SHORT COMMUNICATION

Effective management of hospitalized patients – established role of hospitalists in the USA.

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Abstract

Objectives: **Summarize and present benefits of effective management of inpatients in US hospitals by hospitalists and discuss the possible implications for healthcare system in Slovakia.**
Background: **Inpatient or hospital-based internal medicine started to separate from traditional office-based medicine about a decade ago. Today, hospitalist programs are an integral part of most progressive hospitals in the US and the value of such programs is well documented.**
Methods: **Literature review and analysis of Mercy Medical Center – North Iowa hospitalist program.**
Results: **Hospitalists improve the quality of care for hospitalized patients, use fewer resources and decrease the length of stay. In 1998 there were 2,000 hospitalists and in 2005 there were more than 15,000 hospitalists in more than 1,800 programs throughout the US. It is projected that by the end of the decade there will be more than 30,000 hospitalists in the US. Mercy Hospital started its hospitalist program in 1999 with one hospitalist and by July 2006 the program will expand to six physicians. The average daily census for a hospitalist is 20 patients and the average length of stay is 3 days. In 2003, with 874 median new admits and consults per year per hospitalist, one hospitalist was able to save approximately $400,000/year compared to the traditional internal medicine model.**
Conclusion: **Hospitalists are the fastest growing specialty in the US. In addition to the care of medical illnesses including subspecialty and surgical consults, hospitalists also serve as stewards of hospital systems. They improve quality, patient safety, efficient use of resources and reduce variation in diagnostic and therapeutic approaches *(Tab. 2, Fig. 3, Ref. 10)*.**
Key words: hospitalist, patient safety, Mercy Medical Center – North Iowa.

Hospital medicine is the fastest growing medical specialty in the United States and it focuses on the treatment of hospitalized patients. The movement towards creating hospital medicine in its current form started early in the1990s and was driven by need for specialists able to take care of the entire patient. Today the field of hospital medicine is moving rapidly towards recognition as a separate medical specialty.

Methods

Literature review and data analysis provided from the Hospitalist Program at Mercy Medical Center – North Iowa, Mason City, Iowa, USA.

Results

The term "Hospitalist" was introduced by Robert Wachter, MD, in the 1996 New England Journal of Medicine (1). Hospitalists are physicians whose primary professional focus is the general medical care of hospitalized patients. Their activities include patient care, teaching, research and leadership to hospital care. Hospitalists also consult on and treat patients referred by medical subspecialists during their hospitalization. About 83 percent of practicing hospitalists are trained in general internal medicine and another 5 percent in an internal medicine subspecialty, such as pulmonary or critical care. Three percent are trained

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Tab. 1. Annual survey comparison between Hospitalists and Nonhospitalists Length of Stay (LOS) and mean costs (in USD) (Source: Kaboli et al, 2004).

	Hospitalists	Nonhospitalists	Difference	P-value
Mean LOS (days)	5.5	6.5	-1.0	.009
Mean total cost	7694	8611	-917	.080
Mean nursing costs	2610	3205	-604	.002
Mean laboratory costs	834	960	-126	.040
Mean pharmacy costs	1179	1307	-128	.270
Mean radiology costs	672	664	+8	.900
Mean costs per day	1476	1354	+122	.003

in family practice and the remaining 9 percent are pediatric hospitalists trained as general pediatricians (2). There are approximately 15 000 hospitalists in the US today and the number is expected to be as high as 30 000 by the end of the decade. Utilizing data from the 2003 Annual Survey of the American Hospital Association it was reported that 71 % of hospitals with 500+ beds, 55 % hospitals with 200+ beds and 45 % with 100 or more beds have hospital medicine programs (2). Studies have shown that hospitalists reduce the length of stay, costs of treatment, mortality and improve patient satisfaction and overall quality of care for hospitalized patients (3). Patients cared for by hospitalist have a lower chance of dying during hospitalization after age, severity of illness and other variables that might influence statistical significance were adjusted. Patients cared for by hospitalists stayed in the hospital for a shorter time than patients cared for by traditional internists, resulting in lower costs (4, 5). The future role for the hospitalist may include reducing the variations in clinical practice and further improving treatment outcomes.

