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Hysterectomy Pathway as the Global Engine of Practice Change: Implications for Value in Care

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Abstract

Introduction: In 2012, University of Pittsburgh Medical Center (UPMC) introduced a hysterectomy clinical pathway to reduce the number of total abdominal hysterectomies performed for benign gynecological indications. This study focused on exploring physician and patient factors impacting the utilization of hysterectomy clinical pathways.

Methods: An online survey with 24 questions was implemented to explore physicians' attitudes and perceived barriers toward implementing the pathway. A survey consisting of 27 questions was developed for patients to determine the utility of a pathway-based educational tool for making surgery decisions and to measure satisfaction with the information provided. Descriptive statistics were used to describe survey results, while thematic analysis was performed on verbal feedback submitted by respondents.

Results: Physician respondents found the clinical pathway to be practical, beneficial to patients, and up-to-date with the latest evidence-based literature. Key barriers to the use of the pathway that were identified by physicians included perceived waste of time, inappropriateness for some of the patient groups, improper incentive structure, and excessive bureaucracy surrounding the process. Overall, patient respondents were satisfied with the tool and found it to be helpful with the decision-making process of choosing a hysterectomy route.

Conclusions: Physicians and patients found the developed tools to be practical and beneficial. Findings of this study will help to use pathways as a unifying framework to shape future care of patients needing hysterectomy and add value to their care.

Keywords: *Clinical Pathways; Hysterectomy; Decision Support Tools; Survey Research*

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Research

Hysterectomy is one of the most common gynecologic procedures in the US, with approximately 600,000 women undergoing a hysterectomy each year.[1-3] Hysterectomy is a common procedure used to treat endometrial cancer, the most common gynecologic malignancy in the US women. Published evidence points to the excessive use of open surgical approaches for hysterectomy when minimally invasive approaches may be used.[4] Reducing the overutilization of open hysterectomy has many benefits: lessening patient recovery time, reducing surgical complications, such as infection and thromboembolic events, and decreased healthcare expenditures.[4-7] One way of reducing this variability in care is by adopting clinical pathways.

Clinical pathways became an essential part of patient care management in the US. By the late 1990s, more than 80% of US hospitals used at least some clinical pathways to manage patient care.[8] Clinical

pathways are evidence-based, multidisciplinary care algorithms that outline essential steps in the medical management of a specific clinical condition.[9] A recent study by Hripcsak et al. characterized treatment pathways on a global scale and found that the pathways improved consistency of therapy across diseases and locations.[10]

In 2012, University of Pittsburgh Medical Center (UPMC) introduced a hysterectomy clinical pathway to reduce the number of total abdominal hysterectomies being performed for benign gynecological indications.[4,11] We hypothesized that pathways could be a unifying vehicle of change for both providers and patients in choosing the most optimal surgical approach to hysterectomy, which can have very important implications for gynecologic care and healthcare in general. The first aim of this study was to examine physicians' perceptions and attitudes toward utilization of the hysterectomy clinical pathway 3 years after its implementation.

The second aim of this study was to investigate if a "pathways-oriented" patient education tool would be helpful for patient decision-making. Patients do not always have an effective decision support infrastructure when it comes to making decisions about which hysterectomy route is the best for them. Additionally, physicians and other healthcare providers may not necessarily have the time to go into the details of all surgical options. To fill this gap, our group sought to develop and introduce a hysterectomy pathway informed online educational tool for patients considering elective hysterectomy, and pilot this effort in UPMC facilities. By using the internet to educate patients about various hysterectomy types/routes, we are employing technology that is already used by many women to obtain health information. By empowering a larger number of women to opt for minimally invasive surgery at specialized centers, we can potentially improve patients' clinical outcomes by reducing adverse outcomes associated with open procedures, while also controlling costs associated with hospital stay that can be reduced by roughly 1.5 days[4]. We hypothesized that using this innovative online educational tool will encourage patients to be active partners in selecting hysterectomy route that works best for each individual woman. Thus, following the implementation of physician satisfaction survey, we surveyed patients on the utility of a pathways-based educational tool in the decision-making process when choosing a hysterectomy route.

