WHITE PAPER

FIND THE MAGIC NUMBER:
HOW MANY HOSPITALISTS DO YOU NEED?

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Executive Summary

As a relatively new specialty, hospitalist staffing levels are still a bit of a mystery to many hospital administrators. Get it right, and your hospital can benefit from the valuable care coordination in the inpatient units and smooth patient flow throughout the hospital system. Get it wrong, and you could find yourself unable to retain physicians, with increased length of stay or deteriorating core measures causing patient care to suffer.

This white paper takes the mystery out of hospitalist staffing by providing a way to objectively quantify demand. Taking a broader view of hospitalist services can help hospitals and staffing companies have a more accurate frame of reference for staffing. It reengineers staffing calculations from "patients per hospitalist" to a productivity measure based on the Centers for Medicare and Medicaid Services Relative Value Units (RVU) or "hospitalists per weighted RVU." The methods proposed in this white paper take into account billable minutes, working minutes and total minutes to provide a real-world approach to hospitalist staffing plans.

Optimized staffing plans can result in improvements in case mix index, reductions in length of stay, and decreases in readmissions. Such potential for impact is worthy of insightful review.

Creating a High-Performing Healthcare Organization

Today's focus on efficiency, cost-effectiveness and quality has put staffing center stage. In fact, visionary healthcare organizations are realizing that the new demands for care delivery require a macro approach in considering the services provided, focusing on clinical outcomes and improving the patient experience. This white paper explains why a new, more strategic look at hospitalist staffing can improve operational performance and reliability.

The Source of the Magic

EmCare is pioneering new models of physician services that improve value, efficiency and patient care. This requires contributions from thought leaders who proactively address issues in the industry and implement process improvements that make healthcare work better.

Why is it so hard to get hospitalist staffing right?

What is the optimal number of patients for a hospitalist to see? Is it 10, 15 or 20 patients a day? The answer is "it depends." Coming from a background of engineering, I have learned that the hardest part of solving a problem is often asking the right question. Could this be the case here? Could it be the reason hospitalists, practice managers and hospital administrators are having such a hard time with this staffing dilemma is because we are asking the wrong question?

Drill down: are we asking the right questions?

Instead of "how many patients should the hospitalist see" or "what should our in-patient census be?" the real question should be "how many hospitalists do we need to take care of our mix of patients?" Reaching the optimum staffing level for a hospital requires asking more questions and gathering more data such as:

1. What does – or should – a hospitalist do in a 12-hour shift?

2. Understanding there is not a day that goes by that a hospitalist is not "curbsided" by a physician or diverted by nursing questions. In addition, hospitalists may have multiple patient revisits and need to determine which one may be billable. What we really need to decide is "what is a reasonable level of efficiency and billable hours that can be expected?"

If we can adequately answer these questions, we can come up with "the magic number" without all the magic.

How many vs. how much

The best way to get to the right answers is to ask the right questions.

How many?

- Average daily census

How much?

- Admissions
- Patient flow management
- Procedures
- Rounding
- Consults
- Training
- Communication
- Discharge planning
- Discharges

The system for assigning RVUs is actually a bit more complex than meets the eye.

Time mapping: a day in the life of a hospitalist

Let's start by mapping what a hospitalist does in any given day. While not always the case, in most hospitals the hospitalist has many duties including admitting, ICU, procedures, etc. Not to mention the "other duties as assigned."

For this study, the following assumptions will apply:

1. The hospitalist is filling the typical "Swiss Army knife" role as a physician. He/she is working in a hospital where multiple duties such as admitting patients, running codes, rounding on floor patients, consulting on other services, seeing ICU patients and performing procedures are performed.

2. The hospitalist has a "check out meeting" with the nocturnist every morning. At that point, cross-cover issues are discussed and patients admitted overnight are handed-off and discussed. This morning meeting is conducted during the hospitalist's 12-hour shift. But the nighttime checkout meeting is done after the hospitalist's 12-hour shift is over, during the nocturnist's 12-hour shift.

3. There is usually some kind of short meeting with nursing/case management to coordinate discharge and social issues. This ensures the patient's movement through the healing process-to-discharge runs as seamlessly as possible. This can be done in a short group meeting or one-on-one, but it must be done.

4. Lunch break is taken.

5. Billing has to be done. This is usually done after or during rounding and before checkout.

6. Time is spent answering nursing questions, having meetings with family members and learning from/teaching peers by discussing cases.

Now let's determine the potential billable hours out of that 12-hour shift given the above assumptions. I will assign a reasonable time to each task with the understanding that these times will likely vary slightly at each hospital. These assumptions are based on what I have learned from thousands of hours living the schedule, observing and documenting this time.