With the shift of more care to the outpatient setting, hospitalists see patients who are acutely ill. Their expertise goes beyond what other general internal medicine doctors are able to provide and usually includes critical care skills. Today an average US physician spends only 12 % of the time in the hospital and primary care physicians admit fewer patients (2). Due to the demands of managed care and the increase in medical technology more is accomplished in the physician's office.

There are several common medical problems for which hospitalists are consulted. Management of diabetes mellitus, arrhythmias, preoperative risk assessment and perioperative medical management, acute shortness of breath, chest pain, deep venous thrombosis and pulmonary embolism are just a few on the list. The enormous benefit of having a doctor available in-house 24 hours 7 days a week is demonstrated not only by measurable outcomes but also on the improved satisfaction of referring providers, nursing staff and patients alike. Hospitalists frequently serve as a part of "code blue" or cardio-respiratory arrest emergency call and rapid response teams within hospitals. They are experts in resuscitations protocols and frequently are the first to arrive at a patient's bedside in the case of an emer-

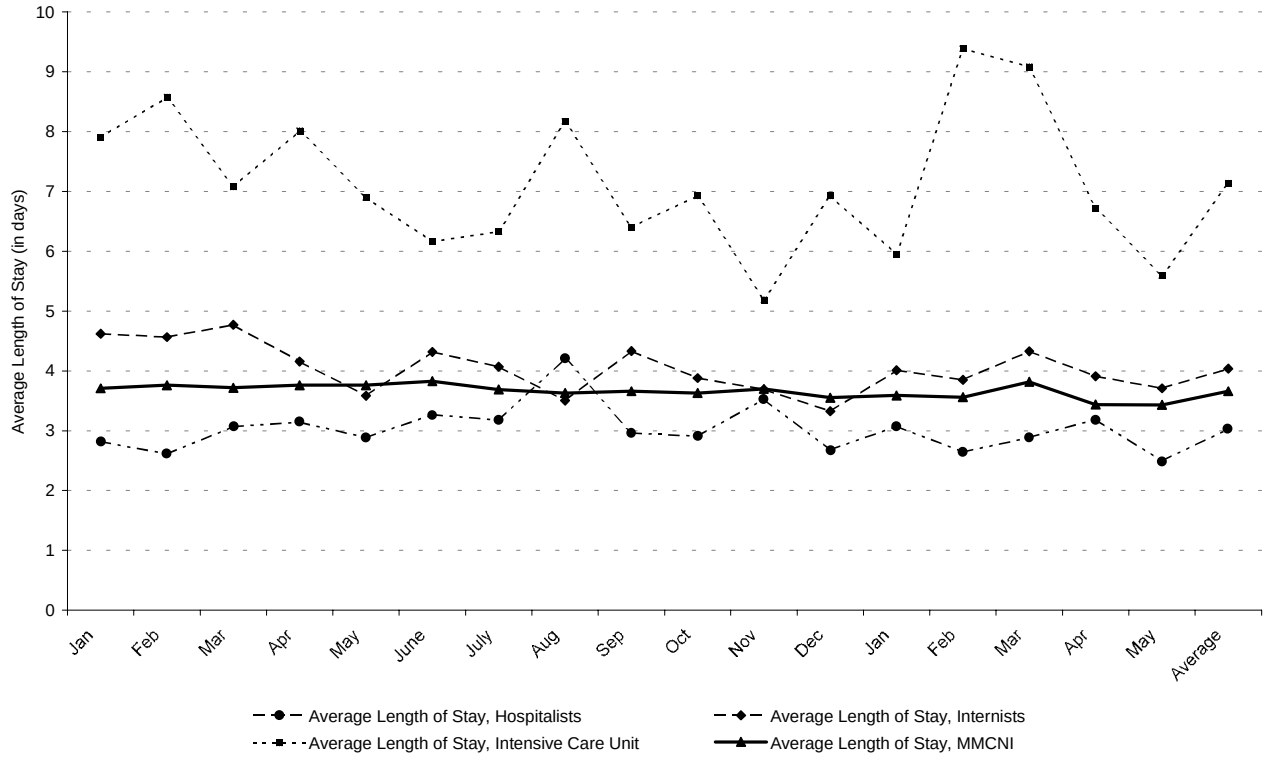

Fig. 1. Length of Stay comparison between Hospitalist, Internists, Intensive Care Unit and whole Mercy Medical Center North Iowa (MMCNI) in the period January 2004 – May 2005 (Source: MMCNI, published with permission).

Tab. 2. Annual survey comparison of data from Mercy Medical Center, North Iowa (MMCNI), all models in the U.S.A. and Midwest Hospital (costs in USD) (internal data from MMCNI Hospitalist Program, published with permission).

MMC-NI Hospitalist Comparison	All models United States 2003	Midwest Hospital Owned 2003	MMC-NI 2003
Median # MD's/Program	6	6	3,25 %
Programs: Shift Based	38	31	-
% Programs: Call Based	36	38	-
% Programs: Combination	27	31	Combination
Median Encounters Per Year and Provider	2256	2200	2571
Median Admits USD Consults Per Year and Provider	468	500	874
