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Controlling Cost And Quality Through Clinical Pathways: One Cancer Center's Experience

By Moira G. Feingold, John W. Meyer, and Deborah S. Briggs

One Kalamazoo, MI, medical center took on the challenge of using clinical paths to cut costs and increase quality. In this article, three authors who were involved in the implementation process offer a step-by-step portrait of the process, and suggest pitfalls to avoid.

Community cancer programs that have survived into the 1990s have had to deal with the multiple economic challenges of prospective reimbursement, managed care, intensified scrutiny of care by patients and insurers, and the need to document outcomes and quality of care. The next challenge administrators face in positioning their programs to compete successfully in the 1990s is micro-managing costs while maintaining the highest possible standards of quality care. Not only are the concepts of controlling costs and providing high-quality care compatible, they can be joined together in a process of demonstrated effectiveness. What is necessary is to change the way we provide care to cancer patients, so that we compete on "value"—the balance of price and quality.

Clinical Path Analysis

Using clinical path (CP) analysis, standard treatment protocols (STPs) can be developed for common surgical procedures and medical interventions. The goal of this process is to reduce the cost of the average case and, at the same time, enhance the quality of patient care through a multidisciplinary, consensus-building approach.

A CP is defined as a combination of clinical practices that result in the most resource efficient, clinically appropriate, and shortest length of stay for a specific medical condition or surgical procedure. The CP concept implies clinical appropriateness, efficiency, and overall quality. STPs are based on the CP for the specific

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“A Clinical Path is a combination of clinical practices that result in the most resource efficient, clinically appropriate, and shortest length of stay for a specific medical condition or surgical procedure”

type of patients under consideration. The STP is a reference document that sets forth consensus-based standards of care and treatment for a defined group of patients for the purposes of resource efficiency, clinical efficacy, and quality enhancement.

The potential benefits of CPs/STPs within an oncology product line include enhanced profit margins and managed care contracting leverage through decreased costs and charges, increased resource efficiency through standardization, and the establishment of a multidisciplinary communication forum that empowers clinical personnel to make changes in the way patients are treated. CPs/STPs provide an opportunity to enhance the quality of care

and to monitor and evaluate that quality. They create a model that enables the hospital to position itself effectively for managed care and specialty contracting. At the conclusion of the process, the community oncology program is in a position to compete effectively in its market, because it simultaneously monitors cost and quality of care.

The Development Process

The concept of using a clinical path (also known as a critical path) is well known in manufacturing industries and has been effectively translated into health care applications. We have taken the clinical path concept a step further and developed standard treatment protocols. The CP/STP process was first utilized in the areas of cardiovascular disease, orthopedics and the neurosciences with considerable success. Its recent application in the area of oncology is described herein.

The selection of procedures and diagnoses for the creation of CPs/STPs is performed by several multidisciplinary subcommittees whose output is reviewed by an executive committee known as the Oncology Protocol Committee (see Exhibit 1 on next page). These committees are established specifically to conduct and oversee the creation of the CPs and STPs. It is of critical importance that the committees have the support of a project coordinator, who is appointed by the hospital.

The criteria used to select target procedures and diagnoses vary, but generally serve to identify high-cost and resource-intensive interventions that have the greatest potential for cost savings for the largest number of patients. Surgical procedures have less variability and are therefore easier to predict and to document than medical interventions.

The first step in developing a CP for the selected procedures and diagnoses is to provide the subcommittees with information for their analyses. Several kinds of documents are gathered to aid the sub-

committee members in constructing the clinical path for a typical patient with a given diagnosis (see Exhibit 2 below). While all of these documents are not available in every setting for every target diagnosis, they provide the subcommittees with a starting point for discussion.

Perhaps most useful to the development of the subcommittee's final product is the charge/cost model that is constructed for each procedure under review. At Borgess Medical Center, Kalamazoo, MI, a typical charge/cost model was compiled from a review of charge and cost data for a 50 percent sample of actual discharges in 1990 (see Exhibit 3 on page 26). Such a charge/cost model also serves to balance anecdotal information and personal recollections, which are often unreliable.

All relevant information is provided to the subcommittees as they begin the process of analyzing the documents and constructing clinical paths. Using a blank, day-by-day model of care for the typical patient (see Exhibit 4 on page 27), the subcommittees eliminate unnecessary tests, procedures, interventions, or days of stay and develop the ideal, streamlined treatment path. The CP addresses not only what happens to the patients while they are in the hospital, but also the tests or interventions that should take place prior to admission.