Billable hours summary

1. Morning checkout with the nocturnist...15-30 minutes
2. Case manager/nursing coordination meeting...................................15-30 minutes
3. Lunch and coffee breaks..30-45 minutes
4. Billing coding...30-45 minutes
5. Curbsiding..30-60 minutes

Range:...120 to 210 minutes
Average time:...165 minutes
12-hours equates to:...720 minutes
720 minutes - 165 minutes = ...555 minutes

That means, in essence, an efficient hospitalist can be expected to be able to bill for a maximum of 9 hours and 15 minutes (555 minutes) in a given 12-hour shift (720 minutes).

Now, how do we reconcile the available billable time to the time spent interacting with the patients and providing services? Well, CMS has provided a foundation for that solution: the RVU and the associated time that each unit should take. Below are some examples of common billable tasks, corresponding RVUs and associated times.

The hospitalist has 555 minutes in a given day to see patients.

Description of Note	CPT Code	Total RVUs	Estimated Minutes
History and Physical	99221	2.91	30
	99222	3.95	50
	99223	5.81	70
Rounding Notes	99231	1.12	15
	99232	2.06	25
	99233	2.97	35
Hospital Discharge Encounters Discharge	99238	2.08	25
	99239	3.07	35
Consultations	99254	4.7	80
	99255	5.85	110
Critical Care	99291	6.4	70
	99292	3.22	30

Source: Centers for Medicare & Medicaid Services (CMS) National Coverage Provision

The system for assigning RVUs is actually a bit more complex than meets the eye. In addition to the estimated time or time range, the service is judged somewhat like an Olympic event giving additional
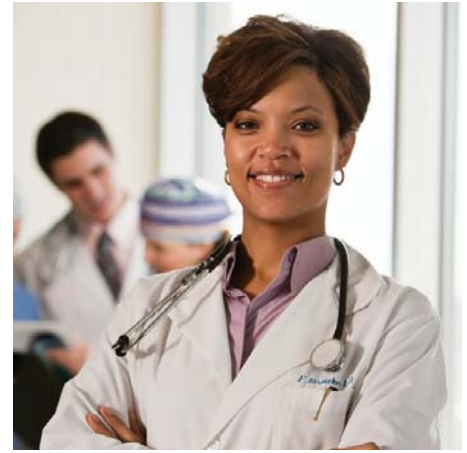
weight for the degree of difficulty. Furthermore, in addition to normal rounding, consultations, admissions and discharges, the hospitalist may perform a number of procedures which vary in time and RVUs. Below, we will use RVUs to standardize measures in order to create a reliable equation for calculating hospitalist staffing.

Standardizing the measurement and establishing a common denominator

Now that we have defined the types of activities our typical hospitalist does in a typical day, let's use this information to help us to further elucidate our questions. As determined above, the hospitalist has 555 minutes in a given day to see patients. But, how can we equate the wide variety of services that may be required of the hospitalist to the hospital's patient population? If we can take all the duties that our "Swiss Army" hospitalist is asked to perform and convert them to a standardized unit, we will have a much more accurate sense of the staffing requirement. So let's start by establishing the lowest common denominator for service based on the lowest level of service which is "rounding." Assume for a moment that our hospitalist ONLY rounds on floor patients and documents well. In reality, this may actually be the case in a large tertiary care center where there are teams of hospitalists, that do individual tasks even though most hospital medicine programs do not work that way. For purposes of creating a viable calculation, basing our calculations on rounding allows us to level the playing field.

Next, let's create a weighted average of the CPT codes for rounding to establish an average time. The most likely pattern is that about 15 percent of patients will require the lowest level of service. The rest will be split, 30 percent and 55 percent, among the top two service levels.

A "by the numbers" approach may not be the final determinant for helping your hospital achieve its mission statement, improve metrics or keep physician satisfaction and retention at desired levels. This magic number does, however, give a more accurate starting point than has been previously available for hospitalist staffing decisions.

Rounding equated to weighted average minutes

This table shows a breakdown of the typical pattern of service levels required and the associated RVUs for services associated with rounding to establish the basis of our lowest common denominator.

Services associated with rounding	CPT Code	RVU	Typical percentages of each code per day	Estimated time	Relative minutes	Weighted RVU
Subsequent hospital care (lowest level of service required)	99231	1.12	15%	15	2.25	0.17
Subsequent hospital care (higher level)	99232	2.06	30%	25	7.5	0.62
Subsequent hospital care (highest level	99233	2.97	55%	35	19.25	1.63
Totals and averages		2.05 Average RVUs			Weighted average 29 minutes	Weighted average RVUs 2.42

So, if we take the 555 billable minutes and divide by the 29 average minutes per service in this scenario, the hospitalist can see approximately 19.14 patients (555 minutes / 29 minutes = 19.14 patients).

