurement is however important to track and trend over time to ensure appropriate staffing. This same representation but by day of the week may also be useful.

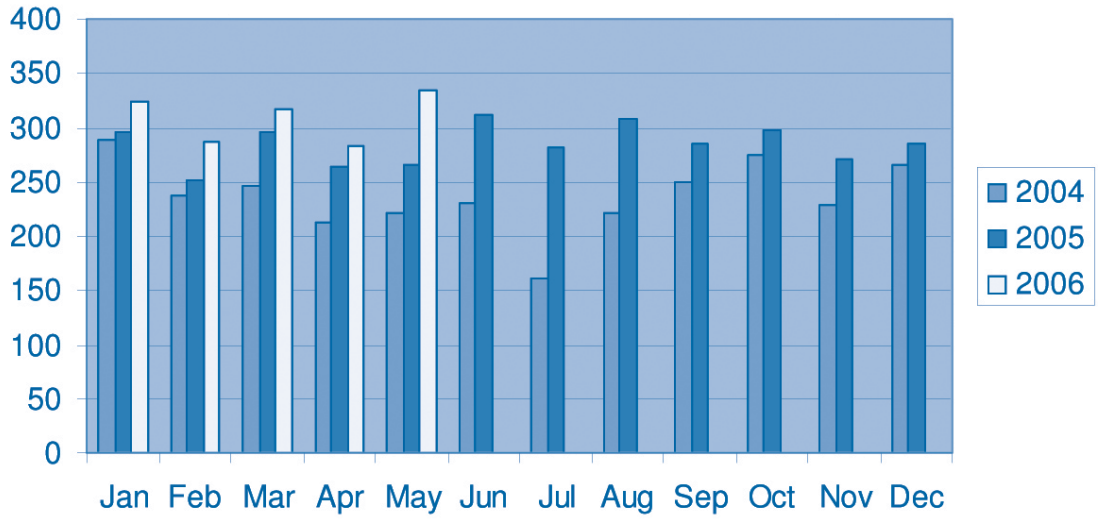
Example Two (Gale Ashbrener)

2003-2005 AVERAGE DISCHARGES BY DAY OF THE WEEK



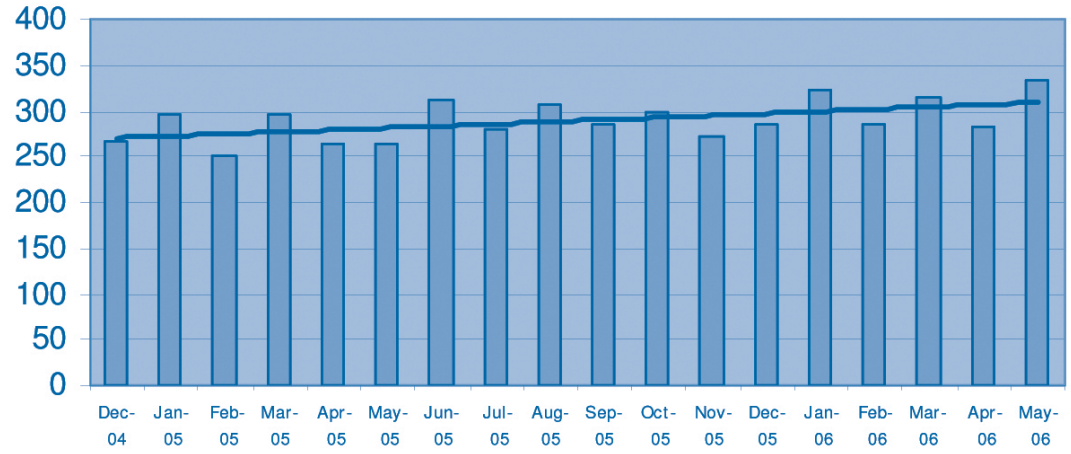
Understanding the admission and discharge trends by day of the week is critical in developing a Hospitalist schedule. Trends do change over time, as can be seen in this graph, and thus should be reviewed periodically. Additionally, improvement efforts, such as focusing on weekend discharges to improve LOS and hospital throughput, might be assessed.

INPATIENT MEDICINE ADMISSIONS



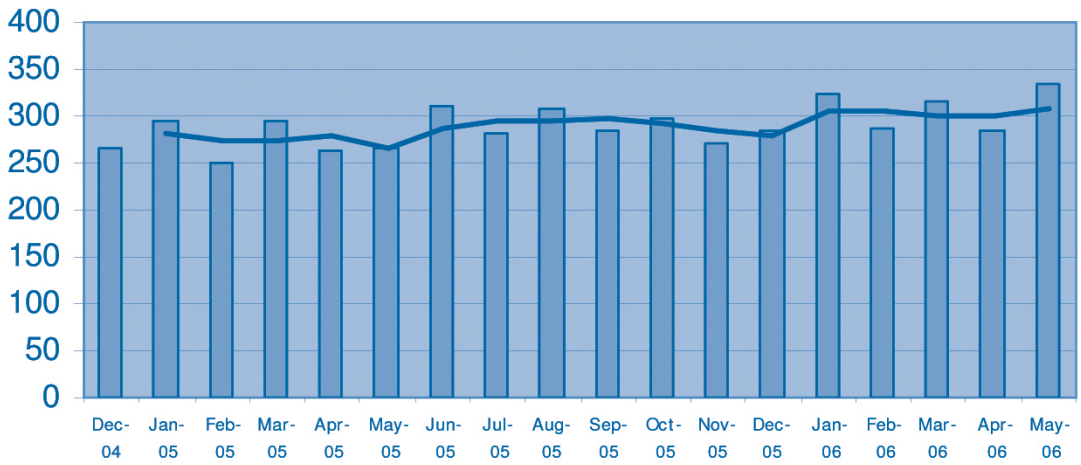
By comparing admissions year-to-year, month-to month, over time, seasonal variations may become evident. Additionally, long term trends of increases (or decreases) in workload may be depicted.

18 MONTH TREND - INPATIENT MEDICINE ADMISSIONS
*Exponential Average



The exponential average differs from a moving average in that the exponential average weighs more recent data heavier in the equation thus trend changes might be identified earlier. Exponential averages however may also be premature in signaling trend changes and must, as with all data, be used with care.

18 MONTH TREND - INPATIENT MEDICINE ADMISSIONS
2 month Rolling Average



Tracking data such as admissions, over a period of time 18 months or longer (rather than by calendar year) is important in understanding trends. Other data such as census, average admissions, and consults per day might also be tracked over an 18 month or longer period to show changes in work load and capacity.

Example Three (Leslie Flores)

This report presents volume and productivity data trended over four quarters. The information is then summarized graphically at the bottom of the page so that total group performance and individual performance can be identified.

HOSPITAL MEDICINE PROGRAM QUARTERLY TREND REPORT — **For the quarter ending: 30-Jun-06**
XYZ Hospitalist Group

Hospital Medicine Program Quarterly Trend Report

For the quarter ending: **30-Jun-06**

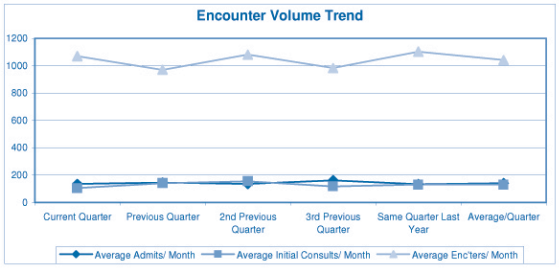
XYZ Hospitalist Group

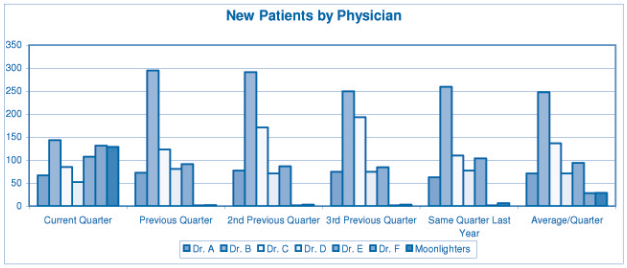
Volume and Productivity Indicators

	Average Days Worked/ Month	Average Days On Call/ Month	Total Admits	Percent of Admits from ER Unass'd.	Average Admits/ Month	Average Admits/ Day Worked	Average Initial Consults/ Month	Average Initial Consults/ Day Wrkd.	Total Enc'ters (all types)	Average Enc'ters/ Month	Average Enc'ters/ Day Worked	Total New Patients/ Quarter
Dr. A												
Current Quarter	10.0	4.0	46	69.6%	15.3	1.5	7.0	0.7	368	122.7	12.3	67
Previous Quarter	11.2	7.6	52	72.0%	17.3	1.5	6.7	0.6	135	45.0	4.0	72.1
2nd Previous Quarter	12.4	7.4	55	68.7%	18.3	1.5	7.5	0.6	139	46.3	3.7	77.5
3rd Previous Quarter	10.6	8.2	50	65.2%	16.7	1.6	8.2	0.8	151	50.3	4.7	74.6
Same Quarter Last Year	11.3	7.9	42	67.1%	14.0	1.2	6.9	0.6	130	43.3	3.8	62.7
Average/Quarter	11.1	7.0	49.0	68.5%	16.3	1.5	7.3	0.7	184.6	61.5	5.7	70.8
Dr. B												
Current Quarter	4.0	1.3	89	23.6%	29.7	7.4	18.0	4.5	176	58.7	14.7	143
Previous Quarter	15.0	3.3	126	68.5%	42.0	2.8	56.2	3.7	447	149.0	9.9	294.6
2nd Previous Quarter	14.6	4.5	105	76.3%	35.0	2.4	61.9	4.2	593	197.7	13.5	290.7
3rd Previous Quarter	15.2	2.6	143	82.1%	47.7	3.1	35.4	2.3	522	174.0	11.4	249.2
Same Quarter Last Year	13.5	5.4	112	69.9%	37.3	2.8	49.1	3.6	509	169.7	12.6	259.3
Average/Quarter	12.5	3.4	115.0	64.1%	38.3	3.7	44.1	3.7	449.4	149.8	12.4	247.4
Dr. C												
Current Quarter	13.7	4.0	54	57.4%	18.0	1.3	10.3	0.8	549	183.0	13.4	85
Previous Quarter	15.4	3.5	87	62.3%	29.0	1.9	12.0	0.8	547	182.3	11.8	123
2nd Previous Quarter	16.1	4.2	92	67.0%	30.7	1.9	26.3	1.6	592	197.3	12.3	170.9
3rd Previous Quarter	16.0	1.5	121	70.1%	40.3	2.5	24.0	1.5	603	201.0	12.6	193
Same Quarter Last Year	14.6	3.9	61	62.1%	20.3	1.4	16.2	1.1	452	150.7	10.3	109.6
Average/Quarter	15.2	3.4	83.0	63.8%	27.7	1.8	17.8	1.2	548.6	182.9	12.1	136.3
Dr. D												
Current Quarter	25.0	2.7	16	12.5%	5.3	0.2	12.0	0.5	772	257.3	10.3	52
Previous Quarter	15.0	3.0	54	56.0%	18.0	1.2	9.0	0.6	498	166.0	11.1	81
2nd Previous Quarter	12.0	2.0	26	68.0%	8.7	0.7	15.0	1.3	465	155.0	12.9	71
3rd Previous Quarter	13.0	3.0	38	64.0%	12.7	1.0	12.0	0.9	399	133.0	10.2	74
Same Quarter Last Year	15.6	2.0	29	71.0%	9.7	0.6	16.0	1.0	581	193.7	12.4	77
Average/Quarter	16.1	2.5	32.6	54.3%	10.9	0.7	12.8	0.9	543.0	181.0	11.4	71.0
Dr. E												
Current Quarter	4.0	6.0	62	27.4%	20.7	5.2	15.0	3.8	175	58.3	14.6	107
Previous Quarter	13.0	3.0	28	64.0%	9.3	0.7	21.0	1.6	498	166.0	12.8	91
2nd Previous Quarter	12.0	2.0	29	58.0%	9.7	0.8	19.0	1.6	420	140.0	11.7	86
3rd Previous Quarter	16.0	3.0	42	29.0%	14.0	0.9	14.0	0.9	441	147.0	9.2	84
Same Quarter Last Year	17.0	2.0	37	61.0%	12.3	0.7	22.0	1.3	533	177.7	10.5	103
Average/Quarter	12.4	3.2	39.6	47.9%	13.2	1.7	18.2	1.8	413.4	137.8	11.7	94.2

Volume and Productivity Indicators

	Average Days Worked/ Month	Average Days On Call/ Month	Total Admits	Percent of Admits from ER Unass'd.	Average Admits/ Month	Average Admits/ Day Worked	Average Initial Consults/ Month	Average Initial Consults/ Day Wrkd.	Total Enc'ters (all types)	Average Enc'ters/ Month	Average Enc'ters/ Day Worked	Total New Patients
Dr. F												
Current Quarter	18.0	6.7	53	39.6%	17.7	1.0	26.0	1.4	530	176.7	9.8	131
Previous Quarter	12.0	6.0	62	71.0%	20.7	1.7	21.0	1.8	441	147.0	12.3	2.0
2nd Previous Quarter	16.0	5.0	41	49.0%	13.7	0.9	12.0	0.8	399	133.0	8.3	1.7
3rd Previous Quarter	15.0	8.0	18	76.0%	6.0	0.4	16.0	1.1	461	153.7	10.2	1.3
Same Quarter Last Year	12.0	7.0	56	64.0%	18.7	1.6	9.0	0.8	489	163.0	13.6	1.9
Average/Quarter	14.6	6.5	46.0	59.9%	15.3	1.1	16.8	1.2	464.0	154.7	10.8	27.6
Moonlighters												
Current Quarter	24.7	5.3	83	69.9%	27.7	1.1	15.0	0.6	640	213.3	8.6	128
Previous Quarter	12.0	4.0	26	76.0%	8.7	0.7	15.0	1.3	343	114.3	9.5	2.4
2nd Previous Quarter	17.0	4.5	57	41.0%	19.0	1.1	13.0	0.8	633	211.0	12.4	2.8
3rd Previous Quarter	11.0	3.7	69	29.0%	23.0	2.1	8.0	0.7	372	124.0	11.3	3.0
Same Quarter Last Year	18.0	1.8	61	62.0%	20.3	1.1	11.0	0.6	612	204.0	11.3	6.3
Average/Quarter	16.5	3.9	59.2	55.6%	19.7	1.2	12.4	0.8	520.0	173.3	10.6	28.5
Total All Physicians												
Current Quarter	99.3	30.0	403.0	45.2%	134.3	1.4	103.3	1.0	3210	1070.0	10.8	713
Previous Quarter	93.6	30.4	435.0	67.1%	145.0	1.5	140.9	1.5	2909.0	969.7	10.4	0.3
2nd Previous Quarter	100.1	29.6	405.0	61.1%	135.0	1.3	154.7	1.5	3241.0	1080.3	10.8	0.4
3rd Previous Quarter	96.8	30.0	481.0	59.3%	160.3	1.7	117.6	1.2	2949.0	983.0	10.2	0.3
Same Quarter Last Year	102.0	30.0	398.0	65.3%	132.7	1.3	130.2	1.3	3306.0	1102.0	10.8	0.4
Average/Quarter	98.4	30.0	424.4	59.6%	141.5	1.4	129.3	1.3	3123.0	1041.0	10.6	142.9

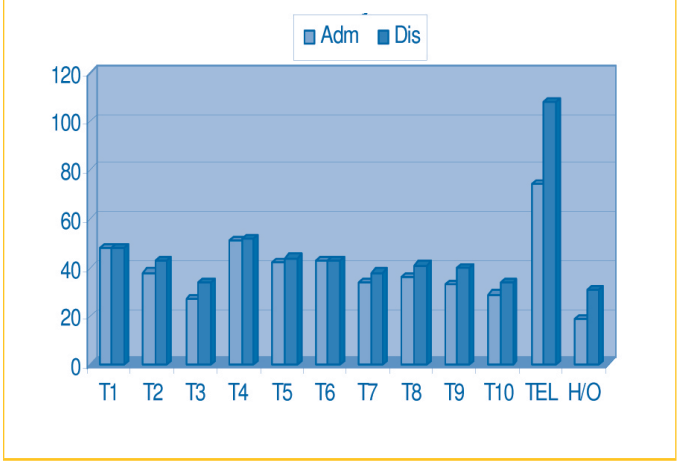




Example Four (Angel Colon-Molero, MD)

Admision	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	Tot
Team 1	0	1	1	2	3	1	5	5	0	3	4	3	1	0	2	2	1	2	1	1	0	2	1	2	1	1	2	1	48
Team 2	4	4	2	0	1	1	1	1	3	0	2	2	0	0	2	1	2	2	0	2	3	0	1	2	1	1	0	0	38
Team 3	0	1	1	1	3	2	0	2	1	0	2	3	0	0	3	1	0	0	1	1	0	0	1	1	0	1	2	0	27
Team 4	1	2	2	2	4	2	0	2	1	1	4	8	0	2	2	1	4	1	3	0	1	2	1	1	0	1	3	0	51
Team 5	1	0	1	3	3	2	0	3	1	2	2	3	0	1	3	3	0	0	1	1	0	4	1	2	1	2	1	1	42
Team 6	2	2	1	1	1	2	1	4	1	2	4	3	2	0	1	1	1	2	1	0	0	3	1	1	1	2	1	2	43
Team 7	1	0	2	1	1	2	1	0	0	2	3	2	0	1	4	3	1	2	0	2	0	0	0	3	0	3	0	0	34
Team 8	1	2	1	2	2	1	2	2	0	2	1	3	2	0	2	1	1	2	1	2	0	1	0	0	1	2	1	1	36
Team 9	2	2	0	0	0	2	2	0	2	3	1	1	0	0	3	1	1	2	0	2	0	3	1	3	0	2	0	0	33
Team 10	1	1	2	1	1	1	0	0	2	3	1	1	0	0	3	1	1	2	0	2	0	2	0	1	1	0	2	0	29
Telem	4	3	3	1	1	3	3	3	2	2	2	6	4	1	3	3	2	0	3	1	2	4	6	3	2	5	1	1	74
H/O	0	1	1	1	1	0	1	1	2	1	1	1	0	0	2	1	0	1	1	0	0	0	1	1	0	1	0	0	19
Micu	1	2	0	1	1	1	2	0	0	2	1	2	1	0	2	4	0	2	3	3	0	0	0	0	1	2	0	2	33
CCU/ICCU	3	1	2	0	1	1	3	2	1	1	3	2	1	0	1	4	0	0	1	1	1	1	0	2	1	2	0	3	38
Surgery	4	4	5	1	3	1	1	3	2	6	7	2	1	3	3	5	6	5	1	2	4	5	3	3	3	4	0	1	88
Sicu/Iscu	2	1	2	0	0	0	3	1	2	5	2	3	1	1	1	0	2	0	3	0	0	0	7	2	1	1	1	2	43
Disch																													
Team 1	1	1	3	0	3	0	4	4	3	2	1	3	0	0	2	3	2	0	1	2	1	0	3	3	2	4	0	0	48
Team 2	3	5	1	3	1	4	2	1	3	1	1	1	0	0	2	3	2	0	1	2	1	0	1	2	0	2	1	0	43
Team 3	1	2	1	5	1	5	0	1	1	2	2	2	0	0	1	1	0	0	4	0	0	0	1	1	0	1	1	1	34
Team 4	4	2	1	2	1	2	2	3	0	1	3	5	0	0	4	6	2	4	2	1	0	1	2	0	1	2	1	0	52
Team 5	1	0	3	3	3	3	3	0	3	2	1	1	1	0	3	2	0	1	4	0	1	1	2	5	1	0	0	0	44
Team 6	3	1	1	3	0	3	3	4	0	2	2	3	0	0	0	1	2	2	1	0	0	3	1	4	2	2	0	0	43
Team 7	1	4	0	1	0	1	1	0	3	1	1	1	1	1	2	4	2	0	3	0	1	1	1	1	5	0	0	2	38
Team 8	0	2	1	1	1	1	4	1	2	2	1	1	0	0	4	2	2	3	3	1	0	2	1	2	1	1	1	1	41
Team 9	3	1	0	2	0	2	1	1	4	0	1	1	0	0	4	2	2	3	3	1	0	2	0	3	1	3	0	0	40
Team 10	0	3	1	1	1	1	0	0	3	2	1	4	0	0	2	1	3	0	1	3	1	1	2	0	0	0	1	2	34
Telem	3	4	6	5	10	5	5	3	6	3	4	6	0	0	4	3	3	6	3	1	1	5	6	1	2	8	1	4	108
H/O	0	3	2	1	2	1	0	1	2	2	1	2	0	1	0	2	1	0	3	0	0	1	2	1	0	3	0	0	31
Micu	1	0	0	0	1	0	0	0	1	0	0	1	0	1	0	1	0	0	1	0	0	0	0	1	0	0	1	0	9
CCU/ICCU	0	3	1	0	1	0	0	1	0	0	1	0	2	0	0	3	1	1	0	2	0	0	0	0	1	1	0	0	18
Med	21	31	21	27	25	28	25	20	31	20	20	31	4	3	28	34	22	20	30	13	6	17	22	24	16	27	7	10	583
Surgery	2	4	2	5	2	4	4	5	2	1	1	3	5	5	7	7	3	4	7	3	2	5	6	4	4	4	4	2	107

ADM AND DISCH BY IM TEAM 4/11-5/8



This example tracks admissions and discharges by team for a very large hospital medicine practice with multiple teams. The days of the month are listed across the top. Each team's total volume for the reporting period is shown on the righthand side of the table (above), and on the graph at left.