Estimated Savings Per Hospitalist Per Year at MMC-NI (assuming 500USD/day savings when decreasing LOS compared to traditional internal medicine program)	-	-	437 000

gency. Recently introduced, 100,000 Life Campaign is counting on the utilization of hospitalists in a variety of roles such as first responders, team leaders and patient care coordinators (6). Another field where hospitalists are expected to play a more prominent role in the palliative care and coordination of transition from aggressive in-hospital care to end-of-life care in facilities outside hospitals.

A study conducted at Mayo Clinic found a far lower incidence of complications in post-surgical arthroplasty patients managed by the hospitalist-orthopedist teams, compared to patients managed under the standard model involving orthopedic primary management with a medicine consult. In addition 62 % of patients in the collaborative care group left the hospital with no complications, compared to 50 % of those under the standard arrangement. The rate of minor complications was far lower in the hospitalist-managed patients – 30 % vs 44 % – even though the length of stay did not differ statistically between the two groups. However, when adjusted for discharge delays, the mean length of stay for patients in the hospitalist model of care was shorter – 5.1 days vs 5.6 days. The study also found high nursing and orthopedic satisfaction with the arrangement (7).

A study in the August 2004 American Journal of Managed Care examined how four groups of physicians cared for just over 1 700 patients at the University of Iowa Hospital and Clinics. One of the three teams included only hospitalists and the other teams were consisted of internal medicine doctors and subspecialists. The study found that hospitalists reduce the length of stay an average of 1 day and lowered overall costs by about 1,000 USD (Tab. 1).

Mercy Medical Center – North Iowa is a 250-bed acute care hospital, serving a 14-county service area, located in Mason City, Iowa, USA. Mercy hospital provides a full spectrum of medical care with medical and surgical specialties including open-heart

