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Workload Models

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Introduction

The ability to predict and measure workload is an integral part of running a successful hospitalist program. It has major implications on projecting staffing needs, maintaining equitable and sustainable scheduling, and predicting appropriate compensation levels.

Traditionally, there has been little emphasis placed on this type of measurement in medicine. This may in part be the result of the prevailing compensation mechanisms for physicians which up to recently have primarily been based on a fee-for-service model[i]. Unlike other salaried healthcare workers, physicians have traditionally been paid for each service they provide, such as an office visit or a medical procedure. In such a model, an individual's compensation is directly related to the volume of services rendered. As a result, individual physicians can potentially have complete control over their workload, as they are the ones who will be directly affected financially as a result of the level of workload they choose. In other healthcare disciplines where income has traditionally been salary-based, measuring workload has been an important subject. For example in nursing various workload models have been in existence for many years[ii].

Another possible reason for why measuring workload has not been an important issue amongst physicians is society's ethical and professional expectations of them. In medicine, physicians are expected to provide high levels of patient care with a high degree of responsibility. They are expected to continually maintain knowledge of the latest technological and scientific advances, and their level of performance is always under close review by consumer organizations, governing bodies and the society at large. As a result, they are expected to provide services for as long as there are patients that need to be looked after. The physician folklore is full of stories of physicians who always put in extra time, sometimes working for 24, 36 or even longer hours without rest in order to complete the work that needed to be done. As a result, the issue of measuring workload and its association with compensation has not always been a top priority for physicians.

Recognizing the importance of workload measurement

Over the past two decades, compensation models have undergone many changes. While the fee-for-service model continues to be the most prevalent for Canadian physicians, more and more physicians are now paid through other mechanisms such as salary, capitation and blended systems. The 2007 National Physician Survey revealed that 48% of Canadian physicians were primarily paid through fee-for-service, while another 31% were paid through a blended model, and smaller numbers through other mechanisms[iii]. This is even more prevalent amongst

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Canadian hospitalists: only 19% of hospitalists in the same study were paid solely through fee-for-service, while the majority was compensated in a blended model.

There has also been a significant change in attitudes amongst newly graduated physicians. New graduates put more emphasis on quality of life issues and work-life balance compared to previous generations[iv], and this new attitude has had an important impact on medical students' career choices[v]. Medical school curricula place a stronger emphasis on teaching their graduates about a healthy work-life balance. Residency training programs have also undergone changes, with increasing limits on length of on-call shifts and their frequency. All of this has resulted in a culture shift in medicine, and the issue of fair, sustainable and equitable workload has become more important for many physicians.

Utility of workload models in Hospital Medicine

The Hospitalist model that has developed in North America over the past decade has many unique features that set it apart from many other areas of medicine. Unlike most other specialties, hospital medicine is a "site-based" specialty and in fact is defined by the environment within which its practitioners operate. This is similar in many ways to Emergency Medicine, another "site-specific" specialty that shares many features with Hospital Medicine. In both, practitioners are required to adapt to the many challenges that working in such an environment brings, such as:

- collaborating with hospital administrators who control the funding and day-to-day operations of the hospitals (and have a culture and training that can be very different from that of physicians);
- working with unionized healthcare workers whose performance and productivity are crucial to the success of the physician's work, and yet who are employees of the hospital and their staffing is completely beyond the control of the physicians (for the most part, physicians have limited say in other health professionals' staffing criteria);
- issues surrounding resources (equipment, adequate staffing), where the physician's needs for latest technologies may not be in alignment with that of administrators who need to be aware of costs of such technologies;
- restrictions placed by administrators on physicians such as codes of conduct, limits on information technology choices (physician groups cannot simply choose any IT solution they require, and their choices are limited to programs that interface with the hospital's existing systems), risk management strategies (many hospitals are acutely worried about risks, and their strategies to minimize such concerns may at times be in contrast to physicians' risk management needs);

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- global pressures on the hospitals (budgetary, pay-for-performance, public reporting, national and regional quality and patient safety initiatives, public-relations and patient expectations) that can filter down from the board of the hospital to all the executive and medical staff.

Such pressures create a unique environment for hospital-based physicians to operate in, one that many clinicians are not accustomed to or trained for. In order for hospitalists to be successful, they need to learn and utilize skills that are not necessarily directly related to patient care, such as management skills, finance, economics, risk management, resource utilization, human resources and public relations. In such an environment, collecting and analyzing various forms of data, such as utilization measures (Average Length of Stay, readmission rates, cost per admission and the like) become crucial for hospitalists when working with the hospital administrators. Workload measurement thus becomes an important data point that can help hospitalists address many of the challenges described above.