PERFORMANCE METRIC TWO: CASE MIX Stacy Goldsholl, MD and Joe Miller	
Description of Metric	Case mix is not a performance metric. It is a tool used to characterize the clinical complexity of the patients treated by the hospital medicine group (and comparison groups). The goal of case mix is to allow "apples to apples" comparisons of performance metrics (e.g., length of stay, cost per stay, mortality, readmission rates).
Subsidiary Metric Components	Hospitalists should be familiar with the following case mix methodologies: • *Diagnostic Related Groups (DRGs)* represent a payment methodology for Medicare. Each DRG is defined by a combination of diagnosis codes (ICD9), procedure codes (CPT), and patient age. For example, DRG 089 is "Simple Pneumonia and Pleurisy, age > 17 years with complications/comorbidities". For each of 495 DRGs, Medicare establishes a payment (see http://ahd.com/pps.html). Hospitalists can compare their average length of stay (LOS) and other metrics to non-hospitalists for the most common DRGs. • *The Medicare Case Mix Index (CMI)* is an index assigned to each DRG to measure clinical complexity. The average CMI is 1.00. More complex DRGs have a value greater than 1.00 (e.g., DRG 209, Major Joint & Limb Reattachment Procedures, Lower Extremity, has a CMI of 2.3491), while less complex DRGs have a value less than 1.00 (e.g., DRG 140, Angina Pectoris, has a CMI of 0.6241). • *All Payer Refined DRGs (APR-DRGs)* is a case mix methodology developed by 3M, a healthcare software vendor. It expands beyond the Medicare 495 DRGs to include conditions and procedures common in non-Medicare populations (e.g., pediatrics and obstetrics). In addition, for each of the DRGs, it computes four levels of Severity of Illness (SOI) and four levels or Risk of Mortality (ROM). Thus, it is a more "refined" case mix methodology. There are wide range of other case mix tools and methodologies (e.g., Acute Physiology and Chronic Health Evaluation/APACHE). In some states, a particular case mix methodology is dictated by government or quasi-government agencies. Hospitalists should be familiar with the case mix methodology used at their hospital. NOTE: Computing case mix requires the hospital (or its vendor) to acquire specialized software tools which processes data from the clinical and financial information systems.
Why this Metric is Important	Case mix provides an objective method of addressing the issue of whether or not "my patients are sicker". Often case mix is used as an adjuster so that two or more populations can be compared for key performance metrics (e.g., length of stay, cost per stay, mortality, readmission rates). The data for the comparison groups are "case mix adjusted" with the goal of creating comparable metrics.
Data Sources	• Case mix data must be obtained by running specialized software against data from the hospital's clinical and financial information systems. • In addition, some high-level, hospital-specific case mix data are available from public sources such as the Medicare program or various state-administered reporting programs, and additional information may be available from proprietary third party data vendors with which the hospital contracts, such as Solucient, Premier, UHC, etc.

Unique Measurement and Analysis Considerations	• Hospitals' approach to case mix and their choice of case mix methodologies vary widely. Each case mix methodology is a sophisticated process, requiring deep understanding of both statistics and clinical medicine. It is not reasonable for hospitalists to be case mix experts. Rather, hospitalists should work closely with their hospital's Finance or Decision Support department (and/or third party vendor) to understand how case mix is applied and analyzed for that organization. • In comparing case mix adjusted performance, hospitalists may want to: - Differentiate cases for which procedures were performed (e.g., surgical comanagement) from those in which no procedures were performed - Exclude outliers (e.g., values outside two standard deviations) that may skew the results. • Because of the small volume of patients seen, it may be difficult to examine case mix differences at the individual physician level. • To do case mix adjustment may require access to and analysis of a *normative* database. In some states, there are agencies which maintain case mix adjusted data for all hospitals in the state. Thus, hospital specific data can be compared to the statewide data. For example, hospitalist mortality and non-hospitalist mortality can be compared to *expected* mortality for each DRG. • Depending on the type of analysis being performed, hospitalists may use different elements of a case mix methodology. For example, if APR-DRGs is the tool of choice, SOI should be used to case mix resource utilization measures (i.e., LOS, cost per stay) and ROM should be used for clinical outcomes (i.e., mortality).
Potential Hospitalist Interventions	Since case mix is not a performance measure and hospitalists do not have control over the types of patients seen, there are few interventions that can be implemented by hospitalists. The one action that can be taken by hospitalists is to understand the case mix characteristics of their patients and of comparison groups, and to communicate that information to key stakeholders (hospital leadership, medical staff leadership, etc.)

SAMPLE REPORTS – CASE MIX (Joe Miller)

Case Mix is not reported as a stand-alone variable. It is used to adjust or explain other variables. There are different case mix methodologies, including the Case Mix Index (CMI), Severity of Illness (SOI) ratings, and Diagnostic Related Group (DRG) categories. Consider the attached three reports:

- The first report shows the "raw" length of stay and average cost per case for three comparison groups (non-hospitalist and two hospitalist groups) and then the same two variables are adjusted based on CMI
- The second report analyzes length of stay and average cost per case for the three comparison groups within each of four SOI ratings. It also has a category of cases that were unable to be grouped into a SOI 1-4 rating.
- The third report is identical in format to the second report, except that instead of SOI categories, length of stay and average cost per case are broken out by DRG category.

LOS AND AVERAGE COST PER CASE
Adjusted by Case Mix Index (CMI)

			CMI ADJ				CMI Adjusted	
Grand Totals	Total Pts	ALOS	ALOS	Expired	% Mort	Avg Cost/Case	Avg/Cost Case	CMI
All pts	3002	4.97	4.02	112	3.73%	$6,735	$5,452	1.2353
Non-Hospitalist	1426	5.7	4.59	64	4.49%	$7,464	$6,018	1.2403
Hospitalist Other	736	4.59	3.95	20	2.72%	$5,683	$4,886	1.1632
Hospitalist	840	4.06	3.14	28	3.33%	$6,421	$4,977	1.2901

NUMBER OF CASES, LOS, AND AVERAGE COST PER CASE
By Severity of Illness (SOI) Rating

		SOI=?	SOI=1	SOI=2	SOI=3	SOI=4
Hospitalist	**Count**	110	86	104	53	33
	ALOS	3.6	2.7	3.3	6.0	5.2
	Avg/Case	4304	4767	5435	10163	8467
Hospitalist Other	**Count**	148	105	80	37	10
	ALOS	4.8	2.8	4.6	5.9	11.6
	Avg/Case	2846	3112	5622	7837	20527
Non-Hospitalist	**Count**	260	157	220	101	38
	ALOS	5.4	3.3	5.1	7.3	13.2
	Avg/Case	4670	5285	6251	8819	19755
Total	**Count**	518	348	404	191	81
	ALOS	4.8	3.0	4.6	6.7	9.7
	Avg/Case	4071	4501	5916	9002	15252

NUMBER OF CASES, LOS, AND AVERAGE COST PER CASE By Diagnostic Related Group (DRG)				
DRG		Hospitalist	Hospitalist Other	Non-Hospitalist
088 COPD	Count	22	13	56
	ALOS	2.8	3.7	5.3
	Avg/Case	$4,636	$2,687	$5,140
127 HEART FAILURE, SHOCK	Count	15	19	42
	ALOS	3.6	7.5	5.3
	Avg/Case	$11,128	$4,676	$7,249
416 SEPTICEMIA AG	Count	17	6	32
	ALOS	3.1	3.7	6.5
	Avg/Case	$4,733	$6,136	$10,097
089 PNEUMONIA, PLEURISY AG+	Count	8	19	24
	ALOS	3.3	5.9	5.3
	Avg/Case	$3,454	$5,611	$5,436

PERFORMANCE METRIC THREE: PATIENT SATISFACTION Joe Miller	
Description of Metric	Patient satisfaction is a survey-based measure that is often considered an element of quality outcomes. Vendor administered surveys are typically designed to measure a patient's perception of their overall hospital experience (including nursing care, food, physical amenities, etc.). Hospitalists should focus on the vendor survey questions related to physician performance. Typically, patients reply on a 5-point scale, for example: 1: very poor; 2: poor; 3: fair; 4: good; 5: very good. An alternative approach is for hospitalists to develop and administer their own patient satisfaction survey. However, SHM's Membership Committee recommends that hospitalists use vendor surveys for the following reasons: • Vendor surveys have been scientifically validated by professional survey research organizations • Vendor surveys already have credibility within the hospital leadership
Subsidiary Metric Components	SHM's Membership Committee has reviewed the most frequently used patient satisfaction surveys and recommends that hospitalists focus on the questions that relate to overall patients satisfaction and the following six dimensions of physician performance: availability, concern for patients, communications skills, courteousness, clinical skills, and involvement of patient's family.
Why this Metric is Important	• Not only is patient satisfaction often considered a dimension of quality outcomes, it is often a correlate for clinical outcomes (e.g., dissatisfied patients often have more complications). • As the hospitalist movement has grown, skeptics have raised the issue that patients will be dissatisfied with hospitalist care because it is not delivered by their primary care physician. Hospitalists can address those concerns by including this metric as part of their performance reporting dashboard. • Hospital executives are increasingly focusing on patient satisfaction measures as the public clamors for objective data that can be used to compare and select providers.
Data Sources	• As previously mentioned, there are professional survey research vendors that administer and analyze patient satisfaction surveys for hospitals. SHM's Membership Committee has identified the major vendors as follows: Press Ganey, The Gallup Organization, National Research Corporation, Professional Research Consultants, The Jackson Organization, and Avatar International. • The industry leader is Press Ganey with an approximate 50-60% market share. The SHM Membership Committee has worked with Press Ganey such that a process is now in place for hospitalists to compare survey responses for the six evaluation dimensions cited above (hospitalists vs. non-hospitalists) using Press Ganey's online analysis tool, InfoEdge.

Unique Measurement and Analysis Considerations	• Hospitalists should understand some of the science ("psychometrics") behind survey questionnaires. From the Press Ganey Psychometrics document: *"The accuracy of a questionnaire is assessed by measuring its validity and reliability. Validity is the degree to which a questionnaire measures what it was designed to measure. Reliability is the degree to which survey data are consistent across respondents or across surveys."* • Patient satisfaction results are only valuable if the data accurately identifies the attending physician (i.e., hospitalist vs. non-hospitalist). Hospital data systems often have errors in this data (e.g., the admitting process may identify the attending physician as the patient's PCP rather than the hospitalist). Hospitalists that use these vendor satisfaction surveys must review the accuracy of the data feed from the hospital to the vendor – and clean up any inaccuracies in the attending physician data. Otherwise the survey results will not truly reflect patient satisfaction with the hospitalist program. Drilling down on individual physician performance is even more difficult, if not impossible. • If possible, patient satisfaction results with hospitalists should NOT be compared to patient satisfaction for all patients at the hospital. Press Ganey national data indicates that patient satisfaction with medicine admissions tends to be lower than for other types of admissions (surgery, OB/GYN, ICU). Furthermore, Press Ganey national data indicate that admissions through the Emergency Department (ED) tend to have lower patient satisfaction rates than elective or direct admissions. Hospitalists typically admit a significantly greater proportion of their patients through the ED than community physicians. It is important that hospitalists define an appropriate comparison group – specifically one consisting only of Medicine (or Pediatric, in the case of pediatric hospitalists) cases, adjusted for the proportion of ED admissions. • Hospitalists should be aware that many patients prefer to be cared for by their primary care physician. Thus, hospitalists may be starting at a disadvantage when compared to other physicians. In consideration of this issue, hospitalists may also examine *overall* patient satisfaction in addition to satisfaction with their physician care.
Potential Hospitalist Interventions	• Work with referring physicians to assure that they explain that a hospitalist will be managing their inpatient care. • If possible, try to have the patient's physician "check in" with the patient during the inpatient stay, either in person or by phone. • Consider implementing a post-discharge follow-up call to patients. • "Market" the hospitalist program so that it is perceived positively by hospital leadership and the medical staff. • Practice patient centered care; communicate regularly with the patient's family as appropriate. • Consider implementation of incentive compensation for hospitalists based on patient satisfaction measures.

SAMPLE REPORT – PATIENT SATISFACTION (Joe Miller)

Inpatient Services - Hospitalists vs. Non-Hospitalists

Based on Inpatient surveys received between 1/1/2006 and 3/31/2006

PHYSICIAN SECTION		
	Hospitalist	Non-Hospitalist
Admitted through ER	84.4	84.8
Not admitted through ER	89.7	89.6
Admission unexpected	84.9	85.6
Admission expected	88.2	89.4
Medical specialty	83.1	84.5

SKILL OF PHYSICIAN		
	Hospitalist	Non-Hospitalist
Admitted through ER	88.5	89.7
Not admitted through ER	93.8	95.0
Admission unexpected	89.1	90.8
Admission expected	92.5	94.8
Medical specialty	86.7	89.0

OVERALL		
	Hospitalist	Non-Hospitalist
Admitted through ER	83.5	82.8
Not admitted through ER	86.6	84.6
Admission unexpected	83.7	83.2
Admission expected	85.6	84.4
Medical specialty	81.6	82.5

PHYSICIAN USE LANGUAGE UNDERSTAND		
	Hospitalist	Non-Hospitalist
Admitted through ER	88.0	87.6
Not admitted through ER	91.7	92.0
Admission unexpected	88.4	88.6
Admission expected	90.9	92.0
Medical specialty	85.8	86.4

TIME PHYSICIAN SPENT WITH YOU		
	Hospitalist	Non-Hospitalist
Admitted through ER	79.6	80.4
Not admitted through ER	84.3	84.0
Admission unexpected	80.1	80.9
Admission expected	82.7	83.4
Medical specialty	78.3	80.9

PHYSICIAN INFORMATIVE W/FAMILY		
	Hospitalist	Non-Hospitalist
Admitted through ER	85.2	85.2
Not admitted through ER	91.2	90.9
Admission unexpected	85.6	86.7
Admission expected	90.5	90.9
Medical specialty	83.2	85.2

PHYSICIAN'S CONCERN FOR YOUR QUESTIONS AND WORRIES		
	Hospitalist	Non-Hospitalist
Admitted through ER	84.0	84.3
Not admitted through ER	88.9	88.9
Admission unexpected	84.6	85.2
Admission expected	87.3	88.6
Medical specialty	82.9	83.6

HOW WELL PHYSICIAN KEPT YOU INFORMED		
	Hospitalist	Non-Hospitalist
Admitted through ER	82.0	82.4
Not admitted through ER	87.9	88.0
Admission unexpected	82.5	83.2
Admission expected	86.5	87.6
Medical specialty	80.9	81.9

FRIENDLINESS/COURTESY OF PHYSICIAN		
	Hospitalist	Non-Hospitalist
Admitted through ER	87.3	87.9
Not admitted through ER	91.9	91.7
Admission unexpected	87.8	88.5
Admission expected	90.4	91.5
Medical specialty	85.5	87.6

This sample report is available from Press Ganey using their *InfoEdge* online analysis tool. It portrays the average mean score, Hospitalist vs. Non-Hospitalist, for the following sections of Press Ganey's standard survey questionnaire:

- Satisfaction with Physician Section
- Overall Satisfaction Section

It also portrays this comparison for the seven questions that compose the Satisfaction with Physician Section:

- Time physician spent with you
- Physician's concern with your questions and worries
- How well the physician kept you informed
- Friendliness/courtesy of physician
- Skill of physician
- Physician use understandable language
- Physician kept the family informed

Finally, each table provides an analysis of the results by the following subgroups of patients:

- Admitted through the ER: Yes/No
- Admission expected: Yes/No
- Patient treated on a "Medical" unit in the hospital

PERFORMANCE METRIC FOUR: LENGTH OF STAY Teresa Jones, DO	
Description of Metric	Length of stay (LOS) is a measure of the number of days of inpatient care utilized by a patient or a group of patients. LOS is most often calculated by hospitals as the number of midnights a patient was an inpatient during a given admission; however, for a hospitalist's purposes the LOS can easily be determined by subtracting the admission date from the discharge date. LOS is typically stratified by patient admission status: i.e., inpatient vs. observation vs. emergency department holding status. Patients on observation status or in the emergency department awaiting admission are not typically included in inpatient LOS calculations. In addition, LOS is usually calculated separately for patients in specialty units such as acute rehab, behavioral medicine, skilled nursing and long term acute care.
Subsidiary Metric Components	• Place of service, e.g., acute care, skilled nursing (SNF), acute rehab, acute psych, long term acute care (LTAC) • Age cohorts • Financial class or insurance product • Discharge diagnosis or Diagnosis Related Group (DRG) • Severity of illness cohorts, which may be assigned using case mix index (CMI) or similar methodologies
Why this Metric is Important	Contributing to improved efficiencies in hospital resource utilization is a critical role that hospitalists are being asked to perform in most organizations. Because inpatient efficiency is largely a function of length of stay, it is important for hospitalists to monitor and report length of stay as a way of assessing and demonstrating the value that hospitalists provide to the organizations in which they practice. LOS monitoring may also be useful in cases where LOS directly impacts the hospital's reimbursement (e.g., DRG-based reimbursement initiatives), as well as for assessing compliance with (or efficacy of) clinical protocols. In organizations with capacity or throughput concerns, LOS analysis may identify opportunities for improving patient flow, and/or may enable a calculation of inpatient days saved (and thus beds freed up for other purposes) by the hospitalists.
Data Sources	• Hospital's financial and clinical information systems • External data repositories (in some cases, such as publicly available Medicare discharge data, state-specific discharge data reporting systems, or vendors such as Solucient, Premier, UHS, etc.) • Hospitalist practice management systems (e.g., patient census logs, billing systems) • Health plan data
Unique Measurement and Analysis Considerations	• Some hospitals calculate an individual admission's LOS on a different basis, such as hourly. • Specific admissions are assigned to a time period (e.g., a month or a year) based on the patient's discharge date; thus a given admission's LOS will impact the calculation for the time period in which the patient was discharged.

Unique Measurement and Analysis Considerations (cont.)	• It is recommended that LOS be adjusted based on the severity of illness as it adds validity when evaluating LOS over time periods or among comparison groups that may not be homogenous. The most common severity adjustment is Medicare's patient classification system called RDRG (Refined Diagnosis Related Groups), used to establish an organization's Medicare case mix index (CMI). However, there are also a variety of proprietary severity-adjustment products. • Hospitalists should consider whether or not to exclude outlier cases (admissions with an excessive LOS) from average LOS calculations, based on what is commonly done in the organization in which they practice. Because there is no commonly accepted industry standard definition of an outlier, it is important to be clear about how outliers are defined, especially when comparing performance against external data sources. • It is difficult for hospitalists to significantly impact LOS when serving only as a consultant or admitting the patient for another physician (e.g., a "tuck-in" service); thus LOS analysis is usually confined to cases where the hospitalist group manages the patient for the entire inpatient stay. Note that it may be challenging to analyze LOS on an individual physician basis, since multiple hospitalists may be involved in the care of a single patient. • Be aware that patient mix and severity of illness can vary significantly by time of year, so it may be more appropriate when trending information to compare a period (such as a month or quarter) to the same period in the previous year rather than to the preceding period. • If volume in a given measurement category is low, it may be appropriate to determine what the statistically significant number of cases is to appropriately evaluate average LOS for that situation.
Potential Hospitalist Interventions	• Early discharge planning, starting at the time of admission - Early family communication regarding expected stay and discharge plan - Daily communication with applicable hospital and/or health plan case management staff - Early physical therapy evaluations, as appropriate - Home healthcare and DME orders prior to the day of discharge - Remember to order tests needed for discharge or placement ahead of time • Efficient follow-up - Physician-to-physician communication with specialists regarding plans - Re-evaluate possible discharge patients again later in the day - Follow up pending test results - Write anticipatory orders that automatically move the patient through the system • General efficiency tips - Utilize evidence-based clinical protocols or guidelines whenever appropriate - Round early on possible discharge patients - Establish what can safely be done as an outpatient, avoiding inpatient testing due to convenience alone - Anticipate peak work times (weekends, holidays, etc.) and prepare patients for discharge prior to this - Clear sign-out to hospitalist colleagues when patients are being transitioned from one doctor to another, including treatment goals and discharge plans - Hospice is under-utilized. As appropriate, consider this resource early and often.

SAMPLE REPORTS – LENGTH OF STAY

Example One: Overall Length of Stay for A Quarter (Teresa Jones, DO)

				Month of Discharge			
Reg	Hospital	Health Prof	Value	01/05	02/05	03/05	**Total**
City	St. Elsewhere	Doctor A	Cases	69	48	58	175
			ALOS	3.8	3.6	2.5	3.3
		Doctor B	Cases	11	42	45	98
			ALOS	6.7	4.0	4.3	4.4
		Doctor C	Cases	45	12	61	118
			ALOS	2.7	3.6	4.0	3.4
		Doctor D	Cases	23	19	-	42
			ALOS	5.3	3.6	-	4.5
		Doctor E	Cases	-	2	1	3
			ALOS	-	1.5	1.0	1.3
		Doctor F	Cases	6	-	-	6
			ALOS	7.8	-	-	7.8
		Doctor G	Cases	1	-	-	1
			ALOS	1.0	-	-	1.0
		Doctor H	Cases	42	48	38	128
			ALOS	3.8	3.8	3.6	3.7
		Doctor I	Cases	12	25	53	90
			ALOS	3.4	2.7	3.8	3.5
	Subtotal for St Elsewhere		Cases	209	196	256	661
			ALOS	4.0	3.6	3.6	3.7

In this LOS report, the individual physician is listed on the left and the month being measured is across the top (along with a 3 month average to the far right). For each physician the total number of cases (for this report case = patient discharged) per month is reported along with the average LOS for those cases listed directly underneath. The group total is calculated at the bottom of the report. This report includes all cases for the given time period. At times, it is helpful to 'filter' the data, looking at specific age groups or health insurance products. Additionally, eliminating LOS 'outliers' (such as patients with LOS > 15 days) can be helpful.