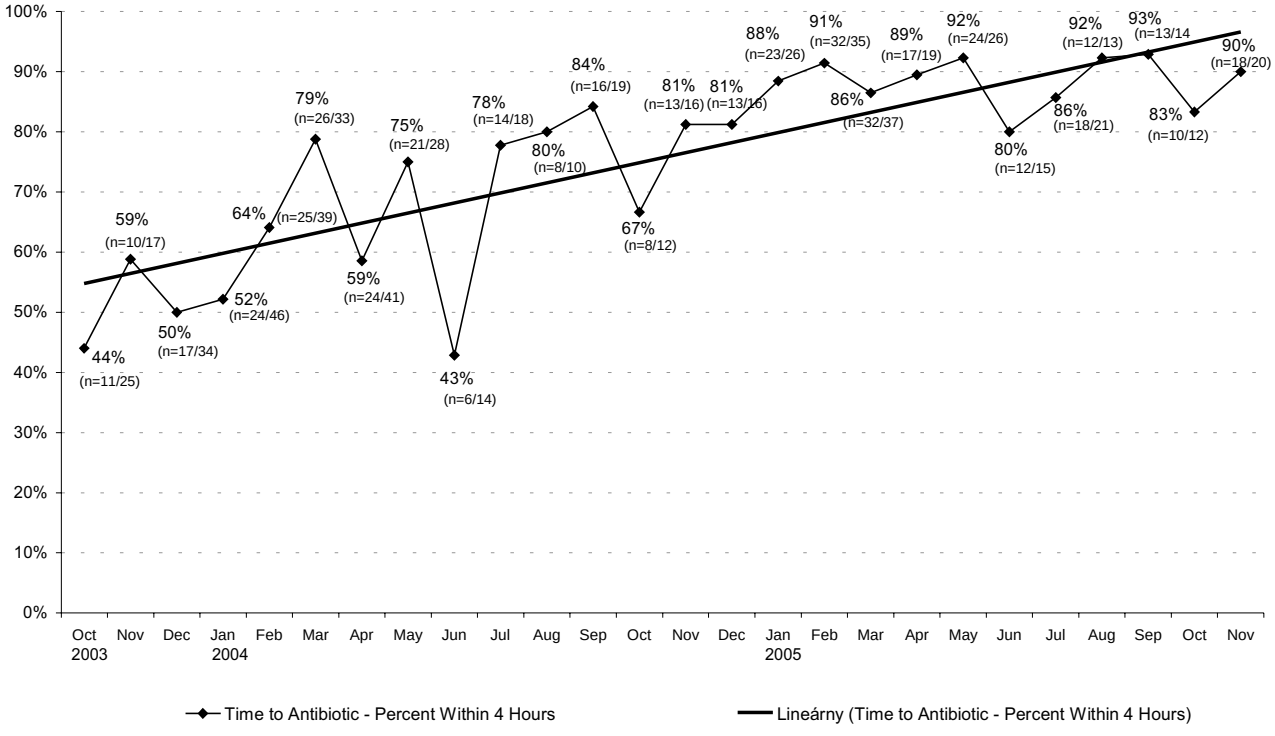

Fig. 2. Time to antibiotic administration in community acquired Pneumonia population. Overall average time to antibiotic administration (percent within 4 hours) = 75.7 %. 3 months rolling average time to antibiotic administration (percent within 4 hours) = 88.7 %. "Top decile" premier target = 87.36 % (Source: Mercy Medical Center North Iowa, published with permission).