Another reason why measuring workload is important for a hospitalist program is in its application to scheduling (for more on scheduling, see our white paper *Hospitalist Scheduling: how can a balance be reached?*)[vi]. Unlike many other specialists, a hospitalist's daily schedule is very unpredictable. A patient's condition can deteriorate rapidly and unpredictably, and the number of consultation requests and admissions from the Emergency Department can be variable. The unpredictable nature of a hospitalist's schedule means that the amount of work that needs to be done varies significantly from day to day, and also between practitioners within the same program. This becomes an important (and potentially contentious) issue in programs where all members of a hospitalist group are paid an equal salary (whether annually or hourly).

Ensuring that everyone works the same "amount" for the same "pay" is an important responsibility for a hospitalist program leader. This is true as by and large, the majority of hospitalists programs have compensation models that are a blend of fee-for-service and stipends. This is particularly true in Canada where the inpatient visit codes grossly undervalue the work done by clinicians[vii]. Indeed, most hospitalist programs are only able to recoup 30-50%f their costs through billings, and rely on "top-up" stipends from other sources to complement the income generated through fee-for-service mechanisms. In order to be financially viable, hospitalists need to maximize their billings while ensuring that their "top-up" is distributed fairly amongst their members. Measuring workload is a crucial step in this process.

Finally, workload tools can be used to predict staffing needs. Utilizing workload models can allow both hospitalists programs and hospital administrators predict their staffing needs based on current and anticipated workloads. In such a way, programs can plan appropriately in order to ensure program sustainability and avoiding physician burn-out. A review of the growth trajectory

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of many hospitalist programs highlights 'staffing" as one of the most important challenges facing many programs.

In the United States, most programs began in an effort to address increasing costs of patient care delivery[viii]. In developing hospitalists programs, hospital administrations saw the promise of reducing costs, while enhancing quality and patient safety. In Canada the main driver for hospitalist programs was the mass migration of family physicians - who had traditionally provided the majority of inpatient care - from hospitals [ix]. Because of inadequate re-numeration, and an increasing demand in their offices (increasing patient volumes, and increasing medical complexity and a higher burden of chronic illnesses) many family physicians found it difficult to sustain their hospital practice. This resulted in an unprecedented number of "unattached" patients presenting to hospitals, and the administrations had to find a way to address this problem. Like in the United States, they turned to hospitalists as a potential solution.

In both the United States and Canada, hospitalists not only took part in patient care, but also became involved in administrative duties and helped their hospitals develop and implement various programs and initiatives. This form of close physician-administrator collaboration had largely been unprecedented in the more traditional models. While the initial scope of practice was limited to caring for acute medical patients, hospitalists soon found themselves involved in co-management (with surgeons and psychiatrists), outpatient follow up clinics, intensive care units and code blue coverage. With the acuity creep, and the increasing administrative demands, many hospitalist programs saw their staffing needs increase.

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Overview of existing models

Various workload models have been proposed in the past decade to address some or all of the issues described in the previous section. However while many programs use models of varying complexity, very few of these have been formally described in the literature. The majority of these models have been presented in hospitalist meetings and leadership courses, such as the Society of Hospital Medicine Leadership course and the Canadian Society of Hospital Medicine annual meeting. Many individual programs have over the years devised their own models, in an effort to address their local needs, and as such many of these models and tools may not be available to the general hospitalist community.

US Models

Three major models have been described in the United States[x]. The majority of these models focus on addressing the question of "staffing", and aim to provide managed care programs and hospital administrations with tools to predict their staffing requirements. All the US model are based on estimation of annual workload (usually in "hours worked per year"), which is then divided by the number of hours a full-time equivalent hospitalist can work in a year. The major differences between these models lie in the assumptions that such calculations are based on.

The Nelson Model [xi]

The Nelson Model, proposed by John Nelson, co-founder of the Society of Hospital Medicine, uses individual hospitalists' census (i.e. the number of patients looked after by a hospitalist every day) and length of stay (LOS) to estimate the number of admissions or consultations performed by an individual hospitalist every day. It uses the following formula:

Daily admits/consults X LOS = daily census.

Assuming an average census of 10 patients per hospitalist, and an LOS of 5 days, each hospitalist would perform 2 admissions or consultations every day. Multiplying this number by 365 days means that an individual would perform 730 admissions per year. By knowing the total annual number of admissions and consultations performed in the hospital, for example 3000, one can derive the number of FTE's needed, in this case 4.1 (i.e. 3000 divided by 730).

The limitations of this model are that it does not include any complexity measures, and assumes that all consults are equal in complexity and time required to perform. It also does not take into account time spent on administrative duties, or weekend or night coverage. In order to account

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for this, Dr. Nelson recommends dividing the admissions/consults annually by 500-800 to give a range of FTE required to provide seven-day/week coverage.