Example Two: LOS Adjusted for Severity of Illness (Teresa Jones, DO)

Reg	Hospital	Health Prof	SOI	Value	01/05	02/05	03/05	**Total**
City	St. Elsewhere	Doctor A	1-MINOR	Cases	42	28	24	94
			1-MINOR	ALOS	2.8	2.8	2.3	2.6
			2-MODERATE	Cases	17	16	27	60
			2-MODERATE	ALOS	4.6	4.6	2.6	3.7
			3-MAJOR	Cases	9	4	7	20
			3-MAJOR	ALOS	6.9	6.0	2.9	5.3
			4-EXTREME	Cases	1	-	-	1
			4-EXTREME	ALOS	7.0	-	-	7.0
		Doctor B	1-MINOR	Cases	3	13	26	42
			1-MINOR	ALOS	1.3	3.2	4.2	3.7
			2-MODERATE	Cases	8	25	13	46
			2-MODERATE	ALOS	8.8	4.0	3.2	4.6
			3-MAJOR	Cases	-	4	6	10
			3-MAJOR	ALOS	-	6.5	6.8	6.7
		Doctor C	1-MINOR	Cases	20	5	31	56
			1-MINOR	ALOS	1.9	2.0	3.2	2.6
			2-MODERATE	Cases	22	5	27	54
			2-MODERATE	ALOS	3.3	3.6	4.3	3.8
			3-MAJOR	Cases	3	2	3	8
			3-MAJOR	ALOS	3.7	7.5	8.7	6.5
		Doctor D	1-MINOR	Cases	8	10	-	18
			1-MINOR	ALOS	2.9	3.3	-	3.1
			2-MODERATE	Cases	8	8	-	16
			2-MODERATE	ALOS	6.0	3.1	-	4.6
			3-MAJOR	Cases	6	1	-	7
			3-MAJOR	ALOS	7.3	10	-	7.7
			4-EXTREME	Cases	1	-	-	1
			4-EXTREME	ALOS	8.0	-	-	8.0
		Doctor E	1-MINOR	Cases	-	2	1	3
			1-MINOR	ALOS	-	1.5	1.0	1.3
		Doctor F	1-MINOR	Cases	6	-	-	6
			1-MINOR	ALOS	7.8	-	-	7.8
		Doctor G	1-MINOR	Cases	1	-	-	1
			1-MINOR	ALOS	1.0	-	-	1.0

The LOS report on the previous page is structured similar to the prior report, but divides the cases by severity of illness (SOI). Similar to a 'case mix adjusted' report, this allows for evaluation of 'how sick' the patients are and adjudicates for variability in acuity. This can allow for a more 'apples to apples' comparison.

Example Three: LOS for Top Ten DRGs (Teresa Jones, DO)

Filters

Hospitalist is: Attending
Region: City
Hospital: St Elsewhere
Group: Hospitalist Inc
Level Type: Acute Inpatient
Date: 01/01/2005 - 03/31/2005

TOP 10 DRG REPORT FOR DATES BETWEEN 01/01/2005 AND 03/31/2005					
Drg	Description	Cases	ALOS	National Benchmark*	Variance from National Benchmark
143	CHEST PAIN	61	1.7	1.7	0.0
182	ESOPHAGITIS GASTROENT & MISC DIGEST DISORDERS AGE >17 W CC	35	3.3	3.3	0.0
183	ESOPHAGITIS GASTROENT & MISC DIGEST DISORDERS AGE >17 W/O CC	32	2.8	2.3	**0.5**
89	SIMPLE PNEUMONIA & PLEURISY AGE >17 W CC	23	3.9	4.8	-0.9
277	CELLULITIS AGE >17 W CC	18	4.2	4.7	-0.5
278	CELLULITIS AGE >17 W/O CC	17	3.8	3.6	**0.2**
23	NONTRAUMATIC STUPOR & COMA	16	2.9	3.1	-0.2
88	CHRONIC OBSTRUCTIVE PULMONARY DISEASE	14	4.3	4.1	**0.2**
243	MEDICAL BACK PROBLEMS	14	3.5	3.7	-0.2
90	SIMPLE PNEUMONIA & PLEURISY AGE >17 W/O CC	13	2.8	3.4	-0.6
End of Report					

**Medicare Geometric Mean ALOS*

This report looks at average length of stay (ALOS) by DRG across the time period measured (for this report, the first quarter of 2005). The DRG is listed in the left column followed (from left to right) by the number of cases with that DRG reported, the ALOS for those cases, the national benchmark for that DRG (Medicare Geometric Mean) and the variance of the actual ALOS compared to the benchmark. Any variance greater than zero (i.e. the actual ALOS is greater than the benchmark ALOS) is denoted in bold. This report can be used to help guide improvement efforts by helping the group focus on high volume DRGs with an ALOS above the national benchmark.

PERFORMANCE METRIC FIVE: HOSPITAL COST AND ANCILLARY UTILIZATION Ed Fink	
Description of Metric	Hospital cost is a broad term that includes a variety of measures of the money expended by a hospital to care for its patients, and is most often expressed as "cost per unit of service," such as cost per patient day or cost per discharge. Cost metrics focus on the costs of the patient's stay (the bed, the tests ordered) and as such, the cost of hospitalist salaries or financial support are not typically included in the definition of hospital costs. Ancillary utilization measures include lab, radiology, and pharmacy and are expressed as ancillary units of service per patient day or discharge.
Subsidiary Metric Components	• Total cost per patient day and per discharge • Variable cost per patient day and per discharge • Ancillary service cost per patient day and per discharge - May be broken down into individual ancillary services such as imaging, clinical laboratory, respiratory therapy and drug costs • Ancillary service utilization, usually broken down into individual ancillary services; e.g., - CT scans per discharge, imaging tests per discharge, laboratory tests per patient day, respiratory therapy treatments per discharge, pharmacy unit doses per discharge, etc.
Why this Metric is Important	Contributing to improved efficiencies in hospital resource utilization is a critical role that hospitalists are being asked to perform in most organizations. Cost is often used as a proxy measure for resource utilization, since it represents an aggregate measure of the resources utilized. Thus cost and utilization can be important metrics to demonstrate the value hospitalists provide to the health care system. When analyzed in conjunction with hospital reimbursement information, cost can also be used to evaluate the hospital's profitability for selected services or discharges. This can enable an assessment of the return on investment a hospital realizes from its financial support of a hospital medicine program. In addition, evaluating costs among comparison groups, and/or at the subsidiary component level, often results in the identification of opportunities for process improvement that can improve quality, reduce costs, and enhance patient flow.
Data Sources	Cost and utilization data must be obtained from the hospital's clinical and financial information systems. In addition, some high-level, hospital-specific cost and utilization data are available from public sources such as the Medicare program or various state-administered reporting programs, and additional information may be available from proprietary third party data vendors with which the hospital contracts, such as Solucient, Premier, UHC, etc.
Unique Measurement and Analysis Considerations	• Hospitals' definitions of various cost components, and their methodologies for determining and analyzing costs, vary widely. Hospitalists should work closely with their hospital's Finance or Decision Support department to understand how cost is determined and analyzed for that organization. • Because of this variability, great care should be taken in attempting to compare cost data to other organizations or external benchmarks.

Unique Measurement and Analysis Considerations (cont.)	• Many hospitals use a methodology that estimates their costs as a percent of their retail charges (the "ratio of cost to charges"); this percent usually varies for each subsidiary component or clinical department. As a result, when these hospitals increase their retail charges, usually at the beginning of their fiscal years, it can significantly impact cost analyses until a new set of ratios is established. • It is also useful to evaluate the cost and utilization of subsidiary cost components, especially ancillary service utilization, and assess how these subsidiary costs impact the total cost per discharge or patient day. • Most cost and utilization analyses are more appropriately conducted for the hospital medicine practice as a whole, than for individual physicians, due to the low number of applicable cases for each individual and the fact that many cases will have had multiple hospitalists involved. In addition to the standard longitudinal and peer group analyses, costs and utilization can also be analyzed by product line (e.g., Orthopedics) or by DRG for the top 10 DRGs. • Most hospitals can only report costs and utilization at the patient level, not at the level of the ordering physician; thus, cost and utilization for hospitalist-managed patients may be impacted by the ordering patterns of consulting physicians as well as hospitalists. • In some organizations, certain portions of a patient's stay in the hospital (e.g., ICU days, which are usually the costliest days) may not be under the control of the hospitalists. • In addition, many of the measurement and analysis considerations discussed under "Length of Stay" are also applicable to cost analyses, particularly issues such as outliers, severity adjustment, and the hospitalist's limited ability to impact this metric when serving only as a consultant.
Potential Hospitalist Interventions	• Hospitalists are in an excellent position to contribute to hospital process improvement efforts. Hospitalists should seek to participate in both formal and informal process improvement activities whenever possible. Consider requesting the hospital to: - Display lab utilization and costs for high-priced or high-volume lab tests in the CPOE or other information system accessed by physicians - Unbundle lab test orders in the CPOE or on lab order forms - Create automated systems that flag duplicate test or treatment orders, and missing test results - Facilitate easy access to drug formulary information in the hospital information systems - Provide hospitalists with regular trended reports of laboratory, imaging and drug utilization by attending physician (or by ordering physician, if available) • Other interventions a hospitalist or hospital medicine group can undertake to reduce costs and improve resource utilization include: - Work with emergency department physicians to agree on what tests and treatments the emergency physicians will typically order, and which can wait until the hospitalist assumes care of the patient - Look for appropriate opportunities to transfer patients to a lower level of care sooner (e.g., ICU to step-down or telemetry; med/surg to TCU or SNF) - Round on patients likely to be discharged early in the day, and write discharge orders as early as possible - Work with clinical pharmacists to target patients for drug protocols, such as rapid movement from IV to PO medications - Be familiar with the hospital's drug formulary - Establish what can safely be done as an outpatient, avoiding inpatient testing due to convenience alone

SAMPLE REPORTS – HOSPITAL COST AND ANCILLARY UTILIZATION

Example One (Angel Colon-Molero, MD)

This table provides a summary of length of stay and cost performance by doctor. Care should be taken when drawing inferences regarding the relative performance of individual doctors, since this information is not case mix- or severity-adjusted, nor does it take into account the impact of "outlier" cases with excessive lengths of stay.

DISCHAGES BY ATTENDING PHYSICIAN - 1ST QUARTER					
	Total Cases	Total LOS	Avg. LOS	Total Cost	Avg. Cost per Disch.
Dr. A	32	488	15.3	$588,322	$18,385
Dr. B	111	1,443	13.0	$2,122,519	$19,032
Dr. C	54	627	11.6	$900,326	$16,673
Dr. D	85	940	11.1	$1,087,922	$12,800
Dr. E	40	399	10.0	$500,131	$12,503
Dr. F	49	433	8.8	$519,293	$10,611
Dr. G	91	700	7.7	$1,052,285	$11,564
Dr. H	36	217	6.0	$226,081	$6,280
Total All Hospitalists	**498**	**5,247**	**10.5**	**$6,987,579**	**$14,031**

Example Two (Leslie Flores)

The example on the following page compares the hospital medicine practice as a whole to a peer group comprised of family practice and internal medicine doctors practicing at the same facility. The table provides resource utilization and profitability data for the top 10 DRGs (by volume) managed by the hospitalists during the year. Although the PMI (an APRDRG severity adjustment indicator) is shown, the cost and length of stay information has not been severity-adjusted. A similar analysis could be performed for all medical patients by payor classification, rather than by DRG.

HOSPITALIST-MANAGED PATIENTS FOR THE TOP 10 DRGS FOR ALL PAYORS, CY 2005

DRG	Vol.	Avg. PMI*	Avg. LOS	Avg. Chg. Per Case	Avg. Total Cost Per Case	Avg. Direct Cost Per Case	Avg. Est. Reimb.	Avg. Net Margin	Avg. Cont. Margin	Avg. Drug Cost	Avg. Lab Cost	Avg. Image Cost	Avg. Supply Cost
89	116	0.89	5.1	9,782	6,621	4,378	5,794	(827)	1,416	644	456	259	63
182	104	0.70	4.3	11,021	6,507	4,132	6,514	7	2,382	765	378	361	66
88	92	0.82	4.7	9,241	5,961	4,016	5,689	(272)	1,673	640	352	229	45
183	86	0.54	2.7	7,423	3,858	2,548	4,611	753	2,063	337	267	216	46
174	70	0.82	3.6	10,164	6,024	4,231	6,792	768	2,561	303	806	194	108
243	57	0.67	3.1	7,151	4,424	2,894	4,063	(361)	1,169	317	154	398	29
320	52	0.69	4.5	9,565	6,289	4,185	5,862	(427)	1,677	450	443	359	100
14	51	1.24	5.3	15,243	9,678	6,679	7,278	(2,400)	599	711	507	677	182
127	46	0.94	4.8	10,208	7,005	4,643	5,645	(1,360)	1,002	568	549	288	132
143	38	0.52	1.4	5,967	2,594	1,764	3,798	1,204	2,034	106	275	288	21
Total	**712**	**0.78**	**4.2**	**9,694**	**5,926**	**3,981**	**5,656**	**(270)**	**1,675**	**530**	**419**	**312**	**76**

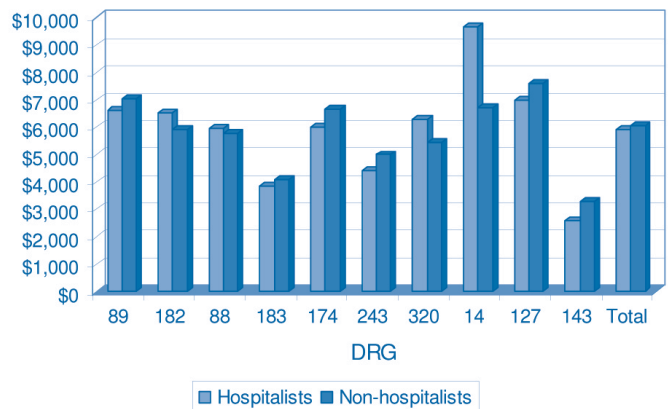
FP AND IM NON-HOSPITALIST-MANAGED PATIENTS FOR THE TOP 10 DRGS FOR ALL PAYORS, CY 2005

DRG	Vol.	Avg. PMI*	Avg. LOS	Avg. Chg. Per Case	Avg. Total Cost Per Case	Avg. Direct Cost Per Case	Avg. Est. Reimb.	Avg. Net Margin	Avg. Cont. Margin	Avg. Drug Cost	Avg. Lab Cost	Avg. Image Cost	Avg. Supply Cost
89	184	0.89	5.3	10,460	7,032	4,685	5,794	(1,238)	1,109	644	456	259	63
182	126	0.69	4.5	10,263	5,901	3,951	6,514	613	2,563	765	378	361	66
88	113	0.78	4.4	8,056	5,769	3,826	5,689	(80)	1,863	640	352	229	45
183	79	0.56	3.0	7,614	4,073	2,723	4,611	538	1,888	337	267	216	46
174	98	0.83	4.3	11,158	6,667	4,490	6,792	125	2,302	303	806	194	108
243	68	0.68	3.8	8,012	5,001	3,325	4,063	(938)	738	317	154	398	29
320	72	0.68	4.5	8,270	5,465	3,699	5,862	397	2,163	450	443	359	100
14	69	1.12	4.3	11,151	6,693	4,484	7,278	585	2,794	711	507	677	182
127	135	0.93	5.5	10,872	7,580	5,077	5,645	(1,935)	568	568	549	288	132
143	69	0.51	1.8	7,291	3,306	2,239	3,798	492	1,559	106	275	288	21
Total	**1013**	**0.76**	**4.3**	**9,591**	**6,042**	**4,041**	**5,238**	**(804)**	**1,589**	**482**	**421**	**333**	**72**

DRG	Description
89	Simple Pneumonia & Pleurisy Age >17 w/CC
182	Esophagitis, Gastroent & Misc Digest Disorders Age >17 w/CC
88	Chronic Obstructive Pulmonary Disease
183	Esophagitis, Gastroent & Misc Digest Disorders Age >17 w/o CC
174	G.I. Hemorrhage w/CC
243	Medical Back Problems
320	Kidney & Urinary Tract Infections Age >17 w/CC
14	Intracranial Hemorrhage or Cerebral Infarction
127	Heart Failure & Shock
143	Chest Pain

*PMI = Patient Mix Indicator, APRDRG severity-adjusted

AVERAGE TOTAL COST PER CASE



PERFORMANCE METRIC SIX: PRODUCTIVITY MEASURES Marc Westle, DO	
Description of Metric	The term "Productivity Measures" represents an array of output measures that allow the objective quantification of productivity. Hospitalist work is segregated into encounters or other units of service, each of which has a specific work value. The sum of these units of service represents the production level of an individual or of a practice. The critical step in obtaining valid output measures is using a standardized fee schedule that is mapped to standardized work values such as Medicare's Relative Value Unit (RVU) system.
Subsidiary Metric Components	• Total billable encounters • Total new patients admitted to the practice (admits/consults) • Gross professional fee charges • Professional fee collections • Relative Value Units (RVUs) • CPT coding distribution
Why this Metric is Important	Having a dynamic tool that allows ongoing analysis of key output measures gives the physician executive the objective information necessary to quickly spot trends in practice volume and productivity that may require additional analysis and/or intervention. Productivity information allows for objective hospitalist-to-hospitalist comparisons, and enables comparison of the practice with peer groups and national performance benchmarks. In addition, productivity-related output measures: • Can be used as the basis for some or all of individual hospitalist compensation • May be used to assess professional fee collection effectiveness • May offer insights into the appropriate levels of external program support • Can aid in planning for future practice growth and resource requirements
Data Sources	Each hospital medicine practice collects data differently. It is important for the physician executive to understand how his/her practice captures, processes and reports data. Generally productivity information is obtained from: • Computerized practice billing and collection systems - Fee schedule with matched RVUs - Detailed collection reports • Internal financial reporting systems (to enable analysis of overall practice fiscal performance and external financial support requirements) • Patient logs and/or similar patient census management systems
Unique Measurement and Analysis Considerations	***Billable Encounter*** – Standardization is a key element. Using a fee schedule based on the Medicare fee schedule (including standard HCPC codes and RVUs) allows national and regional comparisons across practices. Using individually developed fee schedules and work values may have internal value but they will not allow external comparisons. ***New Patients*** – This metric can be useful to consider in addition to total billable encounters, because the work associated with new admissions or consults is much greater than for most other types of encounters. This can be especially important in a practice that provides tuckin services, pre-op clearances, psychiatric unit history and physicals and similar services that typically involve only an initial encounter; in such cases the total amount of work involved may be underestimated if the practice is only looking at total billable encounters in comparison to external benchmarks. ***Charge Capture*** – Because output measures are typically derived from charge data entered into the billing system, productivity may be under-reported if the practice does not have strong systems in place to ensure capture of all professional charges.

Unique Measurement and Analysis Considerations (cont.)	***Coding Distribution*** – Coding compliance will significantly impact the accuracy of productivity measures. Physician coding and documentation must parallel the actual level of service provided and follow rules outlined by the AMA and CMS. ***Non-billable Work*** – Productivity measures often fail to recognize work associated with non-billable clinical care (such as a second visit in the same day) and administrative activities such as committee meetings. Some practices assign RVU values to these activities for the purposes of productivity analysis, even though they are not billable. ***RVUs*** – Some practices utilize the total Medicare-assigned RVU value; others utilize only the RVU component associated with the work actually performed by the physician (the "work RVU" or "wRVU"). Be sure that you know which is being utilized, when comparing your practice with other practices or external benchmark data. ***Collections*** – This metric should include professional fee revenue collected by the practice, net of refunds or other credits, and before any allocation of practice expenses. It should not include financial support provided by an external entity such as a hospital or health plan. ***Comparability*** – When evaluating practice productivity measures in comparison with external benchmarks, be sure to consider the impact of different compensation models and staffing models (for example, 24/7 in-house coverage vs. night call coverage). Similarly, when comparing encounters per doctor per day, consider factors such as length of shift, availability on-call after hours, etc.
Potential Hospitalist Interventions	• Productivity measures may be used to demonstrate the importance of the hospital medicine program to a sponsoring organization such as a hospital or health plan, and to help determine the appropriate level of financial support. Hospitals have many reasons to provide program support, only one of which is partial compensation for uninsured care. As the compensation per billable encounter drops more program support may be appropriate, assuming adequate billing and collections performance. • Using appropriate benchmark data is an effective way to assess your group's productivity on a full time equivalent (FTE) basis. There may be legitimate reasons that a group's productivity measures do not match up across similar groups, which will need to be investigated and clarified. Once clarified, an "internal benchmark" may be the most appropriate comparison. • Regularly share volume and productivity data with all providers in the practice using a side-by-side comparison. This reporting may or may not be blinded, but it is important for each provider to see how he/she is performing against his/her peers. • Institute procedures to ensure consistency and accuracy of CPT/diagnosis coding and supporting medical record documentation. These procedures should include regular checks of the CPT code assigned against supporting medical record documentation prior to bill submission, at least annual random sample coding audits conducted by an independent coding professional, and periodic physician coding education. • Perform periodic reconciliations of billing data for a random sample of patients with the hospital's information systems. This can serve as a check on the practice's charge capture efficiency, may identify potential issues with the hospital's assignment of admitting or attending physician, and will ensure that the practice and the hospital have the same information on which to gauge practice volume and productivity. • Design documentation templates that assist the physician with documentation to support the highest appropriate CPT code, and make this a practice priority. • Periodically conduct billing and collection audits, regardless of whether these services are performed by the group, the hospital, or by an outside billing company. • Mentor low-productivity providers to improve time management skills, clinical decisionmaking skills and rounding skills that will enhance and improve productivity.