Methods

Physician Survey

An online survey with 24 questions for physicians was designed based on the review of the literature[12-14] and local experts' opinions to explore surgeons' attitudes and perceived barriers toward implementing the clinical pathway. Ninety-two gynecologic surgeons who were exposed to the pathway were identified in the UPMC system by utilizing UPMC Healthplan data. In December 2015, an invitation email along with a link to the survey was sent to academic email accounts of all physicians utilizing pathways. This was an anonymous survey, and no identifiable information was collected. The first item on the survey was informed consent. The survey was distributed using the Qualtrics platform (Qualtrics Labs, Provo, UT). Qualtrics protocols were followed to minimize the risk of emails being trapped in spam folders.[15] Reminders were sent at two weeks and four weeks after the initial invitation to those who either did not open the survey or did not finish the survey. Two weeks after the second reminder was sent the survey was closed. Demographics, education and training, practice characteristics (including number of hysterectomies performed in a typical month by route of surgery), and their opinions on different aspects of the pathway (using Linkert-type ranking questions where a score of 1 indicated a favorable attitude and score of 5 indicated an

unfavorable attitude) were collected. This study was approved by the University of Pittsburgh Institutional Review Board (#PRO15060194).

Patient Survey

For the patient educational tool, we solicited the input from the hysterectomy pathway algorithm, from healthcare providers, and materials from the Healthwise[12] website to develop the hysterectomy pathway informed decision making tool. The package explained the different types of hysterectomy procedures, benefits and complications associated with each type of hysterectomy procedure, as well as links to pictures and videos designed to illustrate the nature of the procedures.

With the help of clinical providers and researchers, we developed a patient survey consisting of 27 questions to determine the utility of this pathways based educational tool from the patient prospective. The survey was administered using the University of Pittsburgh Qualtrics survey software site and ascertained their thoughts regarding the utility of the site, ease of use, likes and dislikes pertaining to the site, and suggestions for additions and improvements.[13] Approval to conduct this research survey study was obtained from the University of Pittsburgh Internal Review Board (IRB #PRO16020590).

Study population

Direct recruitment of study participants was conducted during their visits to gynecologic surgical specialists. Participants were identified by the clinical co-investigators of this study based on the criterion of them considering hysterectomy for benign indications (either currently or in the past). We recruited 20 women from the Gynecology Specialties Clinic at Magee-Womens Hospital of the UPMC Health System. When the patient agreed to participate and verbal consent was obtained, the experimental educational package and research survey were presented to her in the same room as her visit or in the consult room of the clinic (as appropriate based on clinic flow). Participants were able to review materials at their own pace and fill out the survey if/when they felt ready to fill it out. The participants were given the option of filling out the survey on an iPad or using a paper version. The survey answers were stored in a password protected electronic format on a secure University of Pittsburgh server and all responses remained anonymous.

Data analysis

This was a mixed methods study consisting of quantitative and qualitative analyses. Descriptive statistics were used to describe the characteristics of both the physician and patient survey populations. We conducted a thematic analysis on all verbal feedback by coding the key points and categorizing them into concepts, sub-themes, and themes.[14] Two authors coded and categorized key themes/concepts individually and then with the help of a third author we aggregated the two sets of codes and developed the final coding scheme. Statistical analyses were carried out using SAS version 9.4 (SAS Institute, Inc., Carey, NC).

Results

Physician Survey

All survey invitations to physicians were successfully delivered to the recipients' email addresses. Out of 92 identified surgeons, 26 (28.2 %) started the online survey and 22 (23.9%) completed the survey. The mean age of respondents was 46.6 years (standard deviation 8.8) and 50% were female. Half of the respondents (11) finished their residency after the year 2000 and the rest (11) finished before or during the year 2000. Ten physicians (45.5%) had fellowship training.

The respondents reported performing as many as 25 and as low as 0 (only 1 observation) hysterectomies in a typical month (median = 7.5). On average, in a typical month, the respondents performed 185 hysterectomies (group data). One respondent