The Wachter-Lurie Model[xii]

This model uses length of stay (LOS) and total annual admissions to calculate the average daily program census (i.e. the total number of patients looked after by the hospitalist *program*, not the *individual*). It uses the following formula:

Daily census= annual admissions X LOS / 365

Once the *program* census is derived, the FTE calculation is done by dividing this number by the average *individual* hospitalist census. This last data point is based on annual hospitalist surveys (at the time of the publication of the model, surveys showed the average individual census to be around 10 patients per hospitalist). The model recommends adding 1 FTE in order to account for nights and weekend coverage to the results of the above calculations.

The Hoffey Model[xiii]

This model is based on calculating the hours worked in a year by an individual hospitalist, and is based on a few fixed assumptions. It assumes that each hospitalist works

- 5 days per week,
- 46 weeks per year,
- has a 10 hour work day,
- only 6.5-7.5 hours of this is spent in direct clinical care
- spends 2.56 clinical hours per admission or consultation

Based on the above assumptions, one can estimate the number of FTEs required by multiplying the number of annual admissions and consultations provided by the *program* by 2.56 (which gives the total number of hours of patient care required from *all hospitalists*), and then dividing this by 1610 hours (which is the number of direct patient care provided by an *individual* hospitalist based on the above assumptions).

The major limitations of this strategy is that it is based on various assumptions that may not be applicable to various circumstances, and that it does not take into consideration the time required for inpatient rounding. For example, the time required for a consult (i.e. 2.56 hours) may be

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much higher than what is encountered in many institutions. Similar to all of the other US models, it also does not take complexity into account.

Canadian Models

Unlike the US models, less is known about workload models used in Canada as descriptions of these models in the literature are scant. Some of these models have been presented in meetings and shared informally amongst interested parties. As a general rule, the Canadian models are more closely tied to compensation and are less focused on calculating staffing needs. These models have developed independently in various provinces in an effort to address the need for proper compensation for physicians.

The majority of hospitalist programs use an hourly remuneration rate. As a result, the models generally specify a set number of patients that should be seen in an hour or in a given day. For example, the model used in Alberta requires that hospitalists see three patients per hour. As such the models translate the daily census of an individual into a required number of hours of work, which is then compensated based on predefined rates. For example, if a hospitalist has 12 patients to look after, he or she would be expected to do this job in 4 hours (given that the expectation is for seeing three patients per hour), and so he or she will be compensated for three hours of work. Most models also envision contingencies for extra work as a result of unforeseen complexities (such as critically ill patients requiring more attention, or family meetings) as well as additional patients above the daily cap.

Other models, mostly designed in Ontario, rely on billing data to measure workload. These models track the billing practices of hospitalists, and assign a defined unit of work to each billing code. For example, an admission billing code may be given more units of work than the billing code for daily inpatient rounding. In this way, billing codes are used as a proxy measure of the amount of work required to perform various tasks, such as an admission/consultation, inpatient rounding, discharge to home, family meetings and various medical procedures. Since each service code is given a different weight, some degree of complexity is built into such models.

However limited data exists on the validity of assigning various work units to different billing codes. Additionally, the accuracy of these models relies on appropriate billing practices, which is frequently a challenge in many programs as many physicians simply do not bill properly for the services they provide, especially if there are no direct financial incentives for them to do so (i.e. the physicians do not get reimbursed –at least partly- based on their billings, and only received fixed hourly or yearly wages). Lastly, many of these models lack the ability to predict future workload requirements in a dynamic fashion.

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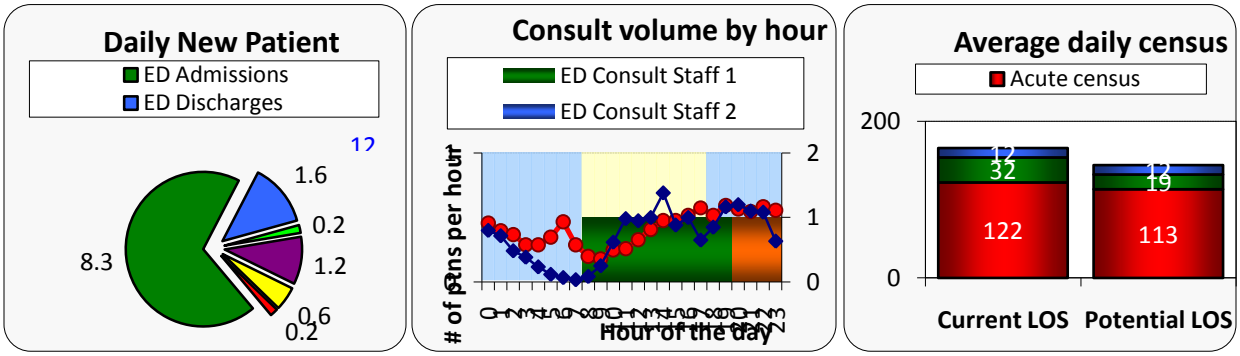
Introducing the HCS Workload Management Tool ™