SAMPLE REPORTS – PRODUCTIVITY

Example One (Marc Westle, DO)

ANYTOWN HOSPITALIST GROUP, PA (AHG) Annual 2005 Data										
Metric	Physician 1	Physician 2	Physician 3	Physician 4	Physician 5	Physician 6	Physician 7	Physician 8	Corporate Median	SHM†
Billable Encounters	2675	2250	2840	2585	2860	2720	2680	2730	2700	2328
Gross Charges/FTE	$371,825	$310,500	$396,180	$358,022	$391,820	$367,200	$348,400	$365,820	$366,510	$324,000
Gross Collections[5]/ FTE	$204,504	$170,775	$217,899	$196,912	$215,501	$201,960	$191,620	$201,201	$201,581	$183,000
wRVU/FTE	3745	3106	3920	3593	3976	3808	3725	3795	3770	3213
Program Support	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$65,400
Gross Revenue/ FTE	$254,504	$220,775	$267,899	$246,912	$265,501	$251,960	$241,620	$251,201	$251,581	$248,400
Analysis - Example										
TCR/Billable Unit[1]	$95.14	$98.12	$94.33	$95.52	$92.83	$92.63	$90.16	$92.02	$93.18	$106.70
Collection %									55	56
Avrg TCR/ wRVU									$66.73	$77.31

Billable Unit = Any physician encounter

Analysis - Anytown Hospitalist Group, PA vs. Medicare* vs. SHM					
CPT Code		wRVU*	Par Comp[2]	AHG[3]	SHM[4]
Int Hosp Care	99223	2.99	$152.57	$199.53	$231.16
Sub Hosp Care	99232	1.06	$54.11	$70.74	$81.95
Sub Hosp Care	99233	1.51	$76.91	$100.77	$116.74
Int Inpt Const	99254	2.64	$137.56	$176.17	$204.10
Int Inpt Const	99255	3.64	$189.64	$242.91	$281.41

† 2005-06 Productivity & Compensation Survey (Median All Models)

* Federal Register 11/21/2005 Vol. 70, No. 223

[1] Total Collected Revenue/Billable Unit

[2] Participating Medicare NC Cigna 2005 Fee Schedule

[3] Avrg TCR/wRVU X wRVU*

[4] All collected professional fees before overhead

[5] Gross Collections = professional fee revenue collected by the practice, net of refunds or other credits, and before any allocation of practice expenses

ANYTOWN HOSPITALIST GROUP, 2005 ANNUAL DATA

This example represents a simple report to assist the physician executive in tracking internal productivity data in a format that allows quick comparison to external benchmark data. In designing such a report one must take precautions to compare your group to the appropriate matched external benchmark data and comparative groups based on compensation model, service level provided (24/7/365), staffing model, group size, etc. Applying program support also needs special consideration. Only the financial program support being equally distributed to all FTE physicians in the group should be used in the report. Generally benchmark data does not include overhead.

The Data

- The median number of annual encounters for Anytown Hospitalist Group physicians are 14% higher than the Society of Hospital Medicine national benchmark (%CH=13.78)
- The gross charges and gross collections per FTE are also higher than the benchmark (as would be expected based on volume), the percent of gross charges/FTE vs. gross collections/FTE are also similar between Anytown Hospitalist Group and SHM (55% vs. 56%) but the Total Collected Revenue/Billable Unit for the Anytown Hospitalist Group is 13% less than the SHM benchmark ($93.18 vs. $106.70).
- On average the Anytown Hospitalist Group collects $13.52 less per billable unit than the SHM benchmark

Where is the problem?

- Collection percentages for the Anytown Hospitalist Group are very close to the national benchmark (55% vs. 56%). Therefore, it appears their billing department is performing at the national average for hospitalist groups.
- As Total Collected Revenue/Billable Unit drops it may signal one or more of the following, assuming good collection efforts:
    1. An increase in the uninsured and under-insured population
    2. Dropping or poor third party fee schedule compensation
    3. Inadequate program support

Intervention

- Track the uninsured and under-insured population closely with internal informational systems
- Reduce cost shifting by seeking additional program support to cover the uninsured patient population
- Renegotiate third party payer contracts to a more equitable fee schedule
- Consider dropping contracts not providing an equitable fee schedule

Example Two (Leslie Flores)

The example on the following page assesses total Work Relative Value Units (wRVUs) and encounters (defined as units of service at the CPT code level) for a one-year period. The information is shown in both table and graphic formats, and both group and individual performance are compared to several external benchmarks. Since some of the doctors in the group work only part time, the production data is presented both as actual production and on an FTE-adjusted basis (what the doctor would have produced if he/she had worked at the same production level, but as a full FTE).

SAMPLE HOSPITAL MEDICINE GROUP

WORK RELATIVE VALUE UNITS

Physician	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	YTD Total	FTE - Adjusted
Applebaum	330.09	268.91	230.64	304.86	318.94	247.85	239.67	301.68	250.97	268.86	227.41	317.80	3,308	3,028
Buxby	154.69	249.31	259.45	170.64	238.51	238.14	171.76	217.08	166.42	173.03	152.33	235.02	2,426	3,273
Chattanooga	291.36	318.78	245.28	279.74	31.41	2.56	57.92	216.16	215.21	307.78	131.23	211.76	2,309	2,990
Duffel	152.14	255.49	170.53	249.19	438.97	359.29	180.48	325.88	154.38	(220.39)	208.54	251.46	2,526	3,046
Eisch	290.24	245.83	314.13	149.09	16.14	264.28	189.59	235.08	239.46	654.76	193.21	265.29	3,057	2,958
Flores	305.67	227.73	283.90	112.90	228.87	207.83	240.90	153.45	208.69	175.70	121.21	188.80	2,456	2,801
Gandhi	296.80	215.78	185.48	168.26	200.50	227.66	165.80	148.59	125.29	207.67	38.47	254.36	2,235	3,089
Hyde	305.51	248.69	312.69	320.38	308.54	281.66	266.34	336.93	233.36	192.31	238.03	324.20	3,369	3,195
Ingalls	196.15	191.39	218.28	174.27	186.66	199.18	137.14	141.08	171.47	109.31	142.53	143.81	2,011	2,935
Jekyll	197.13	251.60	311.94	240.81	238.95	255.04	213.62	254.75	270.76	197.31	217.18	254.00	2,903	2,788
Kooper	-	60.63	368.40	263.86	-	-	-	-	-	-	-	-	692.89	2,772
	2,561.91	2,583.57	2,902.86	2,445.97	2,266.88	2,354.62	1,930.48	2,421.54	2,093.22	2,135.22	1,722.97	2,487.63	27,907	

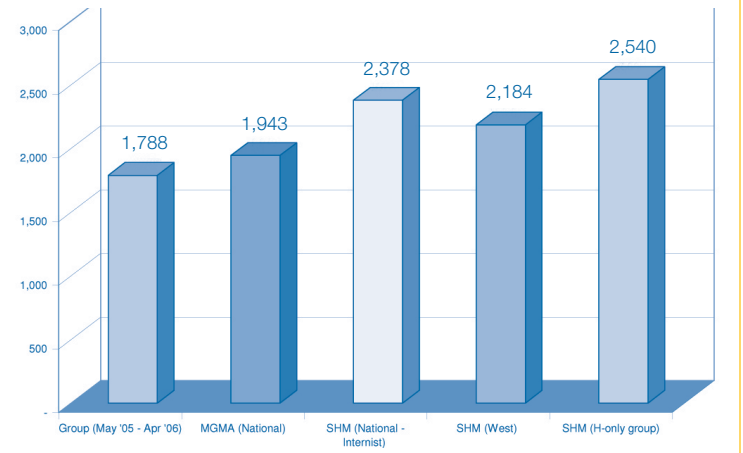
Group (May '05 - Apr '06)	2,958
MGMA (National)	3,431
SHM (National - Internist)	3,256
SHM (West)	2,945
SHM (H-only group)	3,904

TOTAL ENCOUNTERS (CPT CODES)

Physician	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	YTD Total	FTE - Adjusted
Applebaum	200	163	149	162	215	155	146	180	155	169	134	170	1,998	1,829
Buxby	87	142	148	69	135	149	97	133	98	103	87	144	1,392	1,878
Chattanooga	207	202	160	180	24	2	32	142	129	194	87	150	1,509	1,954
Duffel	84	154	95	142	273	197	107	190	93	133	119	153	1,740	2,098
Eisch	191	165	213	105	9	194	127	168	174	170	131	172	1,819	1,760
Flores	201	133	183	60	158	118	171	94	142	114	87	122	1,583	1,805
Gandhi	170	132	97	88	118	140	86	85	71	111	15	139	1,252	1,731
Hyde	198	145	173	183	188	169	145	214	150	119	141	187	2,012	1,908
Ingalls	106	119	138	111	134	128	73	89	113	57	81	88	1,237	1,805
Jekyll	129	175	189	170	158	169	143	157	180	121	137	165	1,893	1,818
Kooper	0	27	196	146	0	0	0	0	0	0	0	0	369	1,476
	1590	1577	1742	1422	1436	1449	1157	1488	1327	1319	1041	1507	16,804	20,860

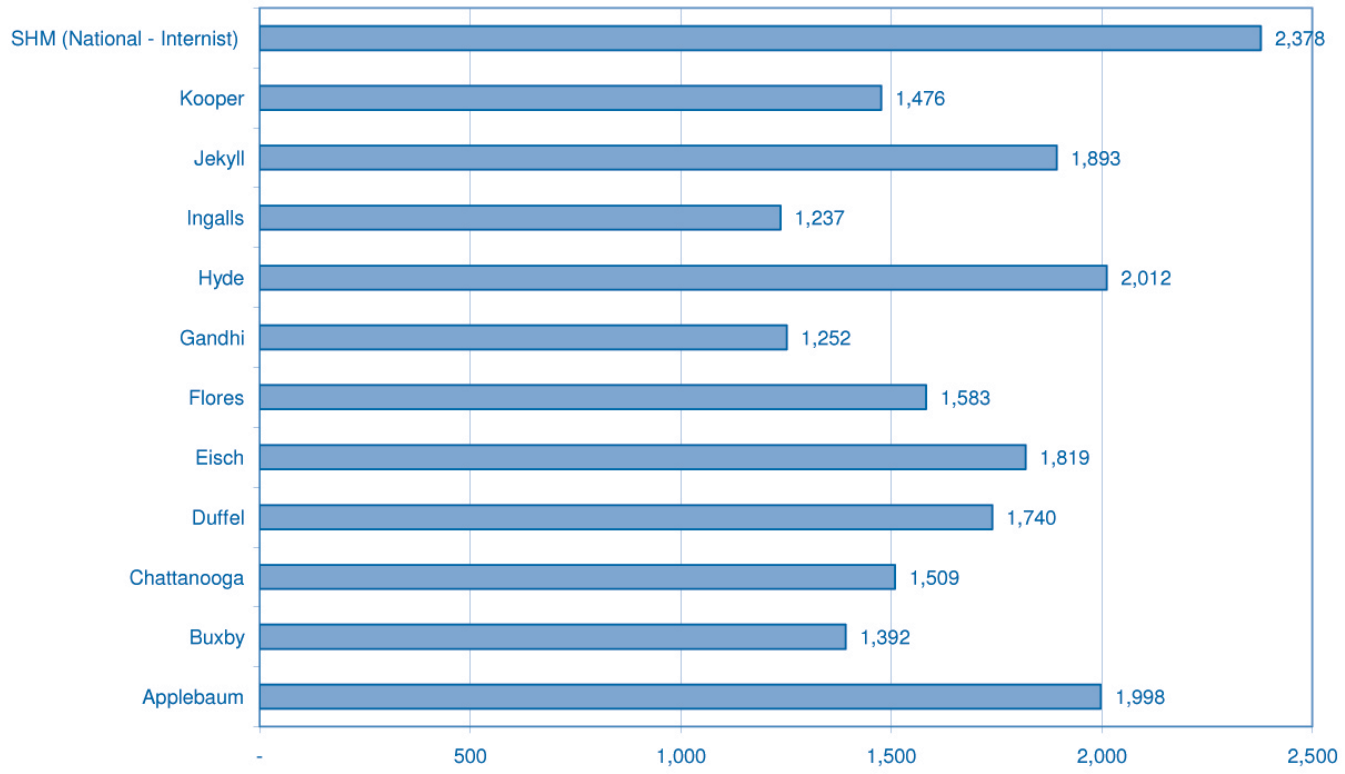
Group (May '05 - Apr '06)	1,788
MGMA (National)	1,943
SHM (National - Internist)	2,378
SHM (West)	2,184
SHM (H-only group)	2,540