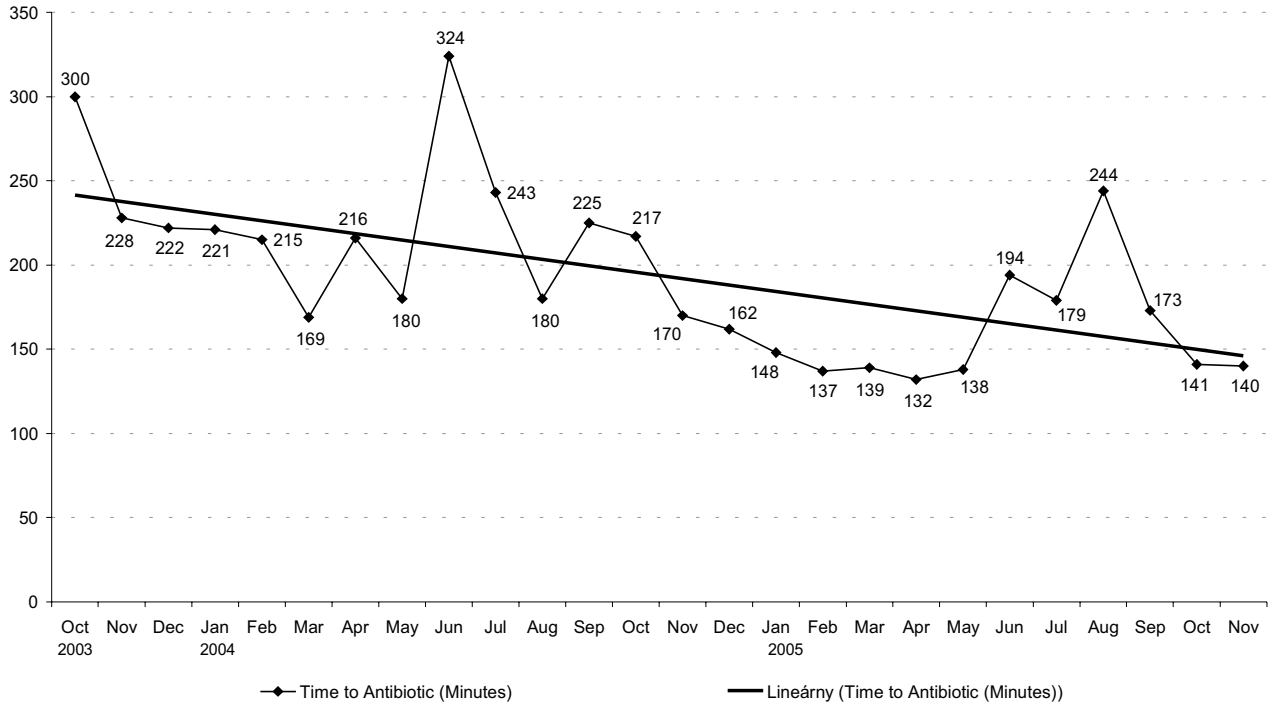

Fig. 3. Time to antibiotic administration in community acquired Pneumonia population. Overall average time to antibiotic administration = 194 minutes. 3 months rolling average time to antibiotic administration (percent within 4 hours) = 151 minutes. Target •240 minutes (Source: Mercy Medical Center North Iowa, published with permission).

surgery, neurosurgery, orthopedic surgery, medical and radiation oncology services, air-life transportation service and serves as the regional trauma center. For the fourth consecutive year, Mercy Medical Center-North Iowa has been named one of the nation's 100 Top Hospitals by Solucient, a leading source of health care intelligence. The award recognizes hospitals that achieved excellence in quality of care, operational efficiency, financial performance, and adaptation to the environment.

The hospitalist service was started at Mercy in 1999 with one hospitalist and today four hospitalists are already practicing and two more are planned to start this summer. The program was created to improve care for medical patients, to improve the management of medical problems in surgical patients, to decrease length of stay and to decrease inpatient cost. The current role of hospitalists are billable (admissions, consults, discharges, daily visits, procedures) and non billable (teaching residents and students, quality improvement, decreasing complications rate and supporting other services). Hospitalists play a key role in hospital-wide initiatives such as implementing computerized medical records and pay for performance initiatives that are being introduced nationwide to improve patient care. Hospitalists were able to significantly reduce length of stay compared to traditional internal medicine doctors and also to the national hospitalist average (8). Hospitalists were able to lower the average length of stay by 1 day (2.99 vs 4.01) compared to traditional internal medicine physicians (Fig. 1). This is consistent with the results from the study done at the University of Iowa (9). Hospitalists at MMC-NI care on average for 20 patients during a day shift, which includes established patients, new admissions, new consults and discharges. Data from the Society of Hospital Medicine Survey from 2003 show that the national average is between 12–17 and averages 14.5 patients per day. Using data from an article published in Today's hospitalist and from Mercy's hospitalist program from 2003 we calculated that one hospitalist was able to "save" the hospital approximately 400,000 USD per year (8, 10) (Tab. 2).

In the future, the US reimbursements for hospitals from third party payers are going to be based on quality indicators. Even today, there is an incentive for hospitals to perform above the standard of care to achieve additional financial resources from Medicare and other medical insurance carriers. Therefore hospitalists at Mercy are pioneers in improving and standardizing the care for patients admitted with variety of diagnoses and pioneering the project with community acquired pneumonia. Significant improvements are already documented such as improving vaccination, smoking cessation counseling, rate of obtaining blood cultures and timely antibiotic administration (Figs 2 and 3).