When the CPs have been refined and approved by the Oncology Protocol Committee, they are translated into STPs. These detailed reference documents are maintained at every nursing station and appropriate department or oncology treatment setting. CPs/STPs and supporting documentation, such as variance reports, do not become a part of the permanent medical record.

The committees should complete their tasks after four or five meetings held every other week. Advance preparation takes as long as is necessary to analyze data, to gather documents for subcommittee review, and to select and orient committee chairs and members. Implementation timetables vary with the number and complexity of STPs, but the entire process can be completed in approximately four to six months. However, the hospital must make a substantial commitment to the process in terms of staff time, physician time, and consulting support.

EXHIBIT 1

Standard Treatment Protocol for Oncology Protocol Development Organization Structure

Oncology Protocol Committee ("OPC")

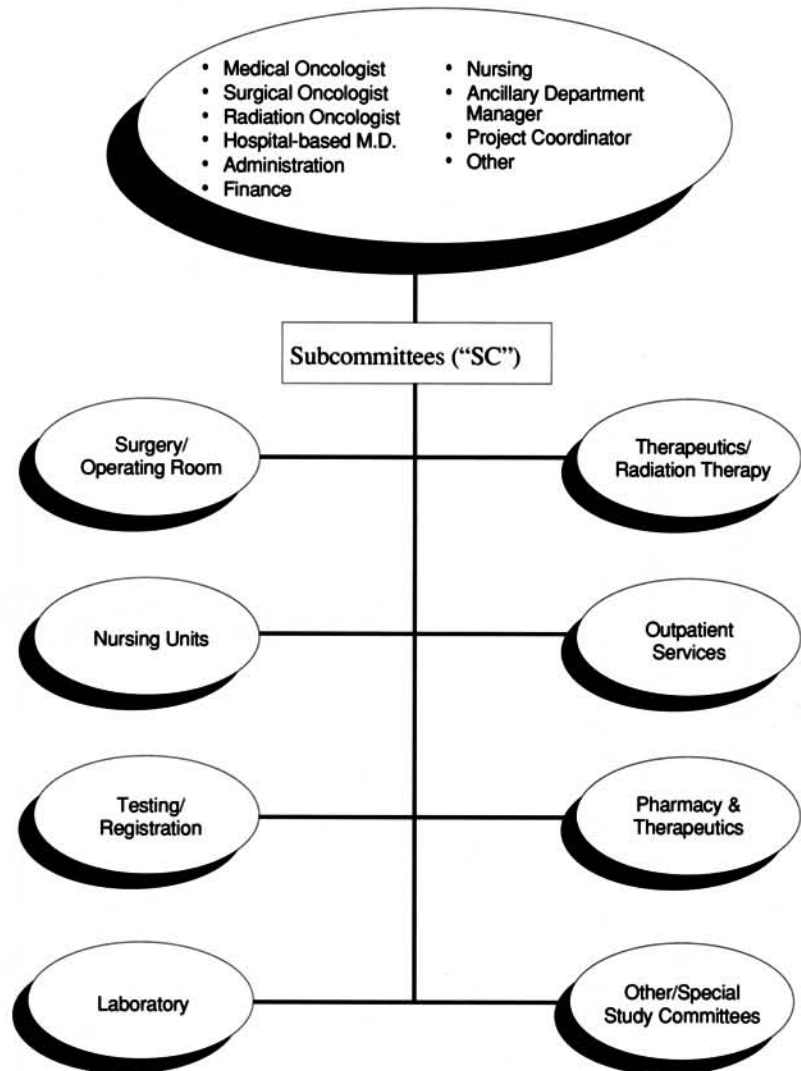


EXHIBIT 2

Typical Inputs Available to Hospital as Inputs to STP Process

- Patient Management Guidelines
- "Pre-Printed" / "Standing" Orders
- Cost/Charge Data
- Empirical/Anecdotal Information
- Local Practice Patterns
- Literature Review

Potential Pitfalls

Many issues, both anticipated and unexpected, that surface during the course of CP/STP development and implementation can threaten to derail the entire process. Perhaps the most critical requirement is that of organizational commitment. Many hospitals have significant oncology care resources, but are surprised to discover that they do not have a "program" per se, and therefore lack the requisite program infrastructure.