reported zero number of hysterectomies. Only one of the remaining 21 respondents reported performing a low volume of minimally invasive hysterectomies (MIH) (<30%). Laparoscopic surgery was the most common route of surgery with 120 cases (64.8%) followed by vaginal 34 (18.3%), robotic 19 (10.2%), and abdominal 12 (6.4%) routes. All of the respondents unanimously reported the positive benefits of minimally invasive approaches for women that are appropriate candidates for MIH. One respondent commented that the benefits of MIH are so positive that they are willing to refer to another physician to ensure the patient has the minimally invasive option. When asked whether they believe they need to do more MIH, two respondents (one with no hysterectomies and the one with low MIH volume) answered yes. The remaining respondents believe they perform an appropriate number of MIH. While overall perception of pathways was favorable, three respondents (13.64%) had either "unfavorable" or "very unfavorable" attitude toward the pathway, and 7 (31.8%) found it "unhelpful" or "very unhelpful" in decision making (Table 1). One respondent reported the pathway as "difficult to follow" and 2 respondents reported that the software interface was "not user-friendly". Overall, 19 respondents (86.36%) believed the clinical pathway was up-to-date with the latest evidence-based literature, while 17 respondents (77.27%) would recommend it to their colleagues. None of the respondents reported any resistance from the patients when MIH was offered to them. Lastly, when asked what route of surgery they would prefer should they or an immediate family member (spouse, mother, sister, or daughter) need a hysterectomy for a benign indication, all of them chose MIH. Thirteen respondents (59.09%) preferred vaginal approach, followed by laparoscopic route (27.27), and robotic route (13.64%).

The three main themes that emerged during the analysis of verbal feedback are practice pattern, barriers, and benefits. The key barriers to use of pathways reported by the respondents included: not being appropriate for all cases, perceived waste of time, forgetting to use it, improper incentive structure, and excess bureaucracy around the process.

Patient Survey

We surveyed 20 women who visited the Gynecology Specialties Clinic at Magee-Womens Hospital of the UPMC Health System between May 5, 2016 and June 1, 2016. Fifteen (75%) were Caucasian, 4 (20%) were African-American, and 1 (5%) was Hispanic. The average age of the thirteen women who reported their age, was 46 years old (standard deviation: 7.3).

Out of 18 participants who were considering having a hysterectomy, 6 reported "fibroids" as their chief complaint, 3 reported "heavy periods, 5 had "painful periods, endometriosis," 2 had "ovarian cysts," 1 was BRCA mutation positive, and 1 did not specify her compliant. When asked whether they found the information on the website helpful, 12 out of 18 (66.6%) answered "definitely yes", 5 (27.7%) answered "probably yes" and 1 (5.5%) answered "might or might not".

All participants were asked to rank the source of information they relied on the most in making the decision about the type of surgery. Seventeen (85%) ranked physicians as their primary source, while the other 3 ranked the internet, family member or friends as their primary sources. They were also asked to rank the main factors that can influence their decision on choosing the type of surgery. Fourteen (70%) ranked "effectiveness in symptoms relief" as the first factor, 2 (10%) ranked "complications", 1 (5%) ranked "cost", 1 (5%) ranked "length of stay in the hospital", 1 (5%) ranked "pain", and 1 (5%) ranked "incision size". When asked who was the main decision maker for the type of surgery, 2 (10%) said it was a shared decision between the primary care physician and the obstetrics and gynecology specialist. Twelve (60%) said this was a decision that should be made by the obstetrics and gynecology specialist. Four (20%) said they themselves

Overall attitude towards clinical hysterectomy pathways	Number	Percent
Very favorable	4	18.18%
Favorable	12	54.55%
Neutral	3	13.64%
Unfavorable	2	9.09%
Very unfavorable	1	4.55%
Helpfulness of the hysterectomy pathway in decision making		
Very helpful	3	13.64%
Helpful	0	0%
Neutral	12	54.55%
Unhelpful	4	18.18%
Very Unhelpful	3	13.64%
Practicality of the pathway in their health care facility?		
Very practical	5	22.73%
Practical	8	36.36%
Neutral	6	27.27%
Impractical	1	4.55%
Very impractical	2	9.09%
Easy to follow		
Very easy	10	45.45%
Easy	8	36.36%
Neutral	3	13.64%
Difficult	1	4.55%
Very difficult	0	0%
Software interface "user-friendliness"		
Very user-friendly	2	9.09%
User-friendly	14	63.64%
Neutral	4	18.18%
Not user-friendly	1	4.55%
Not user-friendly at all	1	4.55%
Being up-to-date with the evidence-based literature?		
Yes	19	86.36%
No	3	13.64%
Whether the pathway changed the way they practice?		
Yes	3	13.64%

No	19	86.36%
Whether they would recommend the hysterectomy pathway to their colleagues?		
Yes	17	77.27%
No	5	22.73%
Whether the pathway is applicable to their patients' pool?		
Yes	11	50%
Not sure	3	13.64%
No	8	36.36%
Perceived barriers to the use of the pathway		
It is very time consuming	0	0%
Needs lot of effort	1	4.55%
I am not sure if that is helpful	8	36.36%
Others	13	59.09

Table 1. Respondents' evaluation of the clinical hysterectomy pathway

are the ones who should make the final decision, and 2 (10%) said it should be a shared decision between them and their obstetrics and gynecology specialist.