Some workflow patterns that are contributing to the improved patient care, communication between providers, improved patient satisfaction, more effective management and decreased adverse effects are listed below:

a) Every dictation (admission note and discharge) is made immediately after seeing a patient, dictated on a hospital dictation line and typed within 2 hours. Documents are automatically faxed to primary provider's office at the same time.

b) The majority of patients is initially seen in the Emergency Department, which expedites all tests and procedures.

c) The hospital uses a computerized medical records system including physician order entry system and data storage including all previous reports and a list of patient's home medicines, which expedites access to patient's medical information. Every provider has access to patient information from any computer even from his/her private residence.

d) During daily rounds the hospitalist team consists of the hospitalist, hospitalist nurse clinician, pharmacist, medical residents and students, charge nurse for the specific unit and collaborates closely with social worker, rehabilitation services and case managers.

e) Early discharge planning starts upon admission and includes referral to social worker, physical therapist, home health care nursing services or hospice.

f) Upon discharge, the nurse clinician, social worker and unit clerks make appropriate arrangements for medical follow-up, tests and help reconciliate discharge medications to avoid medical errors.

Discussion

The idea of dedicated internal medicine trained physicians that spent majority of their practice in hospitals is not new to Slovakia and Europe. In the US the traditional model of health care involves a primary doctor who spends the majority of time seeing patients in the office and admits patients to the hospital as needed while continuing to be the primary attending physician throughout the hospital stay and consulting specialists as needed. This model is becoming less popular and less efficient. The traditional model of health care delivery in Slovakia is based on a network of primary care physicians that refer patients for admissions to hospitals. Once admitted, hospital-based physicians take over the care and after discharge patients usually follow up with their primary doctors but frequently also have follow-up appointments with the doctor who took care of them during the hospital stay. Even doctors that practice predominantly in hospitals have clinic hours, frequently on a daily basis, which ultimately shifts their attention away from the inpatients and makes them less flexible and less readily available to attend to emergencies in the hospital, urgent consults and patients waiting in the ER for admission or second opinion. It is not unusual that patients need to be referred for common bedside procedures such as lumbar punction, thoracenthesis, paracenthesis, central venous line placement and alike to subspecialists, frequently even need to be transferred to different hospital units. This does not promote ownership of the patient and decreases the effectiveness of management of the patients in the hospital. If patient's condition deteriorates or if intensive care is needed, the patient needs to be transferred to and eventually back from the intensivist. Intubations, ventilator management, administrations of conscious sedation, vasopressors, and broad-spectrum antibiotics are often limited to subspecialists in respective fields of medicine. Delivery of medical care can become fragmented, tasks delegated, ownership of patient not encouraged and subsequently the length of stay increases and room for errors widens.

There are different models for reimbursement in the US and in Slovakia. In the US there is a strong motivation to lower the length of stay and decrease cost of hospitalization, which ultimately increases the margin with which the hospitals operate. Essentially, in the US there is a pre-determined fee for a given diagnosis that the hospital receives from third party payers. Fewer complications, rapid initial assessment of patients and even multiple daily reassessments as needed ultimately lower length of stay, limiting unnecessary diagnostic tests and referrals to different specialists and ultimately increase profitability of hospitals.

There is no perfect health care system as there are no perfect doctors. We think that the hospitalist model, as widely used in the US, may be the best solution to the challenges that are associated with management of hospitalized patients. It has been clearly demonstrated that implementing hospitalist programs improves patient safety, shortens length of stay, decreases mortality and complications, improves work flow in hospitals by accommodating the needs of referring providers and helping to deliver evidence-based medicine. Hospitalists have established themselves as cornerstone of inpatient medicine. They are valued by subspecialists, nursing staff and patients alike. They are the future of inpatient medicine in the US and maybe a similar specialty will be created in the future in the Slovak medical community. Recent changes in Slovak health care system, centralization of inpatient care, planned reimbursement changes and ultimate goal for better and more cost-effective practice of medicine calls for it.

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