A preliminary assessment of the overall program, using the Association of

EXHIBIT 3

General Medical Center

Oncology Cost/Charge Model
Excision of Breast Tissue (Lumpectomy) - Outpatient

Cost Center	Item Description	Units	Unit Charge	Total Charges	Costs		
					Direct	Indirect	Total
3219	SURGI-CENTER	50.2	\$2.00	\$100.40	\$30.72	\$39.86	\$70.58
3250	RADIOLOGY	1.0	\$198.00	\$198.00	\$35.44	\$59.99	\$95.44
3263	LAB - CYTO - HIST	1.0	\$131.00	\$131.00	\$47.42	\$39.43	\$86.85
3350	CENTRAL PROCESSING	1.0	\$51.00	\$51.00	\$17.95	\$19.07	\$37.03
3351	MEDICAL/SURGICAL SUPPLIES	1.0	\$159.00	\$159.00	\$68.37	\$33.39	\$101.76
3351	MEDICAL/SURGICAL SUPPLIES	1.0	\$2.00	\$2.00	\$0.86	\$0.42	\$1.28
3351	MEDICAL/SURGICAL SUPPLIES	1.0	\$3.00	\$3.00	\$1.29	\$0.63	\$1.92
3351	MEDICAL/SURGICAL SUPPLIES	1.0	\$16.00	\$16.00	\$6.88	\$3.36	\$10.24
3351	MEDICAL/SURGICAL SUPPLIES	2.0	\$5.00	\$10.00	\$4.30	\$2.10	\$6.40
3351	MEDICAL/SURGICAL SUPPLIES	1.0	\$6.00	\$6.00	\$2.58	\$1.26	\$3.84
3351	MEDICAL/SURGICAL SUPPLIES	1.0	\$5.00	\$5.00	\$2.15	\$1.05	\$3.20
3351	MEDICAL/SURGICAL SUPPLIES	1.0	\$63.00	\$63.00	\$27.09	\$13.23	\$40.32
3359	MULTIPLE CENTER PROCESSING	1.0	\$10.00	\$10.00	\$3.52	\$59.47	\$62.99
3359	MULTIPLE CENTER PROCESSING	1.0	\$21.00	\$21.00	\$7.39	\$0.75	\$8.14
3359	MULTIPLE CENTER PROCESSING	1.0	\$382.00	\$382.00	\$134.46	\$1.12	\$135.59
3359	MULTIPLE CENTER PROCESSING	1.0	\$24.00	\$24.00	\$8.45	\$5.98	\$14.43
3359	MULTIPLE CENTER PROCESSING	1.2	\$140.00	\$168.00	\$59.14	\$3.74	\$62.88
TOTALS				<u>\$1,349.40</u>	<u>\$548.02</u>	<u>\$284.86</u>	<u>\$742.88</u>

% Average Charge (\$1,349): 100.0%
Margin: \$606.52
% Margin: 44.9%

Community Cancer Center's standards for oncology programs,* or similar guidelines, is an initial, critical step to determine whether key resources actually exist. In the absence of a basic oncology program, and without a clearly articulated administrative commitment, the subcommittees will be unable to effect change.

Medical staff commitment is the second prerequisite for a successful CP/STP process. The process must have the support of key oncology physicians, the general surgeons and specialty surgeons who initially diagnose and treat most of the cancer patients admitted to the institution, and the medical directors of the laboratory and diagnostic departments that will be impacted by the changes STPs bring about. These individuals must not only support the concept but, as much as possible, participate in the process.

When the medical staff understands that STPs will make the hospital more

“Perhaps the most critical requirement is that of organizational commitment. Many hospitals have significant oncology care resources, but are surprised to discover that they do not have a “program” per se”

*Association of Community Cancer Centers, March 1988.

competitive and better positioned for managed care contracting, they generally support the concept. While the entire medical staff of the hospital need not be on record in support of the concept, they should be kept informed of its goals and progress.

Committee member selection is another critical factor in the overall success of CPs/STPs. In general, the subcommittees should be large enough to include key people who provide the care under consideration and whose support is necessary to make the changes dictated by the STP process. Political considerations may dictate the inclusion of certain individuals. It is preferable to err in favor of more rather than fewer participants if this is a concern.

Finally, an area with great potential for providing unpleasant surprises is one of system issues. In general, system issues are problems that are outside the scope of the subcommittees and must be delegated to hospital administration for resolution. It is imperative that committee chairs follow through with their best efforts to bring these issues to the attention of those with the power to resolve them.