At first glance, it may seem that we have arrived at the magic number for optimal staffing. Every hospitalist can see about 19 patients each day. So, if your average daily census is running at 19 patients, one hospitalist ought to be able to manage it. Right? Not quite. Now we need to adjust for the "Swiss Army knife" hospitalist who admits, does critical care, procedures and runs codes.

Based on our above calculations for this hospitalist who is only seeing floor patients, we have determined the following:

- The hospitalist who is only doing rounding should be able to see 19.14 patients and bill about 2.42 RVUs as a weighted average across rounding services.
- Multiplying 19.14 patients by 2.42 RVUs we get a total of 46.32 RVUs. This 46.32 weighted RVUs per day gives us the average RVUs we might expect from an efficient hospitalist.

Voila!

So now we have it! The magic number ... or at least the magic formula. We can simply use the hospital's billing data to make our calculations.
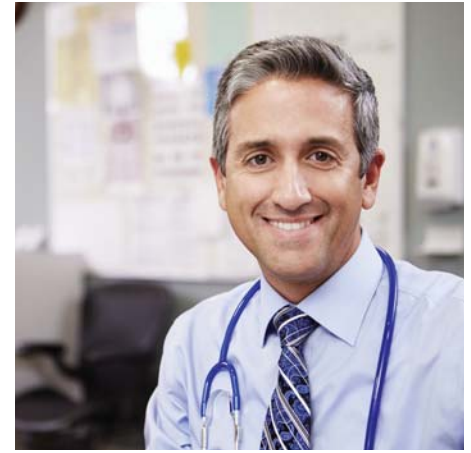
To cope with the variations in required services, it is not unrealistic to ask the providers to stretch for a day or two and allow them extra time for administrative tasks or training on less demanding days.

In essence, to determine how many hospitalists are needed, take the total RVUs generated by the hospitalist team on average each day divided by 46.32 to find the magic staffing number.

$$\frac{\text{Hospital Medicine Average Daily RVUs}}{46.32} = \text{\# of Hospitalists Needed}$$

Of course, as mentioned earlier, there are many factors that go into hospitalist staffing plans. Use of advance practice professionals, case mix and more can impact the actual number of hospitalists needed.

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Testing the theory

Any good engineer will want to test the theory. So, let's step back and see if it makes sense. Let's start by developing a sample hospital and capturing a day in the inpatient unit:

Is this sample hospital staffed correctly? Let's see. Let's look at the typical day in this inpatient unit and review it based on RVUs.

Description:

- 150 bed hospital
- 10 bed ICU
- 30,000 annual E.D. visits
- 10 percent admit rate to hospitalists' care
- Inpatient length of stay: 3.5 days
- Starting census: 20 floor patients and 6 ICU patients
  (Total Census: 26)
- Staffing: 2 hospitalists per day and one APP/mid-level (sees maximum of 12 patients/day)
- Average daily admits: 4 (not including nights)
- Consults: 2/day
- Discharges: 3/day
- Not counting procedures, central lines, codes, intubations, etc.

> There are many factors that go into hospitalist staffing plans. Use of advance practice professionals, case mix and more can impact the actual number of hospitalists needed.

The staff complains of being overworked. A hospitalist should be able to see 19 patients, right? The census is only 26. There are two hospitalists and an APP/mid-level. This seems way over-staffed, not under-staffed. Shouldn't we be able to do this with one hospitalist and an APP/mid-level?

Service	CPT	# of Services	RVUs	Total RVU Per Service
Rounding (Rounding on 20 floor patients equates to an average of 2.42 RVUs)	99231	3	1.1	3.3
	99232	6	2.03	12.18
	99233	11	2.92	32.12
ICU / Critical Care	99291	6	6.26	37.56
H & P (medium)	99222	4	3.88	15.52
Consults (high)	99255	2	5.67	11.34
Discharges	99239	3	3.01	9.03
Total RVUs				121.05

Recapping the calculations, we determined that a hospitalist with 555 billable minutes in a 12-hour shift should be able to generate 46.32 RVUs per day. So, to manage the 121.05 RVUs of service completed in this day would require 2.6 hospitalists (121.05 / 46.32 = 2.61) per day. In this case, we can further assume that the APP/mid-level can see 12 floor patients/day or 12 x 2.236 RVU = 26.83 RVUs.