The Hospitalist Consulting Solutions Workload Management Tool™ allows hospital administrators and hospitalist leaders to make important decisions based on objective data. It provides them with the ability to measure and track their workload, and make appropriate changes to their programs by anticipating the future based on past performance and historical trends. It is designed specifically for hospitalist programs, with the following unique features:

- It provides a detailed analysis of the ER-Hospitalist interface. This allows programs to accurately study the workload associated with Emergency room consults, and allows for appropriate ER staffing. This important feature will allow hospitals to reduce their ER wait times and significantly improve ER throughput.
- It takes into consideration various patient complexity and acuity factors providing a reflection of workload associated with different in-patient populations.
- It allows hospital administrators and hospitalist programs leaders to accurately predict the exact workload that will be carried out by individual hospitalists, such as ER consults and admissions, inpatient rounding, patient co-management and administrative duties.
- It allows hospitals to accurately predict their staffing needs based on their own unique patient populations and hospital needs.



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Conclusions

Measuring and tracking workload is an important part of managing a successful hospitalist program. Many of the most important challenges that hospital and program leaders face, such as staffing, scheduling and compensation are directly tied into the ability to measure the amount of work being done, and workload models can provide this important information to the stakeholders.

In many programs, viability and sustainability depends on avoidance of physician burn out and continuous recruitment and retention of candidates. The ability to measure workload can ensure that programs are staffed appropriately, based on valid calculations that can also enable hospitals to anticipate future staffing requirements in response to changes in hospitalists' scope of activity. For example, a program that is considering expanding into surgical co-management can use a workload tool to anticipate the number of FTE's required to provide additional coverage for this activity. Based on these projections, hospitals can adjust their recruitment strategies ahead of any potential expansion.

Workload measurement can also help ensure fair and equitable compensation, which in itself is an important factor in attracting physicians and ensuring the sustainability of a program. Based on our experience, many programs run into trouble when they are unable to attract physicians, and this inability can result in a situation where the workload of existing staff increases to the point where physician burn out results in more loss of manpower, making it difficult for the hospital to attract candidates and thus creating a vicious cycle that can ultimately results in the collapse of the program.

Various models have been proposed, each with their strengths and weaknesses. While the needs of each hospitalist program are different, it is vitally important for hospitalist leaders and their hospital administrators to be able to measure and track workload in order to respond to various challenges that arise over time.

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References

[i] Maureen Conlon, Zen Tharani. *The Implementation of a physician workload system in an academic health care setting: The Physician Activity Information System.* British Columbia Medical Journal 2008 (10): 565-570
[ii] Sandra R. Edwardson, Phyllis B. Giovannetti. *Nursing Workload Measurement Systems.* Annual Review of Nursing Research 1992 (12): 95-119
[iii] National Physician Survey. College of Family Physicians of Canada, Canadian Medical Association, Royal College of Physicians and Surgeons of Canada; *C[2007]. A*vailable from: ***www.nationalphysiciansurvey.ca***.
[iv] Alice Hohl. *Work-life balance is priority for younger physicians: survey*. April 27, 2009. Modern Physicians Online. http://www.modernhealthcare.com/article/20090427/MODERNPHYSICIAN/304199976
[v] Jack S. Resneck Jr. *The Influence of Controllable Lifestyle on Medical Student Specialty Choice.* Virtual Mentor 2006(8): 529-532.
[vi] Hospitalist Consulting Solutions. *Hospitalist Scheduling: how can a balance be reached?* http://www.hospitalistconsulting.com/docs/hospitalist%20scheduling%20part%20one.pdf
[vii] Anna Day, Leslie MacMillan. *The Neglect of the Inpatient: the Hospitalist Movement in Canada Responds.* Hospital Quarterly 2001: 36-41.
[viii] Robert Wachter. *The state of Hospital Medicine in 2008*. Medical Clinics North America 2008(92): 265-273
[ix] P Sullivan. *Enter the hospitalist: new type of patient creating a new type of specialist*. Canadian Medical Association Journal 2000; 162 (9): 1345-1346
[x] Society of Hospital Medicine. *Hospitalist Staffing Requirements*. http://www.hospitalmedicine.org/AM/Template.cfm?Section=Practice_Resources&Template=/CM/HTMLDisplay.cfm&ContentID=14227
[xi] See above
[xii] Jon D. Lurie, Robert M. Wachter. *Hospitalist Staffing Requirements.* Effective Clinical Practice.1999, 2 (3):126-30
[xiii] See reference x

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