One Cancer Center's Experience

Borgess Medical Center (BMC) is a 375-bed, tertiary care hospital in Kalamazoo, MI. The CP/STP process was first initiated at BMC in 1989 for key cardiovascular diagnosis-related groups (DRGs). Because of the success of the process in cardiovascular services—potential additional revenues of \$4.4 million upon full implementation—BMC began to look at other specialized services, including oncology, for the next phase of CP/STP development.

CPs and STPs were successfully developed at BMC for eight different surgical procedures: hysterectomy, mastectomy, colon resection with and without colostomy, abdominal-perineal resection, outpatient breast biopsy and needle localization, and outpatient venous catheter insertion. In general, surgical procedures more easily lent themselves to the development of CPs than non-surgical interventions. For example, identifying key pre-admission tests and procedures and the necessary day-to-day interventions for mastectomy patients was much easier than attempting to characterize a typical patient assigned to DRG 410 (chemotherapy). The latter group of patients varies so widely that few common

EXHIBIT 4

Clinical Path (Excerpt Only)
Mastectomy

Critical Occurrences	72-Hours or More Preadmission	Admission Day Prior to Surgery or as AM Admit	Surgery Day	P.O. Day 1
Tests	Estrogen/Progesterone receptors at time of BX WHP L/A Chest X-Ray P/B			
Treatments (includes med)		N/Holding Room	IV Fluids Analgesics IM/PO Antibiotics PRN Check JP & Empty Q.S. Check Chest D/PSG QMS Q4+Hours	DC IV PO
Activity			COB Arm on pillow Hand/Arm Precautions Encourage Arm Exercises	
Diet		NPO after Midnight	Clear Liquids	DAT
Discharge Planning		Review Pathway MDFN		
Teaching	Pre-Surgical Testing Emphasis On: 1. Pre-Op Teaching 2. Pre-Op Medications		Reinforce Mastectomy Nurse Instruction	Patient to Verbalize Understanding of: Dian Care Arm Exercises Hand/Arm Precautions Prothesis Care
Consults	Anesthesia Met with Med Instructor Mastectomy Nurse (includes P/B)			
		To Recovery		
				Push to Recovery Unit

threads could be identified to form a standardizable pattern of care. On the other hand, DRG 410 is widely considered a loser from a financial standpoint, and its significant proportion of discharges justifies at least the attempt to create a CP (or multiple CPs) for this DRG. These CPs may have to be drug specific so that there is a commonality of drug administration, time frame, and anticipated side effects. Because of these issues, CPs/STPs were successfully created for surgical procedures at BMC, but the process did not include chemotherapy.

The financial results of the CP/STP process at BMC are expected to be significant. The CPs/STPs were implemented in mid-August of 1991. Therefore, actual results will not be measurable for some time. However, it is expected that the average case charge for all inpatient procedures studied will be reduced, ranging from 12.5 percent for mastectomy to 43 percent for colon resection without a colostomy. Moreover, the process should

“ It is expected that the average case charge for all inpatient procedures studied will be reduced, ranging from 12.5 percent for mastectomy to 43 percent for colon resection without a colostomy ”

not only decrease lengths of stay (e.g., from 3.4 days to 2 days for mastectomy, and from 11.7 days to 7 days for colon resection), but unnecessary lab tests, imaging tests, drugs, etc. have been eliminated.

Decreases in average charges for outpatient procedures should also be achieved, with predicted reductions ranging from 10.8 to 19.3 percent. The successful implementation of these STPs will significantly impact the hospital's bottom line. Before STPs, 1990 volume netted a profit of about \$275,000 for the targeted procedures. If STPs had been applied to these same patients in 1990, the net profit would have been \$880,000, or an additional, potential contribution of more than \$600,000 (see Exhibits 5 and 6).

In addition to the financial benefits to be derived from the projected decreases in costs and lengths of stay, several other, less tangible effects were seen at BMC. For instance, the subcommittee process

(Continued on page 31)

EXHIBIT 5

General Medical Center

Selected Oncology Diagnoses/Procedures Initial Financial Results of STP/CP Process

Diagnosis/Procedure	No. Disc.	Pre-STP Average Charge	Post-STP Average Charge	% Decrease	Total (Direct & Indirect) Cost	% Margin
Abdominal Hysterectomy for Malignancy	204	\$8,265	\$6,530	21.0%	\$4,406	32.5%
Vaginal Hysterectomy for Malignancy	41	\$5,765	\$4,782	17.0%	\$2,970	37.9%
Abdominal/Perineal Resection	17	\$16,503	\$13,016	21.1%	\$8,675	33.4%
Needle Localization of Breast - Outpatient	3	\$1,455	\$1,267	12.9%	\$959	34.1%
Breast Biopsy " Outpatient	163	\$1,229	\$1,033	19.3%	\$711	31.2%



Irvin Fleming, M.D.

will be drastic reductions in fees for common cancer diagnoses and procedures. For instance, the fee for a breast biopsy will be reduced by 38 percent; a modified radical mastectomy by 30 percent, a partial

colectomy by 36 percent; and a staging laparotomy by 42 percent.

