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THE USE OF GUM CHEWING IN POSTOPERATIVE CARE OF PATIENTS WITH ABDOMINAL SURGERY: DEVELOPING AN EVIDENCE-BASED CLINICAL PROTOCOL -PART II

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Abstract

Aim: The aim of this paper is to develop an evidence-based clinical protocol for the use of gum chewing in postoperative care to reduce the risk of paralytic postoperative ileus in patients who have undergone abdominal surgery. *Methods:* A clinical question (For adult patients who have undergone abdominal surgery, does the use of gum chewing postoperatively reduce the risk of paralytic postoperative ileus in comparison with the usual care regimen?) was formulated, a population and setting were defined, and the databases OVID Medline®, CINAHL, and PubMed were searched for relevant material. Six data-based research articles were chosen for review: four randomized controlled trials and two meta-analyses. Finally, the articles were critically appraised to generate evidence on which to base the clinical protocol. *Results:* The development team created a detailed description of the clinical protocol as well as a protocol algorithm to assist clinicians in determining patient eligibility. In addition, protocol implementation and evaluation plans were proposed. *Conclusion:* An evidence-based clinical protocol was developed to provide a template for identification of patients eligible for gum chewing, implementation, and evaluation of this intervention to reduce the risk of paralytic postoperative ileus after abdominal surgery.

Key words: gum chewing, postoperative care, abdominal surgery, paralytic postoperative ileus, time to first flatus, time to first bowel movement, evidence-based clinical protocol.

Introduction

Clinical guidelines are recommendations designed to support the decision-making processes in patient care (Atkinson, 2008, p. 8). Clinical protocols, on the other hand, can be seen as being more specific and more detailed than guidelines. Clinical protocols provide a comprehensive set of rigid criteria outlining the management steps for a single clinical condition or aspects of organization.

Clinical protocols outline what elements of the health history should be taken, what physical findings should be assessed, what diagnostic tests need to be performed, and what plan of care should be followed (Rich, Newland, 2006, p. 123). Clinical protocols are used by clinicians to provide effective health care and ensure consistency among providers. Atkinson (2008, p. 8) stated that the difference between a guideline and a protocol is that while a guideline merely helps with decision making, a protocol should require no judgments to be made. The authors of the paper agree for the most part, although some minimal clinical judgment must be exercised even when following a clinical protocol.

In what follows, the authors will use this slightly modified version of Atkinson´s understanding of a clinical protocol in formulating a protocol for using gum chewing in postoperative care to reduce the risk of paralytic postoperative ileus in patients who have undergone abdominal surgery.

Evidence to support the proposed clinical protocol

Six data-based research articles were chosen for review. Of the six, four were randomized controlled trials and two were meta-analyses. All four randomized controlled trials were evaluated to be modified McMaster level 1 studies (Abd-El-Maeboud et al., 2009; Asao et al., 2002; Choi et al, 2011; Schuster et al., 2006). Both meta-analyses, Fitzgerald and Ahmed (2009) and Vásquez et al. (2009), met

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modified McMaster level 1 criteria. All six studies found significant evidence supporting the clinical question. Furthermore, all six studies strongly recommended the use of gum chewing in the postoperative abdominal surgery patient. The authors (Zeleníkova et al., 2013, p. 544) concluded that there is a strong evidence to justify the development, implementation, and evaluation of a clinical protocol that utilizes gum chewing in the postoperative setting to decrease both the time to first flatus and time to first bowel movement.

Aim

The aim of this paper was to develop an evidence-based clinical protocol for using gum chewing in postoperative care to reduce the risk of paralytic postoperative ileus in patients who have undergone abdominal surgery.

Methods

Formulating a clinical question

The clinical question was formulated: For adult patients who have undergone abdominal surgery, does the use of gum chewing postoperatively reduce the risk of paralytic postoperative ileus in comparison with the usual care regimen? The question is related to prevention. The clinical question was presented in PICO (population, intervention, comparison, outcome) format in Part I of this paper (Zeleníkova et al., 2013, p. 538).

Defining population and setting

The setting for the clinical protocol will be a large urban academic medical center in Southwestern Pennsylvania, USA targeting adult abdominal surgical patients admitted to an inpatient unit. The patient population, as determined by the PICO question, will include adult patients greater than or equal to 18 years of age who have undergone abdominal surgery for any indication and are able to chew gum in the postoperative setting.