SAMPLE HOSPITAL MEDICINE GROUP ENCOUNTERS PER FTE

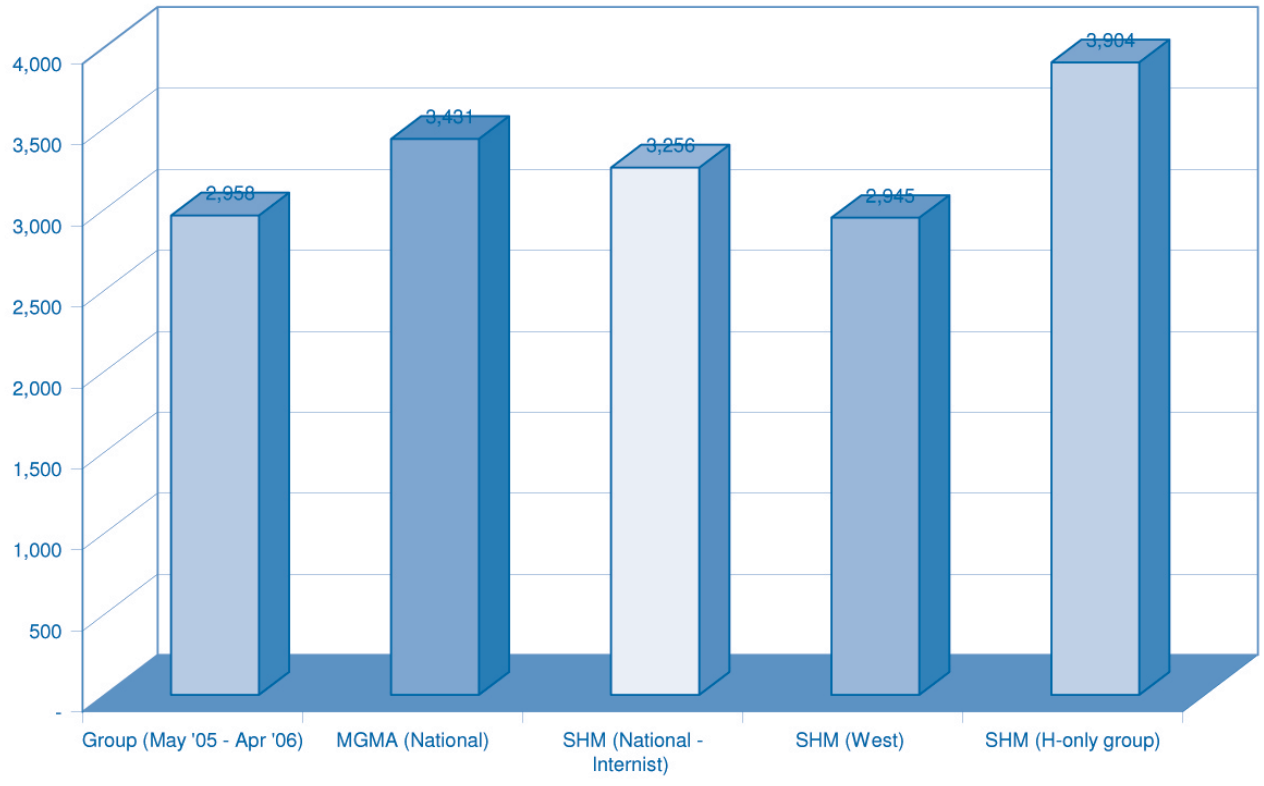


SAMPLE HOSPITAL MEDICINE GROUP

ENCOUNTERS PER YEAR BY DOCTOR
MAY 2005 - APRIL 2006

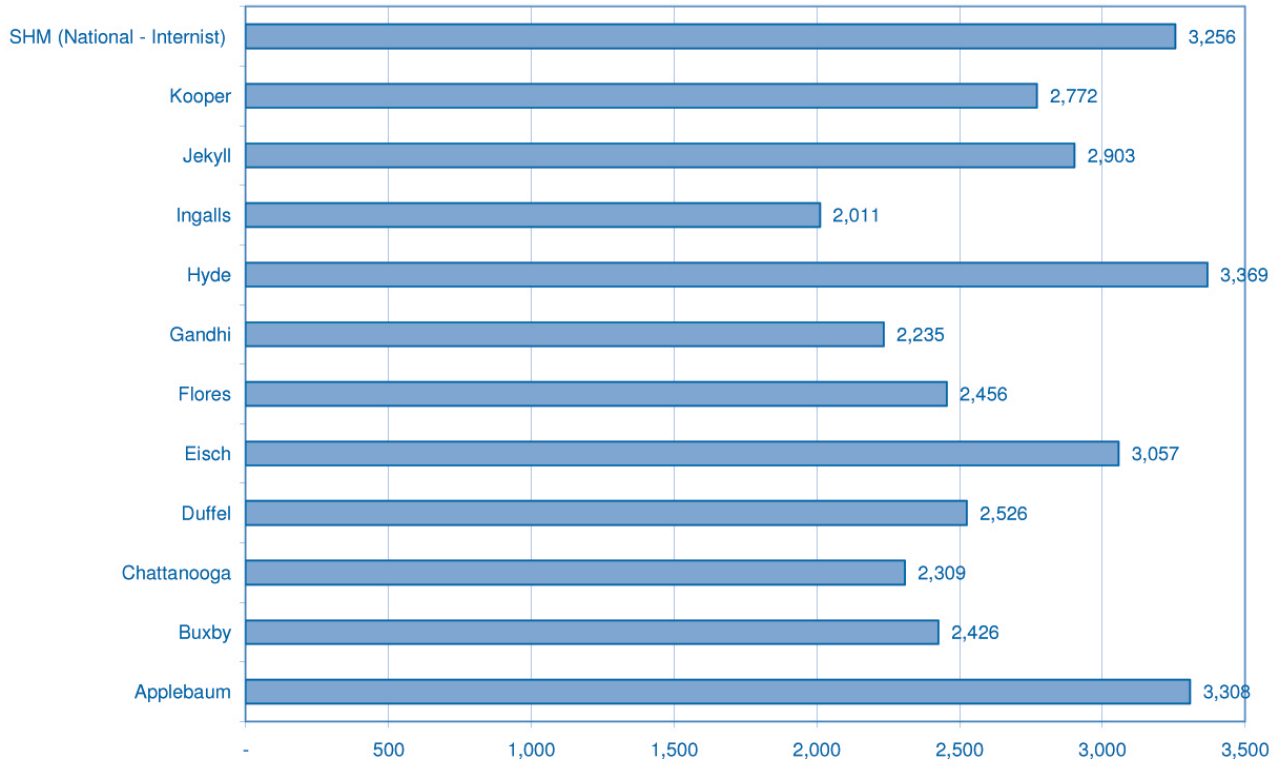


ANNUAL WRVUS PER FTE

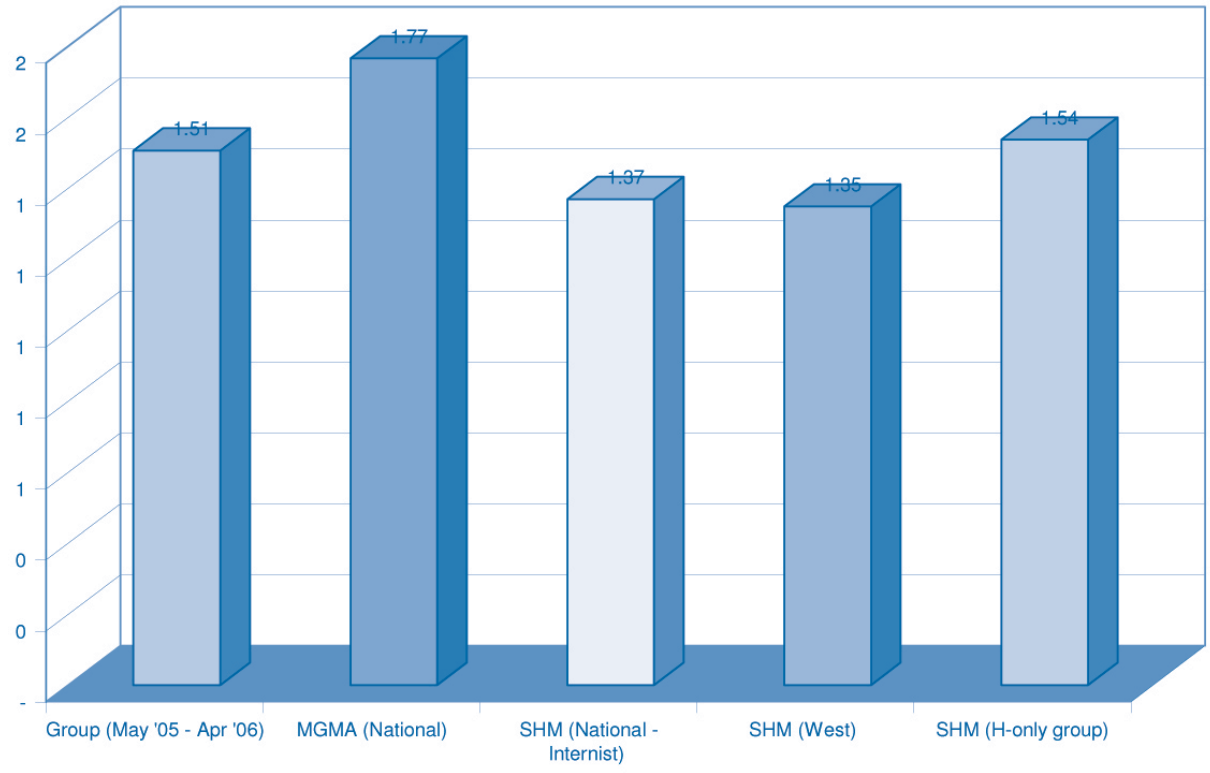


SAMPLE HOSPITAL MEDICINE GROUP

WRVUS PER YEAR BY DOCTOR
MAY 2005 - APRIL 2006



WRVUS PER ENCOUNTER



PERFORMANCE METRIC SEVEN: PROVIDER SATISFACTION Daniel Rauch, MD	
Description of Metric	Referring physician satisfaction is a survey-based measure that is often considered a key consideration of hospitalist performance. Surveys are typically administered by the hospital medicine group and/or the sponsoring organization, and are designed to measure the referring physicians' perceptions of their overall experience with the hospital medicine program (including the care of their patient and interactions with the hospitalists). Hospitalists should focus on survey questions related to physician performance and communication.
Subsidiary Metric Components	A review of published surveys reveals a focus on issues of communication and coordination of care, utility of the hospital medicine system to the PCP, and impact on patient care in terms of quality and patient satisfaction.
Why this Metric is Important	• Referring physician satisfaction is critical to maintaining referral sources and market share. • Referring physician satisfaction is directly related to the quality of communication among physicians, a vital link in providing quality care. Hospitalists can address those concerns by including this metric as part of their performance-reporting dashboard. • Referring physician satisfaction is often of concern to the sponsoring organization, and for some groups, it may be a criterion for incentive compensation from the sponsoring organization.
Data Sources	Data for the evaluation of this metric are typically obtained by written surveys of the referring physicians, administered via mail or e-mail.
Unique Measurement and Analysis Considerations	• There are not currently any widely available, validated survey instruments for this metric. Unlike patient satisfaction, the current state of the art in assessing provider satisfaction usually involves "home-grown" survey instruments. • Hospitalists should understand some of the science ("psychometrics") behind survey questionnaires. From the Press Ganey Psychometrics document: *"The accuracy of a questionnaire is assessed by measuring its validity and reliability. Validity is the degree to which a questionnaire measures what it was designed to measure. Reliability is the degree to which survey data are consistent across respondents or across surveys."* • Most organizations that survey referring physician satisfaction send out general surveys on a periodic (e.g., annual) basis. A few organizations survey referring physicians, as they do patients, regarding their experience with a specific admission. Referring physician satisfaction results related to a specific patient admission are only valuable if the information used to determine the physician to whom the survey should be sent accurately identifies the attending physician or service (i.e., hospitalist vs. nonhospitalist). Hospital data systems sometimes have errors in this data (e.g., the admitting process may identify the attending physician as the patient's primary care physician rather than the hospitalist). Hospital medicine practices that use satisfaction surveys must review the accuracy of the underlying source data; otherwise the survey results may not truly reflect provider satisfaction with the hospital medicine program. Drilling down on individual physician performance is even more difficult, if not impossible. • An alternative approach would be to periodically survey all referring physicians regarding their overall experience with the hospital medicine program, unrelated to a specific admission. • It is often difficult to obtain a good response rate on such surveys from busy communitybased physicians; survey results may be biased by the possibility that dissatisfied physicians may be more likely to respond to the survey than satisfied ones. • Distinguishing between communication and quality of care issues can be difficult, but necessary in order to identify specific areas that can be improved.

Potential Hospitalist Interventions	• If your organization does not routinely survey referring physician satisfaction, work with your practice's leaders to develop and implement a simple survey tool. • Make sure survey results are aggregated, summarized and shared regularly with the hospitalist team, and with other key organizational stakeholders. • Work with referring physicians to assure that they understand that a hospitalist will be managing their patients' inpatient care, and what they and their patients can expect. • Work with referring physicians to establish the preferred methods and frequency of communication before, during, and after the hospital stay. • "Market" the hospital medicine program so that it is perceived positively by hospital leadership and the medical staff. • Practice patient centered care; communicate regularly with the patient's family as appropriate. • Develop and utilize a hospital medicine program brochure to inform and educate referring physicians and patients about the service. • Utilize survey results to identify specific areas where performance can be improved (e.g., night coverage, timeliness of discharge notification, or the interpersonal style of an individual hospitalist) • If a referring physician takes the time to write a note on the survey, and identifies him- or herself, follow up with that physician directly to work out a resolution to the issue or to thank them for the positive input.

SAMPLE REPORT – PROVIDER SATISFACTION (Joe Miller)

The report below has been extracted from an analysis of a "homegrown" satisfaction survey of referring Primary Care Physicians developed by a hospital medicine group. As illustrated, the survey consists of the following three sections, each of which is composed of a series of individual questions:

- How would you rate the hospitalist program?
- How would you compare the hospitalist care to inpatient care you provide?
- What has been the impact of the hospitalist program?

The report displays the mean rating (on a 1-5 scale) for each question. A further refinement of the report would be to compare mean scores for the current period to mean scores from previous periods.

Referring PCP satisfaction with the Hospitalist Service

How would you rate the XYZ Hospitalist Program?	
Re: training, experience, and knowledge	4.88
Re: timeliness of communications	4.44
Re: clarity of communications	4.50
Re: collegiality/include you in decision-making	4.63
Re: compassion/sensitivity to patients & family	4.81
Re: comparison to other hospitalist programs	3.93

How would you compare XYZ Hospitalist Care to Inpatient Care you provide?	
Re: appropriate clinical decision-making	3.81
Re: coordination with hospital-based providers (e.g., RNs):	4.13
Re: documentation in the medical record	3.71
Re: continuity of care in multiple settings	3.23
Re: the overall quality of care	3.73

What has been the impact of the XYZ Hospitalist Service?	
Re: your workload	4.60
Re: your job satisfaction	4.40
Re: your inpatient clinical skills	2.67
Re: your outpatient clinical skills	3.60
Re: your income/revenue	3.07

1 = poor/much worse; 2 = fair/worse; 3 = average/the same; 4 = good/better;
5 = excellent/much better.

PERFORMANCE METRIC EIGHT: MORTALITY

John Novotny, MD

Description of Metric	Mortality is a measure of the number of patient deaths occurring over a defined time period. In the context of hospital medicine, the term mortality usually refers to in-hospital deaths. Figures for post discharge mortality may also be of interest for post-hospitalization survival, although there is a wide range of timeframes used by hospitals, for example, 7 days, 14 days, 30 days, and 1 year. Typically, the observed mortality metric is compared to an expected mortality. Some state data agencies provide benchmarks on expected mortality such as severity of illness within DRG. More recently, the Institute for Healthcare Improvement (IHI) has developed a methodology for determining the hospital standardized mortality ratio (HSMR), the ratio of the actual number of deaths to those expected on the basis of a hospital's location and patient population.1
Subsidiary Metric Components	• Diagnoses – both principal and secondary diagnoses, including conditions, complications, and co-morbidities. • Age, demographics, admission source and type. • Whether or not advance directives and no-code status were in place. • Service – ICU vs. general medicine. • Number of codes, adverse events. • Sentinel event analyses and benchmark comparisons.
Why this Metric is Important	In response to the growing public demand for information on hospital quality, regulatory and advisory agencies have begun focusing on processes that reduce the risk of inhospital mortality; for example, the six "planks" in IHI's 100,000 Lives Campaign. Implementing such processes is becoming a standard marker of quality. Hospitalists should know the mortality of the patients that they treat and understand how the quality improvement processes they implement contribute to reduced mortality. For example, responding to the HSMR provides one vehicle for demonstrating the quality of a hospital medicine program.
Data Sources	• Hospital information system for raw data on patient deaths and subsidiary metric components • State health data agencies for expected mortality data. • Institute for Healthcare Improvement (IHI) for hospital HSMR.
Unique Measurement and Analysis Considerations	• A hospital's crude mortality rate depends on a wide range of factors, many of which are outside of the control of the clinician. These include the geographic location, the population served, the referral network, and the nature of the available clinical services, such as palliative care, all of which have important effects on mortality.2-5 • Benchmarks are being developed for expected mortality rates for specific diagnoses, such as MI and CHF, often reported in aggregate for institutions, which may be useful as internal comparisons for hospital medicine programs. However, given the small numbers of deaths and the limitations of risk-adjustment methodologies, it may be difficult to derive reliable internal comparisons of mortality figures among individual clinicians or groups, including comparing hospitalists with non-hospitalists. Hospitalists should collaborate with the clinical data analysis experts to interpret these metrics.

Unique Measurement and Analysis Considerations (cont.)	• A hospital's crude mortality rate should be reviewed at regular intervals, and individual cases should be analyzed and flagged to identify sentinel events, and to guide root cause analyses. Sentinel event deaths can be analyzed in terms of factors shown to place patients at high risk of mortality, as follows: - 2x2 table approach to identifying full-code patients who died but who were admitted to a non-ICU setting, and those who were admitted perhaps unnecessarily to an ICU setting. - Delay in diagnosis: Was the diagnosis on admission the same as at the time of death?
Potential Hospitalist Interventions	• Hospital medicine program features thought to be important to reducing mortality include: - Interdisciplinary rounds, - Effective inter-provider communication, - Ventilator care protocols, - Tracking ventilator-associated pneumonias, - Blood sugar management and insulin infusion protocols, - Rapid response teams to evaluate patients with unstable vital signs or whose nurses have unaddressed concerns, and - Surgical consultation and/or co-management • Documented implementation of JCAHO Core Measures for MI, CHF, and pneumonia and evidence-based protocols for preventing adverse drug events and central line infections.
References	1. Institute for Healthcare Improvement website for HSMR: http://www.ihi.org/IHI/Programs/CollaborativeLearning/HSMRIC.htm 2. The risks of risk adjustment. L. I. Iezzoni. JAMA Vol. 278 No. 19, November 19, 1997. 3. Accepting critically ill transfer patients: adverse effect on a referral center's outcome and benchmark measures. Rosenberg AL, Hofer TP, Strachan C, Watts CM, Hayward RA. Ann Intern Med. 2003 Jun 3;138(11):882-90. 4. Are diagnosis specific outcome indicators based on administrative data useful in assessing quality of hospital care? Scott I, Youlden D, Coory M. Qual Saf Health Care. 2004 Feb;13(1):32-9. 5. Volume, Quality of Care, and Outcome in Pneumonia. Ann Intern Med. 2006 Feb 21;144(4+):262-269. Peter K. Lindenauer, MD, MSc; Raj Behal, MD, MPH; Cynthia K. Murray, PhD; Wato Nsa, MD, PhD; Peter M. Houck, MD; and Dale W. Bratzler, DO, MPH. 6. Tools and Resources Related to Move Your DotÔ http://www.ihi.org/IHI/Topics/Improvement/MoveYourDot/EmergingContent/ToolsandResourcesRelatedToMoveYourDot.htm

SAMPLE REPORT – MORTALITY (John Novotny, MD)

		Admitted to ICU	
Comfort Care only		Yes	No
	Yes	6	14
	No	9	12

Inpatient deaths broken down by initial admission to the ICU setting and code status. The primary focus should be the 12 patients who were full-code yet who nevertheless died without admission to the ICU. These cases warrant further analysis for opportunities for avoiding delay in diagnosis, inter-provider communication, and other process-improvement measures. The 6 cases admitted to the ICU but which were in a comfort-care status call for an analysis of the appropriateness of the ICU admission process and inter-provider communication.

The care of the 9 patients who were admitted to the ICU initially but who subsequently died should also be analyzed for potential improvement of care, such as ventilator policies.

The 14 comfort-care cases admitted outside of the ICU would appear to be admitted appropriately.

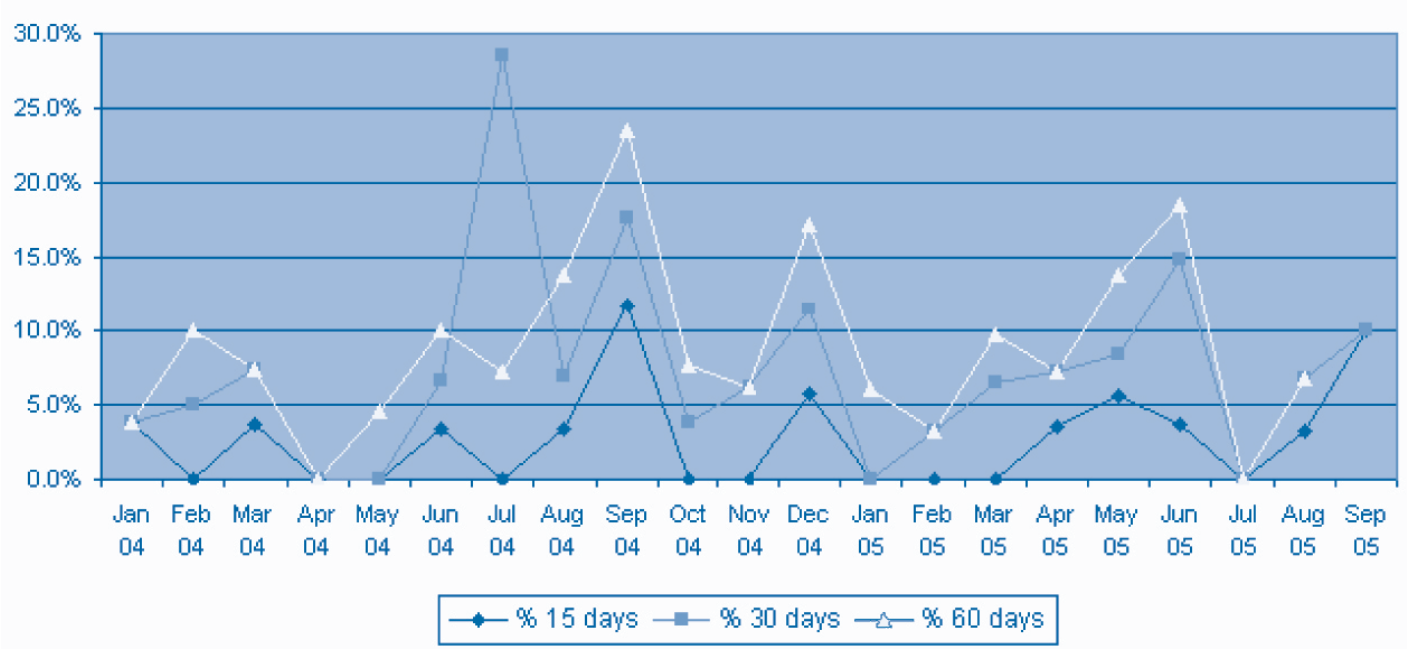
PERFORMANCE METRIC NINE: READMISSION RATE Saeed Syed, MD	
Description of Metric	"Readmission rate" describes the frequency with which patients admitted to the hospital by a physician or practice are admitted again, within a defined period following hospital discharge. Readmission rate is measured as the percent of discharges readmitted within a specific time frame. Readmission rate can be calculated for patients being readmitted only for a similar diagnosis as the original discharge diagnosis, or for any diagnosis. Time frames often used are 24 hours, 48 hours, 15 days, or 30 days.
Subsidiary Metric Components	• Demographic characteristics • Payor mix • Discharge diagnosis - Similar diagnosis vs. different diagnosis • Discharge disposition: e.g. home, SNF, acute rehab, subacute rehab, etc. • Various readmission time frames - Typically, analyses of readmissions within short time frames (e.g., 24-72 hours) focus on readmission for any reason, and long time frame analyses (e.g., 15 or 30 days) focus on readmission for the same or similar diagnosis as the original admission.
Why this Metric is Important	Approximately 25% of Medicare expenditures for inpatient care are for readmissions within 60 days[1]. Unplanned hospital readmission has evolved as an important outcome indicator. Early readmission is considered an indicator of poor quality of care and/or premature discharge. In a survey of 250 Fortune 1000 companies, the benefit managers named hospital readmission as the quality indicator most often used[2]. This could be due to simplicity and ease with which readmission data can be obtained. A significant focus for most hospital medicine programs is effective resource management, including length of stay and patient throughput. Shorter lengths of stay might be expected to increase readmission rates, although data from hospital medicine programs does not substantiate this notion[3]. However, monitoring readmission rates can be a useful indicator to help ensure that this focus isn't resulting in premature discharges.
Data Sources	This information should be obtained from the hospital's admission/discharge/transfer (ADT) and/or clinical information systems, or from health plan information systems – not from the hospital medicine practice's records, which may miss readmissions not cared for by the hospitalists.
Unique Measurement and Analysis Considerations	• Severity of Illness - Presence of co-morbid conditions and severity of illness can increase readmission risk. It may be appropriate to evaluate readmissions on a CMI- or severity-adjusted basis. • Hospital information systems list the discharge diagnosis (principal diagnosis upon discharge), which might have been a coexisting condition and not the primary reason for readmission. • Readmission rate could be an underestimate, since it may miss readmissions to other hospitals. Also, when unassigned patients are discharged to community physicians for follow up, the patient may be readmitted to the community physician's service; thus it is important to track all readmissions to the hospital, not just readmissions to the hospital medicine service.

Potential Hospitalist Interventions	• Hospitalists can play a significant role by identifying remediable deficiencies in the process of inpatient care. In readmitted patients, the process of care during first hospitalization should be reviewed. This review can break the care process into initial admission work up, evaluation and treatment during the stay, and discharge planning. This can help identify the segment of care identified as deficient. However, bear in mind that association between readmission and the antecedent care process are not well established. • The most significant step in preventing readmission is effective discharge planning. - Identify patients at risk for readmission early; communicate your assessment to the discharge planning staff days before expected discharge date. - Ensure that appropriate home care is available. - Involve caregivers, and assess caregiver needs. - Educate patient and caregiver in post discharge needs, particularly in patients on Coumadin therapy, Diabetics, COPD and CHF. - Appropriate disposition to home, rehab or nursing home placement. • Vulnerability to poor outcomes is strongest in the first few days after discharge. A system of telephone follow up after discharge is helpful. Consider making calls within 48 hours of discharge to patients identified as at high risk for readmission.

SAMPLE REPORT – READMISSION RATES)

Example One (Burke Kealy, MD)

HOSPITAL RE-ADMISSION RATES FOR CONGESTIVE HEART FAILURE



This graph tracks the rates of readmissions to the hospital for the diagnosis of Congestive Heart Failure. It looks at 15 day, 30 day, and 60 day readmission rates. This is a good example of using readmission rates in a targeted area to see how a hospital medicine group and its partners in Cardiology and the hospital are performing. Additionally, by looking at the 30 and 60 day views, one can get a sense of how well patients are being followed and supported in the outpatient setting, in maintaining control of their disease.