"The fees vary tremendously by what type of practice you have and what procedures you do," Fleming said. Nevertheless, he is already seeing a "shifting of Medicare patients to tertiary centers, general medicine physicians opting out of hospital settings, and specialty groups refusing to accept new Medicare patients even on an outpatient basis."

Clarke believes that "we are obligated to work on a strategy to increase the value of the health care dollar. We must come up with ideas on how the system can be changed to free up dollars and to increase the quality of care."

Einhorn honored for excellence in clinical research

The ACCC honored Lawrence H. Einhorn, M.D., Distinguished Professor of Hematology/Oncology, Indiana University School of Medicine, Indianapolis, for his outstanding contributions to clinical research.

In his acceptance address, Einhorn pointed out the need for cancer care providers to continue to be proactive in the 1990s. "The 1970s and 1980s were a kinder and gentler time for patients and the practice of medicine. As we approach the 1990s, we find that we have lost control of our own destinies and the control of patient treatment," he contended.

And although Einhorn believes that "diagnostic and therapeutic improvements will continue," he also said, "it is tragic to look at the variety of innovative ideas that are being thwarted by bureaucracy and red tape. It is only by continuing to be proactive that "we can once again control our own destiny and patient treatment." ■

EXHIBIT 6

General Medical Center Estimate of Pre/Post-STP Potential Additional Contribution to Margin for Selected Oncology Procedures

Procedure	No. Disc.	Pre-STP Profit/Loss	Post-STP Profit/Loss	Potential Additional Contribution
Abdominal Hysterectomy	204	\$183,013	\$242,549	\$58,536
Vaginal Hysterectomy	41	\$46,599	\$66,495	\$19,896
Mastectomy	59	\$5,890	\$40,836	\$34,946
Abdominal/Perineal Resection	17	\$27,835	\$59,132	\$31,297
Colon Resection	96	\$8,011	\$449,002	\$440,991
Breast Biopsy *	163	\$1,216	\$22,062	\$20,846
Needle Localization*	3	\$221	\$407	\$186
TOTAL	583	\$272,785	\$880,483	\$607,698

*Outpatient

Clinical Pathways

(Continued from page 28)

improved communication among disciplines. Participants have a better understanding of how the hospital system works, and they derived a sense of empowerment and team participation from their efforts to problem solve. All of these process outcomes contribute to long-term bonding between the hospital and the medical staff, and to a common understanding of the need for conservative financial management in an environment of continually decreasing resources.

Even the problems that the subcommittees were not able to solve, and which were brought to the attention of BMC's administration, resulted in a significant list of recommendations regarding opportunities and strategies for changing hospital systems. These recommendations are currently being considered for implementation.

The subcommittee meetings provided a unique opportunity for key caregivers involved in oncology to openly discuss the problems and frustrations that they encountered on a daily basis. The long-term, positive effects of sharing a successful, task-oriented experience are expected to be of continuing benefit to the oncology program at BMC.

An additional byproduct of the CP/STP process at BMC has been in the area of quality review and quality assurance. By establishing STPs, caregivers

acknowledge what is accepted to be high-quality care. Either this level of care is provided to the patient or the reasons for not providing it are documented on variance reports compiled by the nursing staff. The ongoing monitoring of STP compliance is performed by a committee composed of key participants in the process and provides an excellent form of quality review, reinforcing the normative influence of the STPs.

In addition, using the charge/cost model, which includes overhead costs in its calculations, allows all participants in the process to understand the true costs of providing oncology care. Charge/cost models are now being developed to segregate resource consumption for each day of a targeted patient's expected length of stay. Utilization review personnel will be able to match the expected norm with actual resource consumption on a daily basis. As a result, interactions with the physicians responsible for resource consumption can occur in real time instead of retrospectively.

In conclusion, the success of the STP process can be translated into expected decreased costs, enhanced quality of care, improved communication, and better positioning of the hospital in today's cost- and quality-conscious environment. ■

Note: Inquiries about the CP/STP process at BMC should be addressed to

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