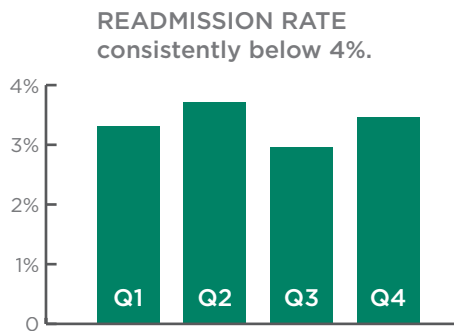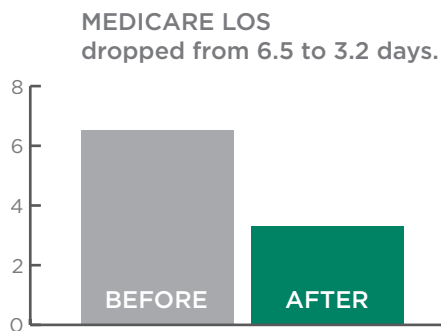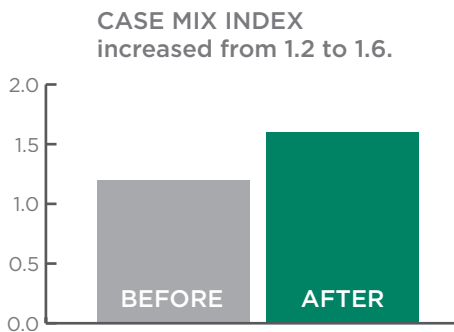| Staffing	Optimal	Actual
Hospitalist 1	46.32	47.11
Hospitalist 2	46.32	47.11
APP/Mid-Level	26.83	26.83
Total	119.47	121.05

So, comparing the 121.05 RVUs in a typical day against a capacity of 119.47 RVUs with the current staff, the staffing model is very close to optimal at this hospital. It is not overstaffed, and is just about the maximum for this staffing model.

It's also important to note that not every day is the same. To cope with the variations in required services, it is not unrealistic to ask the providers to stretch for a day or two and allow them extra time for administrative tasks or training on less demanding days. If, however, the RVU demands decline or increase beyond the current staffing — either based on clinical indicators or human resources indicators — adjusting the number of hospitalists or APP/mid-level providers may be the correct answer.

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Actual Results When Using EmCare "Magic Number" Calculator

CASE MIX INDEX
increased from 1.2 to 1.6.

MEDICARE LOS
dropped from 6.5 to 3.2 days.

READMISSION RATE
consistently below 4%.

If there is a difference in the optimal calculated RVUs and the actual RVUs generated by the hospitalists, then one should further analyze the disparity. Make sure that the hospitalists are documenting what they are doing. Identify potential drains on hospitalists' time. Weigh the pros and cons of changing staffing levels.

The magic number and other revelations

Now, we have a simple formula to answer our questions: What is the magic number? How many hospitalists do we need? What is the ideal staffing level?

Using a little logic, supporting data and real-world experience, we now have a simple formula to help us answer our questions. Every hospital has its own ideal staffing and therefore its own magic number. By using the above outlined analysis one can easily find the magic number for ideal staffing levels for every hospital.

The key point here is that when you find your magic number, wonderful things can happen. I've seen many cases where corrections to the staffing plan led to improvements such as:

- Case mix index increasing from 1.2 to 1.6. With appropriate staffing the acuity did go up, but not to the level illustrated by a 0.4 increase in case mix index. Therefore, we are left to surmise that this increase is mainly due to appropriate documentation thanks to the hospitalist having sufficient time to document more appropriately.

- Medicare length of stay dropped from 6.5 days to 3.2 days with a re-admit rate consistently below 4 percent.

EmCare's handy Hospital Medicine Staffing calculator makes it easy to find the Magic Number. Simply enter the average number of daily encounters for your hospital, and the calculator will estimate your staffing needs.

Here's an example of how it works:

DISCLAIMER: The following offers a simplified method for calculating estimated impact of various changes in data. EmCare does not make any guarantees relative to the potential results, sample numbers or calculations. You should consult a professional before relying on any data derived from this calculator.

Hospital Medicine Staffing - The Magic Number

Not every encounter is created equal which can make staffing for hospital medicine quite a mystery. While many factors should be considered when determining the staffing model for your hospital medicine group, this simple tool can help estimate staffing needs by making appropriate adjustments to align encounters to the "floor patient equivalent" (FPE).

INSTRUCTIONS: Using the gray shaded areas, simply enter the total number of encounters you may expect your hospitalists to complete for each procedure code in any given day.