Example Two (Steven Deitelzweig, MD)

READMISSION SUMMARY: 2005-2006 QTR1
FOR MEDICINE PRODLINE: ADULT POPULATION (AGE >18YRS)

Service Line Name	Discharge Year	Discharges	Potential Readmit Discharges	Readmits 1-7 Days	Readmit 1-7 Days	Norm Readmit Rate 1-7	Readmit Index 1-7	Readmits 1-14 Days	Readmit Rate 1-14	Norm Readmit Rate 1-14	Readmit Index 1-14	Readmits 1-30 Days	Readmit Rate 1-30	Norm Readmit Rate 1-30	Readmit Index 1-30
Gen Medicine	2005	1,159	1,108	101	9.10%	8.60%	1.06	150	13.50%	11.80%	1.15	236	21.30%	16.90%	1.26
	2006	283	271	33	12.20%	9.30%	1.31	42	15.50%	12.60%	1.23	50	18.50%	17.80%	1.03
	Total	1,442	1,379	134	9.70%	8.70%	1.12	192	13.90%	12.00%	1.16	286	20.70%	17.10%	1.22
Pulmonary Med	2005	1,336	1,269	88	6.90%	6.90%	1	144	11.30%	10.40%	1.09	226	17.80%	15.90%	1.12
	2006	413	395	14	3.50%	6.80%	0.52	27	6.80%	10.30%	0.66	40	10.10%	15.90%	0.64
	Total	1,749	1,664	102	6.10%	6.90%	0.89	171	10.30%	10.40%	0.99	266	16.00%	15.90%	1.00
Gastroenterology Med	2005	1,600	1,571	126	8.00%	7.80%	1.02	194	12.30%	11.60%	1.07	294	18.70%	16.90%	1.11
	2006	469	461	28	6.10%	8.10%	0.75	45	9.80%	11.80%	0.83	67	14.50%	17.10%	0.85
	Total	2,069	2,032	154	7.60%	7.90%	0.96	239	11.80%	11.60%	1.01	361	17.80%	16.90%	1.05
Endocrine Med	2005	528	521	40	7.70%	7.60%	1.01	59	11.30%	11.40%	1	92	17.70%	17.00%	1.04
	2006	122	117	12	10.30%	7.90%	1.3	14	12.00%	11.70%	1.02	19	16.20%	17.40%	0.93
	Total	650	638	52	8.20%	7.70%	1.06	73	11.40%	11.40%	1	111	17.40%	17.10%	1.02
Rheumatology Med	2005	60	60	10	16.70%	7.40%	2.25	12	20.00%	10.10%	1.99	13	21.70%	14.40%	1.51
	2006	8	8	0	0.00%	7.10%	0	0	0.00%	9.60%	0	1	12.50%	13.70%	0.91
	Total	68	68	10	14.70%	7.40%	2	12	17.60%	10.00%	1.76	14	20.60%	14.30%	1.44
Dermatology Med	2005	550	549	21	3.80%	4.90%	0.78	32	5.80%	7.10%	0.83	51	9.30%	10.60%	0.88
	2006	160	159	6	3.80%	4.80%	0.79	10	6.30%	6.90%	0.92	14	8.80%	10.30%	0.86
	Total	710	708	27	3.80%	4.90%	0.78	42	5.90%	7.00%	0.85	65	9.20%	10.50%	0.87
Otolaryngology Med	2005	94	94	2	2.10%	3.60%	0.59	5	5.30%	5.50%	0.96	11	11.70%	8.50%	1.38
	2006	28	28	1	3.60%	3.00%	1.17	1	3.60%	4.60%	0.78	3	10.70%	7.00%	1.53
	Total	122	122	3	2.50%	3.50%	0.7	6	4.90%	5.30%	0.93	14	11.50%	8.20%	1.41
HIV Med	2005	59	52	3	5.80%	8.60%	0.67	8	15.40%	13.40%	1.15	12	23.10%	20.10%	1.15
	2006	20	20	1	5.00%	7.90%	0.63	1	5.00%	12.60%	0.4	2	10.00%	19.80%	0.51
	Total	79	72	4	5.60%	8.40%	0.66	9	12.50%	13.20%	0.95	14	19.40%	20.00%	0.97
Total	**Total**	**6,889**	**6,683**	**486**	**7.30%**	**7.40%**	**0.98**	**744**	**11.10%**	**10.80%**	**1.03**	**1,131**	**16.90%**	**15.90%**	**1.06**

This readmission rate report is prepared by an external data repository vendor. Polaris provides five readmit rate calculations: 0-7 days, 0-14 days, 0-30 days, 8-14 days, and 15–30 days. A patient is considered readmitted if they have returned to the hospital within a defined number of days from their primary visit. They are identified as such if the readmission has occurred within the same submitting facility, regardless of reason or patient population mix. The calculation of the readmission rate equals the previous admissions in the reporting time frame that had a subsequent readmission within 14 days/total patients that could potentially be readmitted to that facility within the reporting time frame (excluding deceased patients).

Polaris provides readmit norm comparisons for all five readmit rates at the APR-DRG severity level by calendar year. The norms are derived using one of Solucient's all client inpatient databases. Norm readmit rates are computed at the APR-DRG severity level for a given calendar year time period. Readmit norm rates are linked to the underlying report data by APR-DRG severity level before final report aggregation. This provides APR-DRG case mix adjusted norm comparison rates.

PERFORMANCE METRIC TEN: JCAHO CORE MEASURES

Jennifer Myers, MD

Description of Metric	In July 2002, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) implemented evidence-based standardized "core" measures that were designed to track the performance of hospitals in providing quality health care. Hospitals seeking accreditation must collect and submit data on these core measures according to the requirements outlined by JCAHO. In turn, JCAHO provides feedback on each core measure to all participating hospitals and to the public in the form of comparative reports.
Subsidiary Metric Components	Quality indicators for four diagnoses are included in the JCAHO core measures: acute myocardial infarction, congestive heart failure, community-acquired pneumonia, and pregnancy and related conditions. Pregnancy is not discussed here due to the fact that it is not relevant to hospitalist practice. The applicable core measures are as follows: **1) Acute Myocardial Infarction (AMI)** • AMI-1 Aspirin at arrival • AMI-2 Aspirin prescribed at discharge • AMI-3 ACEI for LVSD • AMI-4 Adult smoking cessation advice/counseling • AMI-5 Beta blocker prescribed at discharge • AMI-6 Beta blocker at arrival • AMI-7 Time to thrombolysis • AMI-8 Time to PTCA • AMI-9 Inpatient mortality **2) Congestive Heart Failure (CHF)** • HF-1 Discharge Instructions • HF-2 LVF assessment • HF-3 ACEI for LVSD • HF-4 Smoking cessation advice/counseling **3) Community Acquired Pneumonia (CAP)** • CAP-1 Oxygenation assessment • CAP-2 Pneumococcal screening and/or vaccination • CAP-3 Blood cultures prior to antibiotics • CAP-4a Adult smoking cessation advice/counseling • CAP-4b Pediatric smoking cessation advice/counseling • CAP-5 Antibiotic timing
Why this Metric is Important	• JCAHO accreditation is vital to the reputation and financial viability of all hospitals, so every hospital medicine group should be monitoring its performance on the JCAHO core measures. • JCAHO core measure comparative reports can be used as a benchmark by hospitals and hospitalists to show value and demonstrate performance improvement. • Individual hospital performance on the core measures is made available to the public, and can therefore affect hospital volume and reputation. See: http://www.cms.hhs.gov/HospitalQualityInits/. • Review of hospital core measure performance can result in the identification of opportunities for improvements in the quality of care and documentation. This review process may also impact hospital processes that are not included in the core measures through identification of common areas for improvement. • Good performance on the core measures can show the added value of a hospitalist service

Why this Metric is Important	• The Center for Medicare and Medicaid Services (CMS) has adopted the JCAHO core measures as markers of quality care in hospitals. In the future, hospital reimbursement by CMS and other payors will likely be linked to performance on these measures in a pay-for-performance environment.
Data Sources	• Data are abstracted from the medical record after discharge and assessed by hospital abstractors for each core measure. • Data collection is handled at the health care organization level and then reported to the JCAHO quarterly. • Issues related to data quality (e.g. standardization of definitions, costs of data collection/abstraction by hospitals, JCAHO ability to produce comparison data) were studied in the JCAHO pilot project. This was a collaborative effort among the JCAHO, 5 state hospital associations, 5 measurement systems, and 83 hospitals in 9 states.
Unique Measurement and Analysis Considerations	• Measurements will depend entirely upon the ability of the hospital to accurately document the core measures. To this end, targeted strategies and interventions designed to improve the documentation process by clinicians are extremely important. • Because the data are obtained via manual abstracting, the quality of the resulting core measure performance information will depend on the quality of the abstracting process. • Some core measures are not entirely under the control of hospitalists (e.g. patients with core measure diagnoses who are admitted to other services or locations; core measures that affect nursing processes such as oxygenation assessment and antibiotic timing, AMI patients admitted to the cardiologists). However, hospitalists often have unique insights that can contribute to the stakeholder discussions around core measure improvements. • Core measure data should ideally be measured for the hospitalist group as a whole to allow for comparison of hospitalist group performance against the performance of other groups within the hospital such as cardiology or non-hospitalist general medicine services. When analyzing the data by individual hospitalist physician for individualized feedback purposes, it is important to be aware that there may be more than one hospitalist involved in a single admission. This can make the data difficult to interpret.
Potential Hospitalist Interventions	• Design documentation templates or computer physician order entry (CPOE) programs that facilitate the physician's ability to assess and document the core measures. • Using national and institutional historical benchmarks, identify areas of low core measure compliance and focus hospitalist improvement efforts around this measure(s). • Educate physicians and trainees around the evidence-based recommendations included in the core measures. • Regularly share hospitalist core measure performance with the hospitalist group and with stakeholders in the hospital to show value. • Consider utilizing clinical support staff (e.g., nurse care coordinators, dedicated case managers, and/or mid-level providers) to evaluate all patients for core measure compliance.
References	Williams SC, Schmaltz SP, Morton DJ, Koss RG, Loeb JM. Quality of care in US hospitals as reflected by standardized measures, 2002-2004. New Engl J Med. 2005;353:255-64. http://www.jcaho.org/pms/core+measures/index.htm. Accessed on March 3, 2006.

SAMPLE REPORTS – JCAHO CORE MEASURES (Jennifer Myers, MD)

Anytown Hospital
Core Measure Report: Congestive Heart Failure
Reporting Period First Quarter 2005 through First Quarter 2006

Type of Facility: Short-term
Type of Ownership: Voluntary non-profit
Accreditation Status: JCAHO

	Hospital Quality Measures	Your Hospital Performance for First Quarter 2006	Your Hospital Performance aggregate rate for all four Quarters 2005	State Average	National Average
CHF-1	Discharge Instructions	60% of 50 patients	62% of 200 patients	46%	42%
CHF-2	LVF Assessment	99% of 50 patients	88% of 200 patients	84%	88%
CHF-3	ACEI or ARB for LVSD	80% of 15 patients	85% of 98 patients	98%	79%
CHF-4	Adult Smoking Cessation Advice/ Counseling	45% of 12 patients	45% of 60 patients	98%	60%

Notes:

1. Core Measure performance is available for review through your hospital's regulatory, decision support or performance improvement office on a quarterly basis.
2. The denominator for each core measure is variable because JCAHO has different definitions for each core measure. For example, in the First Quarter of 2006 at Anytown Hospital there were 50 patients discharged with a principal diagnosis of congestive heart failure. The denominator for 'discharge instructions' and 'LVF assessment' therefore equals 50. However, only those patients who have LVSD, would quality for measurement on the 'ACEI or ARB for LVSD' measure and only those patients who have smoked within the past one year would qualify for the 'adult smoking cessation advice/counseling' measurement.
3. These reports provide the state and national average on each core measure for comparison.

SECTION THREE:
SAMPLE PERFORMANCE DASHBOARDS

Example One (Leslie Flores)

Metric	Target	Actual		Trend	Status
		Current Quarter	Previous Quarter		
Volume: Total Inpatient Encounters	4,800 or higher	3,786	3,259		
Case Mix: Medicare CMI	1.06 or higher	0.98	.099		
Patient Satisfaction: Press-Ganey "Physician Communication" score	85th percentile or higher	64%	58%		
Length of Stay: Medicare LOS for inpatient admissions with medicine DRGs	4.2 or lower	4.1	4.8		
Hospital Cost: Average cost per discharge	$3,650 or lower	3,827	3,692		
Ancillary Util.: Pharmacy unit doses per discharge	50 or lower	46	49		
Productivity: wRVUs per FTE	900	943	868		
Provider Satisfaction: "Overall Satisfaction" score on survey instrument	4.0 or higher (on 5-point scale)	3.8	2.8		
Mortality: Full-code patients expiring outside the ICU	Zero	0	2		
Readmission Rate: Percent of patients readmitted within 72 hours for same dx.	3% or lower	2.8%	2.5%		
JCAHO Core Measures: LVF assessment documented for CHF patients	98% or higher	100%	89%		

This example uses the metrics described in this report. A single performance indicator was selected for each metric. The dashboard displays the target level of performance for each indicator, and reports actual performance for both the current period and the previous period. The arrows indicate the direction of the performance trend over time: an up arrow indicates performance on this indicator has been improving over time, a right-facing arrow indicates performance is stable, and a down arrow indicates performance has been deteriorating. The final column provides a quick visual indicator of current performance for this indicator: **white** indicates that performance is at acceptable levels, **yellow** represents a warning of a potential problem that bears closer attention, and **blue** indicates unacceptable performance.

Example Two (Teresa Jones, DO)

SAMPLE HOSPITALIST DASHBOARD FIRST QUARTER 06								
	LOS	Enc/D	Cost	ACE	Readmit	Mort.	PtSat	Consult
Hosp	<4.0	≥15	<5,000	>80%	<10%	<4%	>90%	≤3
A								
B		**X**						**X**
C	**X**		**X**				**X**	
D				**X**	**X**	**X**		

Dashboard Definitions:

LOS = overall length of stay, all patients with 15 day outliers extracted
Enc/Day = encounter/day, billable encounters on days worked
Cost = dollar cost/case, CM adjusted
ACE = ACE Inhibitor, % of patients with diagnosis of CHF d/c on ACE Inhibitor
Readmit = readmission rate, 30 day readmit for any diagnosis
Mortality = observed mortality rate, % of patients who expired during hospitalization
PtSat = patient satisfaction, 90th percentile by Press Ganey
Consult = number of consults/case

This is a sample dashboard for the first quarter of 2006 listing the individual Hospitalist down the left hand side (denoted by letters A-D) with the dashboard metrics being measured across the top (with a brief descriptor directly under the metric on the dashboard along with further description given as footnotes).

In this dashboard example, when a physician meets the target metric the 'box' in that column is blank. If the physician is outside the target range for a given metric then a blue "X" is placed in the column. (noted in blue for this publication only).

A group may decide that, in certain or all categories, it is important to provide the actual number value for the metric. If this is the case, those number values outside the target range could be listed in red to draw attention to areas where improvement is needed.

Example Three (Steven Deitelzweig, MD)

The dashboard displays data reflective of Health System quality initiatives. The goal of producing a dashboard is to provide focused quality results and to report the data in various forums. Hospital Medicine is instrumental in promoting the use of best practice order sets that reduce variance and improve adherence to quality.

The purpose of the Quality Dashboard is to provide integrated oversight, visible accountability, and consistent communication. Dashboard elements were selected based on nationally recognized quality measures:

- CMS Core Measures
- IHI Best Practices
- HealthGrades Initiatives and Five Star Results
- NDNQI Magnet Measures
- NNIS Device-related Infection Targets
- JCAHO National Patient Safety Goals
- Risk Adjusted Mortality and Complications
- HEDIS Ambulatory Measures

Some data are reported monthly, and others are reported quarterly or annually. Each data point is displayed in two dimensions. One display, using color blocks, compares the one site's data to nationally recognized benchmarks. A gold color block indicates that Ochsner is meeting or exceeding the benchmark. A blue color block indicates that Ochsner is falling below the benchmark. In addition, each data point trend is compared to its previous reporting period by an arrow (T) indicating improvement, no change, or decline.

It is recommended that a committee be formed to oversee quality initiatives and provide leadership, structure and resources to systematize the approach to quality improvement within the organization.

	Measure	Current	Trend	Target
1	Actual Mortality (In-Hospital, All Ages)	2.00%	↑	2.20%
2a	Risk Adjusted Mortality Index (Adult) Actual: Expected	0.75%	↑	<1.0
2b	Risk Adjusted Complications Index (Adult) Actual: Expected	0.8%	↑	<1.0
3	Ventilator Associated Pneumonia (VAP)	0%	→	0%
4	Surgical Infection Prevention (SIP)		→	90%
5	Central Line Infections (CLI)		→	0%
6	Urinary Tract Infection (UTI)		↑	0%
7	Acute Myocardial Infarction (AMI)		→	100%
8	Pneumonia (PN)		↑	100%
9	Heart Failure (CHF)		↑	100%
10	Diabetic Acidiosis & Coma		↑	<1.0
11	Rapid Response Team (RRT)		↑	
12	Sepsis Mortality Index		→	<1.0
13	Stroke (JCAHO defined)		→	
14	Prostatectomy Complication Index		→	<1.0
15	Hip and Knee Px Complication Index		↑	<1.0
16	CABG Mortality Index		↑	<1.0
17	COPD Mortality Index		→	<1.0
18	Patient Indentification		→	100%
19	Effectiveness of Communication Among Caregivers		↑	
20	Health-Care Aquired Infections		→	0%
21	Reconcile Medications		↑	
22	High Alert Medications		→	100%
23	Medical Record Delinquency Rate		↑	<50%
24	Pressure Ulcers		→	0%
25	Falls with Injury		→	0%

Example Four (Ed Fink)
UCSD Hospital Medicine – Key Metrics 2006

Hospitalist Key Metrics: ***Hospitalist Name***

FTE: 1.0 % FY: 1

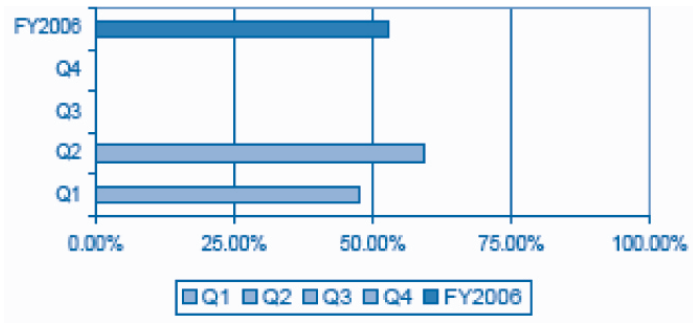
Productivity Measures	Q1	Q2	Q3	Q4	FY2006
Ward Days Worked	48	44			92
Charges - Actual	$ 56,028	46,958			$ 102,986
Gross Collections - Actual	$ 21,640	22,039			$ 43,679
Total Encounters - Act	334	294			628
wRVUs - Actual	560.41	471.44			1031.85
wRVUs/Encounter (Ind) - Act	1.68	1.60			1.64
Lag - 3 Days 50% Benchmark	47.40%	59.32%			52.72%

Hospital Medicine Key Metrics

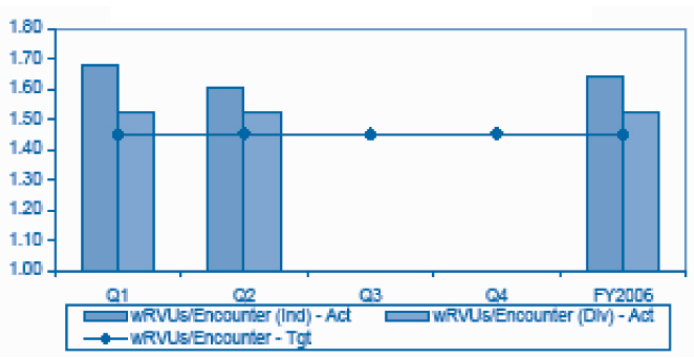
FTE: 14.9

Productivity Measures	Q1	Q2	Q3	Q4	FY2006
Ward Days Worked	630	644			1274
Charges - Actual	$ 778,740	861,133			$ 1,639,873
Charges - Budget	$ 826,736	826,736			$ 1,653,472
Gross Collections - Actual	$ 331,101	317,354			$ 648,455
Gross Collections - Budget	$ 280,289	280,289			$ 560,578
Total Encounters - Act	4,993	5,528			10,521
wRVUs - Actual	7,608.91	8,429.88			16038.79
wRVUs/Encounter (Div) - Act	1.52	1.52			1.52
Lag - 3 Days 50% Benchmark	38.14%	55.13%			46.96%

LAG - 3 DAYS 50% BENCHMARK

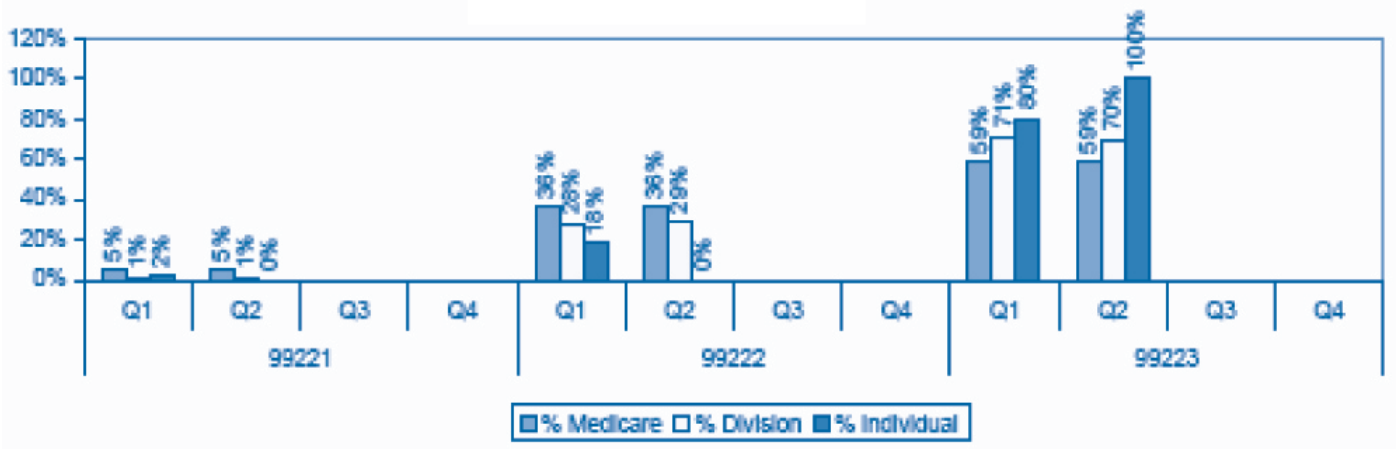


WORK RVUS PER ENCOUNTER ACTUAL VS. TARGET

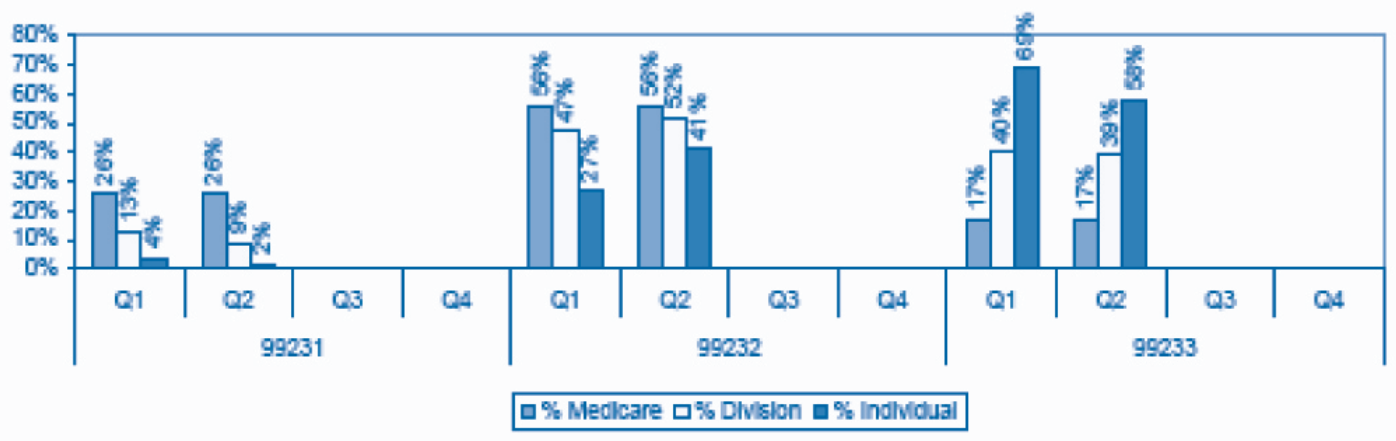


Example Four (Ed Fink)
UCSD Hospital Medicine – Key Metrics 2006

INITIAL HOSPITAL CARE



SUBSEQUENT HOSPITAL CARE



GUIDE TO THE "UCSD HOSPITAL MEDICINE – KEY METRICS" DASHBOARD

Data

FTE and '% FY' (the duration as a Hospitalist during the fiscal year) are used to calculate budget and average figures.