Participants were also asked to report what they liked and disliked about the educational materials. Twelve (60%) believed it was "easy to follow," 16 (80%) liked the "comprehensiveness of the material", and 11 (55%) believed that the links and picture were informative. Of all participants, only one believed the content was "hard to understand." No one thought that the material was either "too much information," or "too little information". On the scale of 1-10 (1 = very little, 10 =very much), participants were asked to rank whether a) the content was explained clearly, b) the presented information were new to them, and c) there was any discrepancy between what they read in the provided material and what they already knew. The average scores for the questions above were 9.15, 4.5, and 7.3, respectively.

Suggestions for improvements included: "including more pictures," "testimonials from patients undergoing each type of surgery," "videos from real procedures," "explaining the difference between partial and total hysterectomy," and "explaining the indications for bilateral salpingo-oophorectomy" were the main comments.

Discussion

Physicians and patients found the developed tools to be practical and beneficial. This study is very innovative in capturing both patients and providers in the exploration of how pathway-based systems can fuel change in the way hysterectomy decisions are approached. This approach can have significant implications for changes in practice for patients considering hysterectomy locally and globally.

The majority of physicians believed that the material is up-to-date and consistent with evidence-based medicine, and reported that they would recommend it to their colleagues. However, when they were asked whether the pathway has changed their practice, 19 answered "no". The reason behind this discrepancy is the fact that 20 out of 22 respondents (90.9%) were already practicing a high volume (>30%) of MIH. Therefore, it appears that there is a considerable *self-selection* bias in our sample, since

only those physicians who were already pro-MIH opted in and completed the survey. The above findings suggest that the respondents overall found the pathway to be adequate for their educational purposes. There was even a suggestion to integrate extra-uterine conditions such as ovarian cyst and endometriosis into the pathway. Moreover, lack of awareness about the presence of the pathway was not an issue since the pathway was mandatory in the UPMC system. Regarding the software interface, 95.45% of the physicians reported that the software is easy to navigate and is user-friendly or were neutral. All respondents agreed that using the pathway did not affect their own workflow, while interestingly they reported that it could be potentially perceived as a barrier.

The main limitations of the physician component of the study are the low response rate (23.9%) and self-selection bias. We only heard from 1 physician with a low MIH volume, and this is the population on whom we should focus more and try to actively engage. This makes it difficult to address this population's concerns about the pathway in the future. The small sample size and homogeneity of the respondents did not allow us to run any inferential statistics; however, the respondents formed a balanced sample regarding age, gender, and training. Being a mixed methods study (partially qualitative and partially quantitative in nature), this research provided an insight into the gynecology surgeons' attitudes towards a clinical pathway and how pathways might engineer practice change. However, quantitative studies are needed in future to parse out all the factors we identified in this study.

When patients are considering a hysterectomy for a benign condition, deciding on the route of surgery is commonly an overwhelming task for the patient, considering the plethora of surgical approaches available. Our future studies will also focus on exploring decision support options for patients considering non-surgical management, as well as evaluate decisions that patients with malignancies are facing. This study represents evaluation of one of the first pathway based decision tool kits developed to assist patients in making these difficult decisions. Overall, the educational materials were very well received by the participants. We will continue to build on our current experience and improve the materials based on the comments we received from participants.

Decision support systems, including computer programs designed to assist in the visualization of tradeoffs inherent in the decision-making process, are needed to educate patients more effectively and help them make a fully informed decision based on evidence-based approaches. Decision support tools have been shown to help healthcare providers and patients make more informed decisions, especially when multiple treatment options are available with various degrees of risks and benefits.[15,16] However, they have rarely been used for hysterectomy decision making. This shared decision making pathway informed model is especially important for hysterectomy, where multiple approaches/techniques are available.

Clinical pathways are an effective instrument to decrease undesired practice variability, improve clinician performance, and provide consistent therapy for diseases on a global scale.[10,17] The pathway systems could become a driver of change in clinical practice in the US and around the world, influencing both the patient and provider side of healthcare. In addition, clinical pathways can serve as a framework for moving forward and increasing the efficiency of care while decreasing the variation in care.

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