Hospital Medicine Staffing Model Calculator

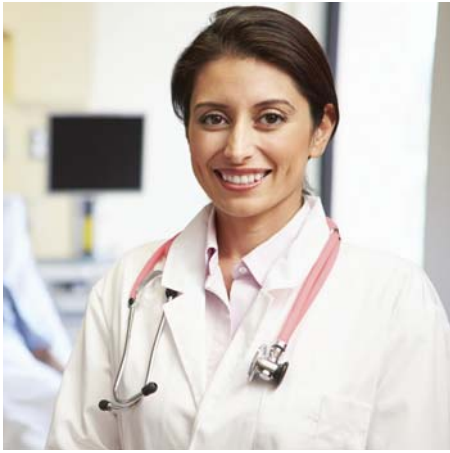| Service	CPT© Code	Total RVUs	Average Number of Encounters (Daily)
History and Physical	99221	2.87	0
	99222	3.88	4
	99223	5.71	0
Rounding Notes	99231	1.1	3
	99232	2.03	6
	99233	2.92	11
Hospital Discharge Encounters	99238	2.03	0
	99239	3.01	3
Consultations	99255	5.67	2
Critical Care	99291	6.26	6
	99292	3.16	0
Staffing with Physicians		Your magic number:	2
How many Mid-Levels?			1

Please note: RVUs may vary due to a number of factors including down-coding and collections. This tool may not correlate perfectly with your RVUs.

CPT codes are copyright 2014 American Medical Association.

Hospital Medicine Staffing Model Calculator

To make it easy, use the Hospital Medicine Staffing Model Calculator based on this logic. Simply plug in the total encounters for the hospital medicine group to see a recommended staffing model to meet your hospital's needs. You may also adjust the number for the addition of APP/mid-level providers.

Calculate your own magic number. Follow this link to download the EmCare calculator.

The healthcare industry likely has one of the most complicated cost/benefit models to analyze. There are many intangible factors that result in other long-term costs. The increasing trend of hospitals moving from community-based independent practitioners to hospitalists brings great opportunities to reduce variations in care, but requires careful consideration of optimal physician utilization. With physicians at the heart of patient care, stability in all areas of care, quality and efficiency generally stems from achieving the correct staffing model for the hospital.

Conclusion

So what have we learned? Arriving at the magic number doesn't take magic. It only requires taking a deeper look at certain questions. Not every encounter is created equal, which can make staffing for hospital medicine quite a mystery. While many factors should be considered when determining the hospital medicine staffing model, aligning encounters to the weighted RVU equivalent helps standardize the inputs so that an appropriate calculation can be made. Improvement in patient care and overall performance is the ultimate goal, and appropriate staffing is one of the factors that can help the hospital achieve its goals.

EmCare's Hospital Medicine Staffing Model Calculator is just one more way EmCare is … making healthcare work better™.

Every hospital has its own ideal staffing and, therefore, its own magic number.

Note: The 46 RVUs calculated in this white paper are for illustration purposes only and will differ at each hospital as the demands for each hospital group varies. Also, the RVUs in this white paper are calculated using 2014 total RVUs, not working RVUs.

About the author

Nathan Goldfein, M.D. is vice president of hospital medicine integration for EmCare Hospital Medicine and is the director of the Hospital Medicine program at Gerald Champion Regional Medical Center in Alamogordo, N.M. Dr. Goldfein graduated from University of Arizona College of Medicine in 2005 and finished his residency in internal/hospital medicine at the University of New Mexico in 2008. His undergraduate degree is in mechanical engineering and manufacturing. Prior to pursuing medical school, Dr. Goldfein worked in manufacturing, experience which provides him an exceptional understanding of how to mix business, technology and medicine to create the best experiences and outcomes for patients while improving process efficiency and physician satisfaction. He holds more than eight patents and is the inventor of more than 100 additional products and programs. Additionally, he is the architect of EmCare's revolutionary Rapid Admission Process and Gap Orders™, or RAP&GO™, evidence-based software; RAP&GO is designed to improve communication between E.D. physicians and hospitals and expedite inpatient admissions from the E.D. which reduces E.D. boarding time and lengths of stay.

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EmCare is a leading national physician practice management company and provider of clinical department outsourcing services, including physician recruiting, credentialing, scheduling, enrolling, leadership, training and education, and billing for nearly 1,000 hospitals nationwide.

EmCare clinicians participate in more than 12 million patient encounters annually. The company focuses on helping each client with efficiency, quality of care and creating outstanding patient experiences, all with an eye on enhancing the hospital's financial performance.

In short, EmCare is *making healthcare work better*™.

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