All data is reported by posting period – (PPD – based on the date when the charge or payment was posted)

There are two groups of data, each group having two sections (upper section).

- Groups of data
  - Individual Hospitalist data is on the left
  - Hospital Medicine aggregate data is on the right
- Sections of data
  - Days worked, by quarter, for the individual hospitalist and the group as a whole
  - Charges, gross collections, total encounters (includes all activities, such as procedures), work RVUs, work RVUs per encounter (wRVU divided by total encounters)
    - Actual – actual amounts reported individually and as a program
    - Budget – budgeted amounts

Lag data reflects percent of bills submitted within 3 days.

Charts

The charts give a visual representation of the Hospitalists billing distribution, as compared to the group and Medicare, for inpatient and subsequent visit CPT codes.

How to interpret these charts:

- The distribution percentage for the CPT ranges are calculated and presented. Medicare benchmarks are based on 2002-3003 CMS data for Internal Medicine.
- Lag day chart shows the individual hospitalist's data by quarter, and year to date.
- The work RVUs per encounter is used to smooth out the variability based on site of service and patient census and to demonstrate the level of billing in relationship to the actual number of encounters billed. This serves as an indicator of productivity. The chart shows the target rate for the group, and then the individual and group results for each quarter.

ZYVOX® linezolid injection, tablets and for oral suspension
Brief summary of prescribing information.

INDICATIONS AND USAGE ZYVOX formulations are indicated in the treatment of the following infections caused by susceptible strains of the designated microorganisms (see **PRECAUTIONS, Pediatric Use**). **Vancomycin-Resistant *Enterococcus faecium* infections**, including cases with concurrent bacteremia. **Nosocomial pneumonia** caused by *Staphylococcus aureus* (methicillin-susceptible and -resistant strains), or *Streptococcus pneumoniae* (including multidrug-resistant strains (MDRSP*)). **Complicated skin and skin structure infections, including diabetic foot infections, without concomitant osteomyelitis**, caused by *Staphylococcus aureus* (methicillin-susceptible and -resistant strains), *Streptococcus pyogenes*, or *Streptococcus agalactiae*. ZYVOX has not been studied in the treatment of decubitus ulcers. **Uncomplicated skin and skin structure infections** caused by *Staphylococcus aureus* (methicillin-susceptible only) or *Streptococcus pyogenes*. **Community-acquired pneumonia** caused by *Streptococcus pneumoniae* (including multidrug-resistant strains (MDRSP*)), including cases with concurrent bacteremia, or *Staphylococcus aureus* (methicillin-susceptible strains only). To reduce the development of drug-resistant bacteria and maintain the effectiveness of ZYVOX and other antibacterial drugs, ZYVOX should be used only to treat or prevent infections that are proven or strongly suspected to be caused by susceptible bacteria. When culture and susceptibility information are available, they should be considered in selecting or modifying antibacterial therapy. In the absence of such data, local epidemiology and susceptibility patterns may contribute to the empiric selection of therapy.

CONTRAINDICATIONS ZYVOX formulations are contraindicated for use in patients who have known hypersensitivity to linezolid or any of the other product components.

WARNINGS Myelosuppression (including anemia, leukopenia, pancytopenia, and thrombocytopenia) has been reported in patients receiving ZYVOX. In cases where the outcome is known, when ZYVOX was discontinued, the affected hematologic parameters have risen toward pretreatment levels. Complete blood counts should be monitored weekly in patients who receive ZYVOX, particularly in those who receive ZYVOX for longer than two weeks, those with pre-existing myelosuppression, those receiving concomitant drugs that produce bone marrow suppression, or those with a chronic infection who have received previous or concomitant antibiotic therapy. Discontinuation of therapy with ZYVOX should be considered in patients who develop or have worsening myelosuppression. In adult and juvenile dogs and rats, myelosuppression, reduced extramedullary hematopoiesis in spleen and liver, and lymphoid depletion of thymus, lymph nodes, and spleen were observed. **Mortality imbalance in an Investigational Study in Patients With Catheter-related Bloodstream Infections, Including Those With Catheter-site Infections.** ZYVOX is not approved and should not be used for the treatment of patients with catheter-related bloodstream infections or catheter-site infections. In an open-label investigational study in seriously ill patients with intravascular catheter-related infections, an imbalance in mortality was seen in patients treated with ZYVOX compared with vancomycin/dicloxacillin/oxacillin. While causality has not been established, mortality was higher in patients treated with ZYVOX who were infected with Gram-negative organisms alone, with both Gram-positive and Gram-negative organisms, or who had no infection when they entered the study. Patients with Gram-positive infections had no difference in mortality. ZYVOX has no clinical activity against Gram-negative pathogens and is not indicated for the treatment of Gram-negative infections. It is critical that specific Gram-negative therapy be initiated immediately if a concomitant Gram-negative pathogen is documented or suspected. *Clostridium difficile*–associated diarrhea (CDAD) has been reported with the use of nearly all antibacterial agents, including ZYVOX, and may range in severity from mild diarrhea to fatal colitis. Treatment with antibacterial agents alters the normal flora of the colon leading to overgrowth of *C difficile*. *C difficile* produces toxins A and B, which contribute to the development of CDAD. Hypertoxin-producing strains of *C difficile* cause increased morbidity and mortality, as these infections can be refractory to antimicrobial therapy and may require colectomy. CDAD must be considered in all patients who present with diarrhea following antibiotic use. Careful medical history is necessary since CDAD has been reported to occur more than 2 months after the administration of antibacterial agents. If CDAD is suspected or confirmed, ongoing antibiotic use not directed against *C difficile* may need to be discontinued. Appropriate fluid and electrolyte management, protein supplementation, antibiotic treatment of *C difficile*, and surgical evaluation should be instituted as clinically indicated.

PRECAUTIONS General Lactic acidosis has been reported with the use of ZYVOX. In reported cases, patients experienced repeated episodes of nausea and vomiting. Patients who develop recurrent nausea or vomiting, unexplained acidosis, or a low bicarbonate level while receiving ZYVOX should receive immediate medical evaluation. Spontaneous reports of serotonin syndrome associated with the co-administration of ZYVOX and serotonergic agents, including antidepressants such as selective serotonin reuptake inhibitors (SSRIs), have been reported (see PRECAUTIONS, Drug Interactions). Where administration of ZYVOX and concomitant serotonergic agents is clinically appropriate, patients should be closely observed for signs and symptoms of serotonin syndrome such as cognitive dysfunction, hyperpyrexia, hyperreflexia and incoordination. If signs or symptoms occur physicians should consider discontinuation of either one or both agents. If the concomitant serotonergic agent is withdrawn, discontinuation symptoms can be observed (see package insert of the specified agent(s) for a description of the associated discontinuation symptoms). Peripheral and optic neuropathy have been reported in patients treated with ZYVOX, primarily those patients treated for longer than the maximum recommended duration of 28 days. In cases of optic neuropathy that progressed to loss of vision, patients were treated for extended periods beyond the maximum recommended duration. Visual blurring has been reported in some patients treated with ZYVOX for less than 28 days. If patients experience symptoms of visual impairment, such as changes in visual acuity, changes in color vision, blurred vision, or visual field defect, prompt ophthalmic evaluation is recommended. **Visual function should be monitored in all patients taking ZYVOX for extended periods (≥3 months) and in all patients reporting new visual symptoms regardless of length of therapy with ZYVOX.** If peripheral or optic neuropathy occurs, the continued use of ZYVOX in these patients should be weighed against the potential risks. Convulsions have been reported in patients treated with ZYVOX. In some of these cases, a history of seizures or risk factors for seizures was reported. The use of antibiotics may promote the overgrowth of nonsusceptible organisms. Should superinfection occur during therapy, appropriate measures should be taken. ZYVOX has not been studied in patients with uncontrolled hypertension, pheochromocytoma, carcinoid syndrome, or untreated hyperthyroidism. The safety and efficacy of ZYVOX formulations given for longer than 28 days have not been evaluated in controlled clinical trials. Prescribing ZYVOX in the absence of a proven or strongly suspected bacterial infection or a prophylactic indication is unlikely to provide benefit to the patient and increases the risk of the development of drug-resistant bacteria. **Information for Patients** Patients should be advised that: ZYVOX may be taken with or without food. They should inform their physician if they have a history of hypertension. Large quantities of foods or beverages with high tyramine content should be avoided while taking ZYVOX. Quantities of tyramine consumed should be less than 100 mg per meal. Foods high in tyramine content include those that may have undergone protein changes by aging, fermentation, pickling, or smoking to improve flavor, such as aged cheeses (0 to 15 mg tyramine per ounce); fermented or air-dried meats (0.1 to 8 mg tyramine per ounce); sauerkraut (8 mg tyramine per 8 ounces); soy sauce (5 mg tyramine per 1 teaspoon); tap beers (4 mg tyramine per 12 ounces); red wines (0 to 8 mg tyramine per 8 ounces). The tyramine content of any protein-rich food may be increased if stored for long periods or improperly refrigerated. They should inform their physician if taking medications containing pseudoephedrine HCl or phenylpropanolamine HCl, such as cold remedies and decongestants. They should inform their physician if taking serotonin re-uptake inhibitors or other antidepressants. *Phenylketonurics:* Each 5 mL of the 100 mg/5 mL ZYVOX for Oral Suspension contains 20 mg phenylalanine. The other ZYVOX formulations do not contain phenylalanine. Contact your physician or pharmacist. They should inform their physician if they experience changes in vision. They should inform their physician if they have a history of seizures. Diarrhea is a common problem caused by antibiotics, which usually ends when the antibiotic is discontinued. Sometimes after starting treatment with antibiotics, patients can develop watery and bloody stools (with or without stomach cramps and fever) even as late as two or more months after having taken the last dose of the antibiotic. If this occurs, patients should contact their physician as soon as possible. Patients should be counseled that antibacterial drugs including ZYVOX should only be used to treat bacterial infections. They do not treat viral infections (e.g., the common cold). When ZYVOX is prescribed to treat a bacterial infection, patients should be told that although it is common to feel better early in the course of therapy, the medication should be taken exactly as directed. Skipping doses or not completing the full course of therapy may (1) decrease the effectiveness of the immediate treatment and (2) increase the likelihood that bacteria will develop resistance and will not be treatable by ZYVOX or other antibacterial drugs in the future. **Drug Interactions *Monoamine Oxidase Inhibition:*** Linezolid is a reversible, nonselective inhibitor of monoamine oxidase. Therefore, linezolid has the potential for interaction with adrenergic and serotonergic agents. *Adrenergic Agents:* Some individuals receiving ZYVOX may experience a reversible enhancement of the pressor response to indirect-acting sympathomimetic agents, vasopressor or dopaminergic agents. Commonly used drugs such as phenylpropanolamine and pseudoephedrine have been specifically studied. Initial doses of adrenergic agents, such as dopamine or epinephrine, should be reduced and titrated to achieve the desired response. *Serotonergic Agents:* Co-administration of linezolid and serotonergic agents was not associated with serotonin syndrome in Phase 1, 2 or 3 studies. Spontaneous reports of serotonin syndrome associated with co-administration of ZYVOX and serotonergic agents, including antidepressants such as selective serotonin reuptake inhibitors (SSRIs), have been reported. Patients who are treated with ZYVOX and concomitant serotonergic agents should be closely observed as described in the PRECAUTIONS, General Section. **Drug-Laboratory Test Interactions** There are no reported drug-laboratory test interactions. **Carcinogenesis, Mutagenesis, Impairment of Fertility** Lifetime studies in animals have not been conducted to evaluate the carcinogenic potential of linezolid. Neither mutagenic nor clastogenic potential was found in a battery of tests including: assays for mutagenicity (Ames bacterial reversion and CHO cell mutation), an in vitro unscheduled DNA synthesis (UDS) assay, an in vitro chromosome aberration assay in human lymphocytes, and an in vivo mouse micronucleus assay. Linezolid did not affect the fertility or reproductive performance of adult female rats. It reversibly decreased fertility and reproductive performance in adult male rats when given at doses ≥50 mg/kg/day, with exposures approximately equal to or greater than the expected human exposure level (exposure comparisons are based on AUCs). The reversible fertility effects were mediated through altered spermatogenesis. Affected spermatids contained abnormally formed and oriented mitochondria and were non-viable. Epithelial cell hypertrophy and hyperplasia in the epididymis was observed in conjunction with decreased fertility. Similar epididymal changes were not seen in dogs. In sexually mature male rats exposed to drug as juveniles, mildly decreased fertility was observed following treatment with linezolid through most of their period of sexual development (50 mg/kg/day from days 7 to 36 of age, and 100 mg/kg/day from days 37 to 55 of age), with exposures up to 1.7-fold greater than mean AUCs observed in pediatric patients aged 3 months to 11 years. Decreased fertility was not observed with shorter treatment periods, corresponding to exposure in utero through the early neonatal period (gestation day 6 through postnatal day 5), neonatal exposure (postnatal days 5 to 21), or to juvenile exposure (postnatal days 22 to 35). Reversible reductions in sperm motility and altered sperm morphology were observed in rats treated from postnatal day 22 to 35. **Pregnancy Teratogenic Effects. Pregnancy Category C:** Linezolid was not teratogenic in mice, rats, or rabbits at exposure levels 6.5-fold (in mice), equivalent to (in rats), or 0.5-fold (in rabbits) the expected human exposure level, based on AUCs. However, embryo and fetal toxicities were seen (see **Non-teratogenic Effects**). There are no adequate and well-controlled studies in pregnant women. ZYVOX should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus. **Non-teratogenic Effects** In mice, embryo and fetal toxicities were seen only at doses that caused maternal toxicity (clinical signs and reduced body weight gain). A dose of 450 mg/kg/day (6.5-fold the estimated human exposure level based on AUCs) correlated with increased postimplantational embryo death, including total litter loss, decreased fetal body weights, and an increased incidence of costal cartilage fusion. In rats, mild fetal toxicity was observed at 15 and 50 mg/kg/day (exposure levels 0.22-fold to approximately equivalent to the estimated human exposure, respectively based on AUCs). The effects consisted of decreased fetal body weights and reduced ossification of sternebrae, a finding often seen in association with decreased fetal body weights. Slight maternal toxicity, in the form of reduced body weight gain, was seen at 50 mg/kg/day. In rabbits, reduced fetal body weight occured only in the presence of maternal toxcity (clinical signs, reduced body weight gain and food consumption) when administered at a dose of 15 mg/kg/day (0.5-fold the estimated human exposure based on AUCs). When female rats were treated with 50 mg/kg/day (approximately equivalent to the estimated human exposure based on AUCs) of linezolid during pregnancy and lactation, survival of pups was decreased on postnatal days 1 to 4. Male and female pups permitted to mature to reproductive age, when mated, showed an increase in preimplantation loss. **Nursing Mothers** Linezolid and its metabolites are excreted in the milk of lactating rats. Concentrations in milk were similar to those in maternal plasma. It is not known whether linezolid is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when ZYVOX is administered to a nursing woman. **Pediatric Use** The safety and effectiveness of ZYVOX for the treatment of pediatric patients with the following infections are supported by evidence from adequate and well-controlled studies in adults, pharmacokinetic data in pediatric patients, and additional data from a comparator-controlled study of Gram-positive infections in pediatric patients ranging in age from birth through 11 years (see **INDICATIONS AND USAGE**): nosocomial pneumonia, complicated skin and skin structure infections, community-acquired pneumonia (also supported by evidence from an uncontrolled study in patients ranging in age from 8 months through 12 years), vancomycin-resistant *Enterococcus faecium* infections. The safety and effectiveness of ZYVOX for the treatment of pediatric patients with the following infection have been established in a comparator-controlled study in pediatric patients ranging in age from 5 through 17 years: uncomplicated skin and skin structure infections caused by *Staphylococcus aureus* (methicillin-susceptible strains only) or *Streptococcus pyogenes*. Pharmacokinetic information generated in pediatric patients with ventriculoperitoneal shunts showed variable cerebrospinal fluid (CSF) linezolid concentrations following single and multiple dosing of linezolid; therapeutic concentrations were not consistently achieved or maintained in the CSF. Therefore, the use of linezolid for the empiric treatment of pediatric patients with central nervous system infections is not recommended. The C_{max} and the volume of distribution (Vss) of linezolid are similar regardless of age in pediatric patients. However, linezolid clearance is a function of age. Excluding neonates less than a week of age, clearance is most rapid in the youngest age groups ranging from >1 week old to 11 years, resulting in lower single-

dose systemic exposure (AUC) and shorter half-life as compared with adults. As age of pediatric patients increases, the clearance of linezolid gradually decreases, and by adolescence, mean clearance values approach those observed for the adult population. There is wider inter-subject variability in linezolid clearance and in systemic drug exposure (AUC) across all pediatric age groups as compared with adults. Similar mean daily AUC values were observed in pediatric patients from birth to 11 years of age dosed q8h relative to adolescents or adults dosed q12h. Therefore, the dosage for pediatric patients up to 11 years of age should be 10 mg/kg q8h. Pediatric patients 12 years and older should receive 600 mg q12h. Recommendations for the dosage regimen for pre-term neonates less than 7 days of age (gestational age less than 34 weeks) are based on pharmacokinetic data from 9 pre-term neonates. Most of these pre-term neonates have lower systemic linezolid clearance values and larger AUC values than many full-term neonates and older infants. Therefore, these pre-term neonates should be initiated with a dosing regimen of 10 mg/kg q12h. Consideration may be given to the use of a 10 mg/kg q8h regimen in neonates with a sub-optimal clinical response. All neonatal patients should receive 10 mg/kg q8h by 7 days of life. In limited clinical experience, 5 out of 6 (83%) pediatric patients with infections due to Gram-positive pathogens with MICs of 4 µg/mL treated with ZYVOX had clinical cures. However, pediatric patients exhibit wider variability in linezolid clearance and systemic exposure (AUC) compared with adults. In pediatric patients with a sub-optimal clinical response, particularly those with pathogens with MIC of 4 µg/mL, lower systemic exposure, site and severity of infection, and the underlying medical condition should be considered when assessing clinical response. **Geriatric Use** Of the 2046 patients treated with ZYVOX in Phase 3 comparator-controlled clinical trials, 589 (29%) were 65 years or older and 253 (12%) were 75 years or older. No overall differences in safety or effectiveness were observed between these patients and younger patients.