Searching for and critically apraising evidence

OVID Medline®, CINAHL, and PubMed databases were searched. Six data-based research articles were chosen for review. The findings of the selected studies were critically appraised and synthesized. Detailed results of the literaure review were presented in Part I of this paper (Zelenikova et al., 2013, p. 539-542).

Results

Development of the protocol algorithm

The development team created a detailed description of the clinical protocol as well as a protocol algorithm to assist clinicians in determining eligibility and the steps to implement the clinical protocol (Figure 1). Developing the evidence-based clinical protocol took 3.5 months, from August through December 2012 (Table 1).

Table 1 Timeline for developing evidence-based clinical protocol

Activity	08/2012	09/2012	10/2012	11/2012	12/2012
Selecting the topic	x				
Formulating a clinical question	x				
Searching the literature		x			
Critically appraising the literature		x	x		
Evaluating the evidence			x		
Determining effect sizes			x		
Developing evidence-based protocol			x	x	
Revising the clinical protocol					x

Description of the clinical protocol

Assessment required to implement clinical protocol:

1. Confirm that the patient has had abdominal surgery. Surgical method is irrelevant (it could be either open or laparoscopic). Verify that there were no other surgeries performed during this hospital stay. Patients who have had surgeries other than abdominal are excluded from this clinical protocol and should continue the usual postoperative care.
2. Verify that the patient is eligible for the clinical protocol. Is the patient 18 years of age or older? Is the patient without allergies to any ingredients in sugar-free gum? Are the patient's bowels in

continuity? Are the patient's natural teeth present? Is the patient able to tolerate a regular diet at baseline? Has the patient returned to a preoperative level of cognitive status? Is the patient able to follow instructions? Is the patient without risk of aspiration? If all questions are answered yes, then proceed with the clinical protocol. If any question is answered no, then the patient is not eligible; continue usual postoperative care and do not give sugar-free chewing gum.

3. Identify whether the patient has been ordered NPO postoperatively. If the patient has not been ordered NPO, continue usual postoperative care. If the patient has been ordered NPO, continue to the next step of the clinical protocol.

Clinical protocol implementation:

1. Notify the patient's surgical and primary care teams that the patient has qualified for the postoperative gum chewing clinical protocol. Obtain an order for sugar-free chewing gum from the surgeon, 1 piece (standard size) for 30 minutes, 3 times per day while awake, until first flatus and first bowel movement.
2. Evaluate the patient's bowel status. Has the patient begun to pass flatus? Has the patient had any amount of bowel movement? If yes to both, stop the gum chewing intervention and continue usual care. If no, continue to the next step of the clinical protocol.
3. Evaluate if the patient is still ordered NPO status. If yes, continue the sugar-free gum chewing intervention and re-evaluate patient's bowel status at a minimum of every 8 hours by asking the patient and auscultation – listening to the abdomen with a stethoscope – noting the frequency and character of bowel sounds on each patient assessment. If the patient is no longer ordered NPO, stop the gum chewing intervention and continue usual care.