ADVERSE REACTIONS Adult Patients The safety of ZYVOX formulations was evaluated in 2046 adult patients enrolled in seven Phase 3 comparator-controlled clinical trials, who were treated for up to 28 days. In these studies, 85% of the adverse events reported with ZYVOX were described as mild to moderate in intensity. The incidence (%)[†] of adverse events reported in at least 2% of patients treated with either ZYVOX (n=2046) or all comparators[‡] (n=2001) in these trials were as follows: diarrhea 8.3 and 6.3; headache 6.5 and 5.5; nausea 6.2 and 4.6; vomiting 3.7 and 2.0; insomnia 2.5 and 1.7; constipation 2.2 and 2.1; rash 2.0 and 2.2; dizziness 2.0 and 1.9; and fever 1.6 and 2.1 respectively. The most common adverse events in patients treated with ZYVOX were diarrhea (incidence across studies: 2.8% to 11.0%), headache (incidence across studies: 0.5% to 11.3%), and nausea (incidence across studies: 3.4% to 9.6%). The percent of drug-related adverse events in at least 1% of adult patients in a trial involving the treatment of uncomplicated skin and skin structure infection comparing ZYVOX 400 mg q12h (n=548) to clarithromycin 250 mg q12h (n=537) were 25.4 and 19.6 respectively. The percent of patients discontinuing drug due to drug-related adverse events[§] were 3.5 and 2.4 respectively. The incidence of drug-related adverse events occurring in >1% of adult patients were diarrhea 5.3 and 4.8; nausea 3.5 and 3.5; headache 2.7 and 2.2; taste alteration 1.8 and 2.0; vaginal moniliasis 1.6 and 1.3; fungal infection 1.5 and 0.2; abnormal liver function tests 0.4 and 0.0; vomiting 0.9 and 0.4; tongue discoloration 1.1 and 0.0; dizziness 1.1 and 1.5; and oral moniliasis 0.4 and 0.0 respectively. The percent of drug-related adverse events in at least 1% of adult patients in all other indications of ZYVOX 600 mg q12h (n=1498) versus all other comparators[‡] (n=1464) with at least 1 drug-related adverse event was 20.4 and 14.3 respectively. The percent of adult patients discontinuing due to drug-related adverse events[§] was 2.1 and 1.7 respectively. The incidence of drug-related adverse events occurring in >1% of adult patients were diarrhea 4.0 and 2.7; nausea 3.3 and 1.8; headache 1.9 and 1.0; taste alteration 0.9 and 0.2; vaginal moniliasis 1.0 and 0.4; fungal infection 0.1 and <0.1; abnormal liver function tests 1.3 and 0.5; vomiting 1.2 and 0.4; tongue discoloration 0.2 and 0.0; dizziness 0.4 and 0.3; and oral moniliasis 1.1 and 0.4. Other adverse events reported in Phase 2 and Phase 3 studies included oral moniliasis, vaginal moniliasis, hypertension, dyspepsia, localized abdominal pain, pruritus, and tongue discoloration. **Pediatric Patients** The safety of ZYVOX formulations was evaluated in 215 pediatric patients ranging in age from birth through 11 years, and in 248 pediatric patients aged 5 through 17 years (146 of these 248 were age 5 through 11 and 102 were age 12 to 17). These patients were enrolled in two Phase 3 comparator-controlled clinical trials and were treated for up to 28 days. In these studies, 83% and 99%, respectively, of the adverse events reported with ZYVOX were described as mild to moderate in intensity. In the study of hospitalized pediatric patients (birth through 11 years) with Gram-positive infections, who were randomized 2 to 1 (linezolid:vancomycin), mortality was 6.0% (13/215) in the linezolid arm and 3.0% (3/101) in the vancomycin arm. However, given the severe underlying illness in the patient population, no causality could be established. The incidence of adverse events reported in ≥2% of pediatric patients treated for uncomplicated skin and skin structure infections[‖] with ZYVOX (n=248) or cefadroxil (n= 251) were fever 2.9 and 3.6; diarrhea 7.8 and 8.0; vomiting 2.9 and 6.4; rash 1.6 and 1.2; headache 6.5 and 4.0; upper respiratory infection 3.7 and 5.2; nausea 3.7 and 3.2; trauma 3.3 and 4.8; pharyngitis 2.9 and 1.6; cough 2.4 and 4.0; generalized abdominal pain 2.4 and 2.8; localized abdominal pain 2.4 and 2.8; loose stools 1.6 and 0.8; localized pain 2.0 and 1.6; skin disorder 2.0 and 0.0 respectively. The incidence of adverse events reported in ≥2% of pediatric patients treated for all other indications[¶] with either ZYVOX (n=215) or vancomycin (n=101) in comparator-controlled trials were fever 14.1 and 14.1; diarrhea 10.8 and 12.1; vomiting 9.4 and 9.1; sepsis 8.0 and 7.1; rash 7.0 and 15.2; headache 0.9 and 0.0; anemia 5.6 and 7.1; thrombocytopenia 4.7 and 2.0; upper respiratory infection 4.2 and 1.0; nausea 1.9 and 0.0; dyspnea 3.3 and 1.0; reaction at site of injection or of vascular catheter 3.3 and 5.1; trauma 2.8 and 2.0; pharyngitis 0.5 and 1.0; convulsion 2.8 and 2.0; hypokalemia 2.8 and 3.0; pneumonia 2.8 and 2.0; thrombocythemia 2.8 and 2.0; cough 0.9 and 0.0; generalized abdominal pain 0.9 and 2.0; localized abdominal pain 0.5 and 1.0; apnea 2.3 and 2.0; gastrointestinal bleeding 2.3 and 1.0; generalized edema 2.3 and 1.0; loose stools 2.3 and 3.0; localized pain 0.9 and 0.0; and skin disorder 0.9 and 1.0. The percent of pediatric patients treated for uncomplicated skin and skin structure infections[‖] with either ZYVOX (n=248) or cefadroxil (n=251) and with ≥1 drug-related adverse event occurring in more than 1% of patients were 19.2 and 14.1 respectively. The percent of pediatric patients discontinuing due to a drug-related adverse event was 1.6 and 2.4 respectively. The incidence of drug-related adverse events reported in more than 1% of pediatric patients (and more than 1 patient) were diarrhea 5.7 and 5.2; nausea 3.3 and 2.0; headache 2.4 and 0.8; loose stools 1.2 and 0.8; vomiting 1.2 and 2.4; generalized abdominal pain 1.6 and 1.2; localized abdominal pain 1.6 and 1.2; eosinophilia 0.4 and 0.4; rash 0.4 and 1.2; vertigo 1.2 and 0.4 and pruritus at non-application site 0.4 and 0.0 respectively. The percent of pediatric patients treated for all other indications[¶] with either ZYVOX (n=215) or vancomycin (n=101) and with ≥1 drug-related adverse event occurring in more than 1% of patients were 18.8 and 34.3 respectively. The percent of patients discontinuing due to a drug-related adverse event were 0.9 and 6.1 respectively. The incidence of drug-related adverse events reported in more than 1% of pediatric patients (and more than 1 patient) were diarrhea 3.8 and 6.1; nausea 1.4 and 0.0; loose stools 1.9 and 0.0; thrombocytopenia 1.9 and 0.0; vomiting 1.9 and 1.0; anemia 1.4 and 1.0; eosinophilia 1.4 and 0.0; rash 1.4 and 7.1; oral moniliasis 0.9 and 4.0; fever 0.5 and 3.0; pruritus at non-application site 0.0 and 2.0; and anaphylaxis 0.0 and 10.1[#] respectively. **Laboratory Changes** ZYVOX has been associated with thrombocytopenia when used in doses up to and including 600 mg every 12 hours for up to 28 days. In Phase 3 comparator-controlled trials, the percentage of adult patients who developed a substantially low platelet count (defined as less than 75% of lower limit of normal and/or baseline) was 2.4% (range among studies: 0.3 to 10.0%) with ZYVOX and 1.5% (range among studies: 0.4 to 7.0%) with a comparator. In a study of hospitalized pediatric patients ranging in age from birth through 11 years, the percentage of patients who developed a substantially low platelet count (defined as less than 75% of lower limit of normal and/or baseline) was 12.9% with ZYVOX and 13.4% with vancomycin. In an outpatient study of pediatric patients aged from 5 through 17 years, the percentage of patients who developed a substantially low platelet count was 0% with ZYVOX and 0.4% with cefadroxil. Thrombocytopenia associated with the use of ZYVOX appears to be dependent on duration of therapy, (generally greater than 2 weeks of treatment). The platelet counts for most patients returned to the normal range/baseline during the follow-up period. No related clinical adverse events were identified in Phase 3 clinical trials in patients developing thrombocytopenia. Bleeding events were identified in thrombocytopenic patients in a compassionate use program for ZYVOX; the role of linezolid in these events cannot be determined (see **WARNINGS**). Changes seen in other laboratory parameters, without regard to drug relationship, revealed no substantial differences between ZYVOX and the comparators. These changes were generally not clinically significant, did not lead to discontinuation of therapy, and were reversible. The percent of adult patients with at least one substantially abnormal hematologic[**] value in patients treated with ZYVOX 400 mg q12h or clarithromycin 250 mg q12h for uncomplicated skin and skin structure infections were as follows: hemoglobin (g/dL) 0.9 and 0.0; platelet count (x 10^5/mm^3) 0.7 and 0.8; WBC (x 10^3/mm^3) 0.2 and 0.6; neutrophils (x 10^3/mm^3) 0.0 and 0.2 respectively. The percent of adult patients with at least one substantially abnormal hematologic[**] value in patients treated with ZYVOX 600 mg q12h or a comparator[‡] were as follows: hemoglobin (g/dL) 7.1 and 6.6; platelet count (x 10^5/mm^3) 3.0 and 1.8; WBC (x 10^3/mm^3) 2.2 and 1.3 and neutrophils (x 10^3/mm^3) 1.1 and 1.2 respectively. The percent of adult patients with at least one substantially abnormal serum chemistry[††] value in patients treated with ZYVOX 400 mg q12h or clarithromycin 250 mg q12h for uncomplicated skin and skin structure infections were as follows: AST (U/L) 1.7 and 1.3; ALT (U/L) 1.7 and 1.7; LDH (U/L) 0.2 and 0.2; alkaline phosphatase (U/L) 0.2 and 0.2; lipase (U/L) 2.8 and 2.6; amylase (U/L) 0.2 and 0.2; total bilirubin (mg/dL) 0.2 and 0.0; BUN (mg/dL) 0.2 and 0.0; and creatinine (mg/dL) 0.2 and 0.0 respectively. The percent of adult patients with at least one substantially abnormal serum chemistry[††] value in patients treated with ZYVOX 600 mg q12h or a comparator[‡] were as follows: AST (U/L) 5.0 and 6.8; ALT (U/L) 9.6 and 9.3; LDH (U/L) 1.8 and 1.5; alkaline phosphatase (U/L) 3.5 and 3.1; lipase (U/L) 4.3 and 4.2; amylase (U/L) 2.4 and 2.0; total bilirubin (mg/dL) 0.9 and 1.1; BUN (mg/dL) 2.1 and 1.5; and creatinine (mg/dL) 0.2 and 0.6 respectively. The percent of pediatric patients with at least one substantially abnormal hematologic[‡‡] value in patients treated with ZYVOX or cefadroxil for uncomplicated skin and skin structure infections[‖] were as follows: hemoglobin (g/dL) 0.0 and 0.0; platelet count (x 10^5/mm^3) 0.0 and 0.4; WBC (x 10^3/mm^3) 0.8 and 0.8; neutrophils (x 10^3/mm^3) 1.2 and 0.8 respectively. The percent of pediatric patients with at least one substantially abnormal hematologic[‡‡] value in patients treated with ZYVOX or vancomycin for any other indication[¶] were as follows: hemoglobin (g/dL) 15.7 and 12.4; platelet count (x 10^3/mm^3) 12.9 and 13.4; WBC (x 10^3/mm^3) 12.4 and 10.3 and neutrophils (x 10^3/mm^3) 5.9 and 4.3 respectively. The percent of pediatric patients with at least one substantially abnormal serum chemistry[#] value in patients treated with ZYVOX or cefadroxil for uncomplicated skin and skin structure infections[‖] were as follows: ALT (U/L) 0.0 and 0.0; lipase (U/L) 0.4 and 1.2; and creatinine (mg/dL) 0.4 and 0.0 respectively. The percent of pediatric patients with at least one substantially abnormal serum chemistry[#] value in patients treated with ZYVOX or vancomycin for any other indication[¶] were as follows: ALT (U/L) 10.1 and 12.5; amylase (U/L) 0.6 and 1.3; total bilirubin (mg/dL) 6.3 and 5.2; and creatinine (mg/dL) 2.4 and 1.0 respectively. **Postmarketing Experience** Myelosuppression (including anemia, leukopenia, pancytopenia, and thrombocytopenia) has been reported during postmarketing use of ZYVOX (see **WARNINGS**). Peripheral neuropathy, and optic neuropathy sometimes progressing to loss of vision, have been reported in patients treated with ZYVOX. Lactic acidosis has been reported with the use of ZYVOX (see **PRECAUTIONS**). Although these reports have primarily been in patients treated for longer than the maximum recommended duration of 28 days, these events have also been reported in patients receiving shorter courses of therapy. Serotonin syndrome has been reported in patients receiving concomitant serotonergic agents, including antidepressants such as selective serotonin reuptake inhibitors (SSRIs) and ZYVOX (see **PRECAUTIONS**). Convulsions have been reported with the use of ZYVOX (see **PRECAUTIONS**). Anaphylaxis, angiodema, and bullous skin disorders such as those described as Stevens Johnson syndrome have been reported. These events have been chosen for inclusion due to either their seriousness, frequency of reporting, possible causal connection to ZYVOX, or a combination of these factors. Because they are reported voluntarily from a population of unknown size, estimates of frequency cannot be made and causal relationship cannot be precisely established. **OVERDOSAGE** In the event of overdosage, supportive care is advised, with maintenance of glomerular filtration. Hemodialysis may facilitate more rapid elimination of linezolid. In a Phase 1 clinical trial, approximately 30% of a dose of linezolid was removed during a 3-hour hemodialysis session beginning 3 hours after the dose of linezolid was administered. Data are not available for removal of linezolid with peritoneal dialysis or hemoperfusion. Clinical signs of acute toxicity in animals were decreased activity and ataxia in rats and vomiting and tremors in dogs treated with 3000 mg/kg/day and 2000 mg/kg/day, respectively.

* MDRSP refers to isolates resistant to 2 or more of the following antibiotics: penicillin, second-generation cephalosporins, macrolides, tetracycline, and trimethoprim/sulfamethoxazole.

† Comparators included cefpodoxime proxetil 200 mg PO q12h; ceftriaxone 1 g IV q12h; clarithromycin 250 mg PO q12h; dicloxacillin 500 mg PO q6h; oxacillin 2 g IV q6h; vancomycin 1 g IV q12h.

‡ The most commonly reported drug-related adverse events leading to discontinuation in patients treated with ZYVOX were nausea, headache, diarrhea, and vomiting.

§ Comparators included cefpodoxime proxetil 200 mg PO q12h; ceftriaxone 1 g IV q12h; dicloxacillin 500 mg PO q6h; oxacillin 2 g IV q6h; vancomycin 1 g IV q12h.

‖ Patients 5 through 11 years of age received ZYVOX 10 mg/kg PO q12h or cefadroxil 15 mg/kg PO q12h. Patients 12 years or older received ZYVOX 600 mg PO q12h or cefadroxil 500 mg PO q12h.

¶ Patients from birth through 11 years of age received ZYVOX 10 mg/kg IV/PO q8h or vancomycin 10 to 15 mg/kg IV q6-24h, depending on age and renal clearance.

These reports were of 'red-man syndrome,' which were coded as anaphylaxis.

** <75% (<50% for neutrophils) of Lower Limit of Normal (LLN) for values normal at baseline; <75% (<50% for neutrophils) of LLN and of baseline for values abnormal at baseline.

†† >2 x Upper Limit of Normal (ULN) for values normal at baseline; >2 x ULN and >2 x baseline for values abnormal at baseline.

‡‡ <75% (<50% for neutrophils) of Lower Limit of Normal (LLN) for values normal at baseline; <75% (<50% for neutrophils) of LLN and <75% (<50% for neutrophils, <90% for hemoglobin if baseline <LLN) of baseline for values abnormal at baseline.

§§ >2 x Upper Limit of Normal (ULN) for values normal at baseline; >2 x ULN and >2 (>1.5 for total bilirubin) x baseline for values abnormal at baseline.

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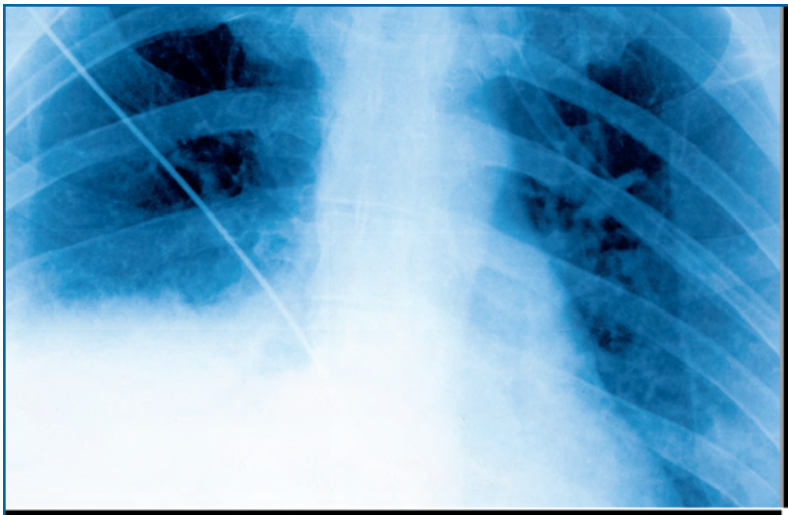

SERIOUS INFECTION

SERIOUS RESULTS

ZYVOX—proven efficacy in nosocomial pneumonia, including those due to MRSA[1-3]*

www.zyvox.com

ZYVOX is indicated in the treatment of nosocomial pneumonia caused by *Staphylococcus aureus* (methicillin-susceptible and -resistant strains) or *Streptococcus pneumoniae* (including multidrug-resistant strains [MDRSP]). MDRSP refers to isolates resistant to 2 or more of the following antibiotics: penicillin, second-generation cephalosporins, macrolides, tetracycline, and trimethoprim/sulfamethoxazole.

Myelosuppression (including anemia, leukopenia, pancytopenia, and thrombocytopenia) has been reported in patients receiving ZYVOX. In cases where the outcome is known, when ZYVOX was discontinued, the affected hematologic parameters have risen toward pretreatment levels. Complete blood counts should be monitored weekly in patients who receive ZYVOX, particularly in those who receive ZYVOX for longer than 2 weeks, those with preexisting myelosuppression, those receiving concomitant drugs that produce bone marrow suppression, or those with a chronic infection who have received previous or concomitant antibiotic therapy. Discontinuation of therapy with ZYVOX should be considered in patients who develop or have worsening myelosuppression.

ZYVOX is not approved and should not be used for the treatment of patients with catheter-related bloodstream infections or catheter-site infections.

ZYVOX has no clinical activity against Gram-negative pathogens and is not indicated for the treatment of Gram-negative infections. It is critical that specific Gram-negative therapy be initiated immediately if a concomitant Gram-negative pathogen is documented or suspected.

Lactic acidosis has been reported with the use of ZYVOX. In reported cases, patients experienced repeated episodes of nausea and vomiting. Patients who develop recurrent nausea or vomiting, unexplained acidosis, or a low bicarbonate level while receiving ZYVOX should receive immediate medical evaluation.

Spontaneous reports of serotonin syndrome associated with the coadministration of ZYVOX and serotonergic agents, including antidepressants such as selective serotonin reuptake inhibitors (SSRIs), have been reported. Where administration of ZYVOX and concomitant serotonergic agents is clinically appropriate, patients should be closely observed for signs and symptoms of serotonin syndrome such as cognitive dysfunction, hyperpyrexia, hyperreflexia, and incoordination. If signs or symptoms occur, physicians should consider discontinuation of either one or both agents.

Peripheral and optic neuropathy have been reported in patients treated with ZYVOX, primarily those patients treated for longer than the maximum recommended duration of 28 days. If patients experience symptoms of visual impairment, such as changes in visual acuity, changes in color vision, blurred vision, or visual field defect, prompt ophthalmic evaluation is recommended. Visual function should be monitored in all patients taking ZYVOX for extended periods (≥3 months) and in all patients reporting new visual symptoms regardless of length of therapy with ZYVOX. If peripheral or optic neuropathy occurs, the continued use of ZYVOX in these patients should be weighed against the potential risks.

Convulsions have been reported in patients when treated with ZYVOX. In some of these cases, a history of seizures or risk factors for seizures was reported.

To reduce the development of drug-resistant bacteria and maintain the effectiveness of ZYVOX and other antibacterial drugs, ZYVOX should be used only to treat or prevent infections that are proven or strongly suspected to be caused by susceptible bacteria. When culture and susceptibility information are available, they should be considered in selecting or modifying antibacterial therapy. In the absence of such data, local epidemiology and susceptibility patterns may contribute to the empiric selection of therapy.

The most commonly reported adverse events in adults across clinical trials were nausea, headache, and diarrhea.

IV/Oral

ZYVOX®

(linezolid)

SMART BUG. SMART DRUG.™

*Methicillin-resistant *Staphylococcus aureus*.

References: 1. Rubinstein E, Cammarata SK, Oliphant TH, Wunderink RG, and the Linezolid Nosocomial Pneumonia Study Group. Linezolid (PNU-100766) versus vancomycin in the treatment of hospitalized patients with nosocomial pneumonia: a randomized, double-blind, multicenter study. *Clin Infect Dis*. 2001;32:402-412. **2.** Wunderink RG, Cammarata SK, Oliphant TH, Kollef MH, for the Linezolid Nosocomial Pneumonia Study Group. Continuation of a randomized, double-blind, multicenter study of linezolid versus vancomycin in the treatment of patients with nosocomial pneumonia. *Clin Ther*. 2003;25:980-992. **3.** Wunderink RG, Rello J, Cammarata SK, Croos-Dabrera RV, Kollef MH. Linezolid vs vancomycin: analysis of two double-blind studies of patients with methicillin-resistant *Staphylococcus aureus* nosocomial pneumonia. *Chest*. 2003;124:1789-1797.

Please see brief summary of prescribing information on adjacent pages.