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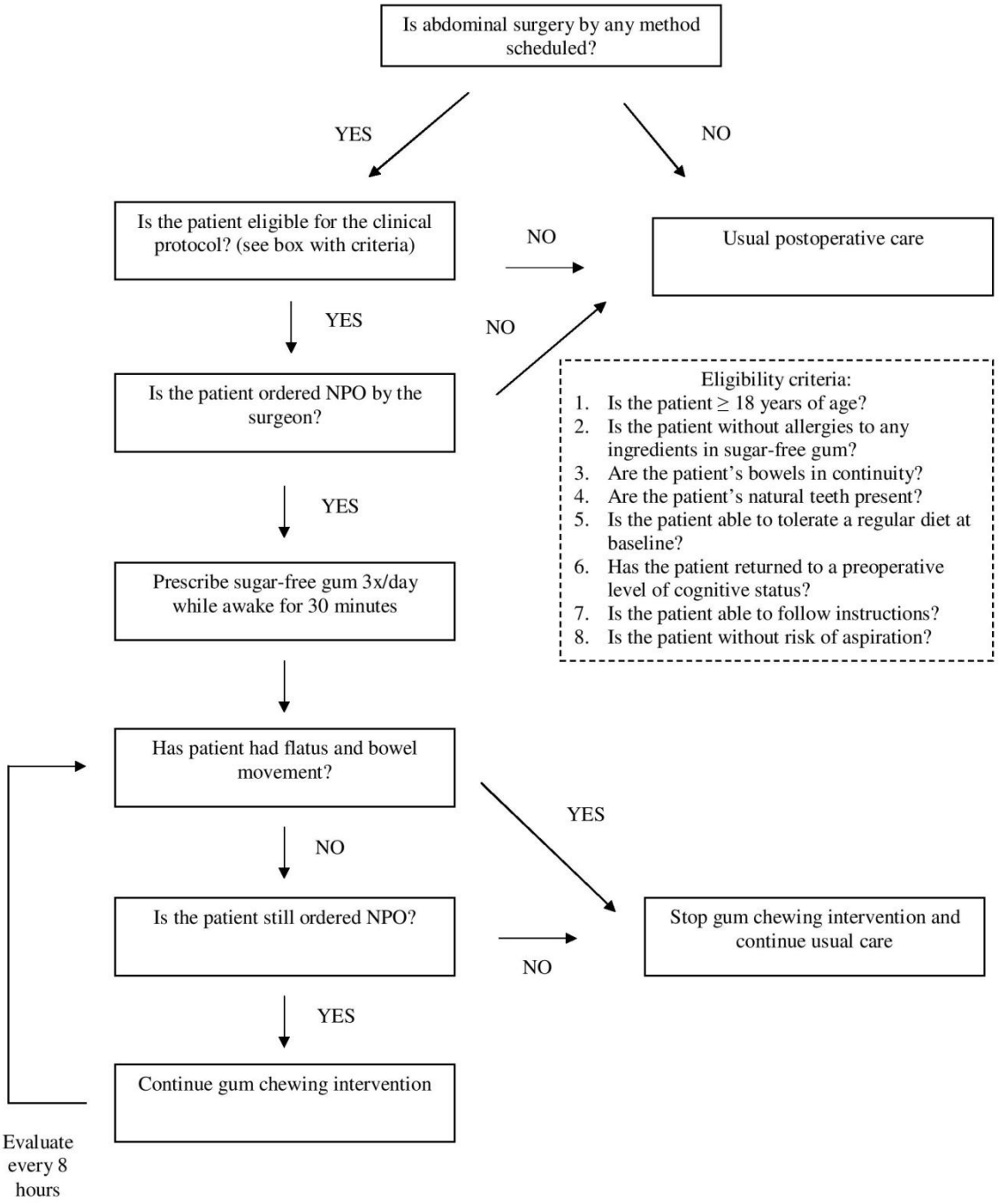

Figure 1 Clinical protocol algorithm

Clinical protocol implementation and evaluationplan

The implementation and evaluation plans of the clinical protocol are described in the discussion section of this paper. The implementation was devised in consultation with Ms. Jane Trombetta, Director, Quality and Risk Management, University of Pittsburgh Medical Center Passavant in Pittsburgh, PA, USA. A timeline for clinical protocol implementation and evaluation was created (Table 2).

Table 2 Timeline for clinical protocol implementation and evaluation

Activity	**01/13**	**02/13**	**03/13**	**04/13**	**05/13**	**06/13**	**07/13**	**08/13**	**09/13**	**10/13**	**11/13**
Submission for review	x										
Approval		x									
Presentation of protocol			x								
Retrospective collection of data			x								
Posting the protocol to aid recall				x	x	x	x	x	x		
Training				x							
Pilot on one unit				x	x	x	x	x	x		
Data collection				x	x	x	x	x	x		
Data analysis				x	x	x	x	x	x	x	
Dissemination of pilot findings										x	
Evaluation									x	x	
Submission for re-review and approval										x	
Roll out to all units											x

Discussion

Clinical protocol implementation

The clinical protocol will be submitted for review and approval to the Committee on Quality Improvement (CQI) in the hospital in January 2013. Members of the CQI include physicians, the Director of Nursing, Nursing Clinical Directors, the Chief Medical Officer, the Chair of the Nursing Quality Council, and others that represent disciplines that are applicable to hospital functions but do not involve patient care. Upon approval from the CQI, the clinical protocol will be presented for review to the high level nursing leaders in the hospital that comprise the Nurse Quality Council (NQC). NQC members include the Chief Nursing Officer, Director of Nursing, Clinical Unit Directors, Nursing Quality Improvement Officer, and the Nursing Informatics Director. Upon final approval, a presentation to the Patient Care Leadership Council, the Medical Executive Committee, and the Department of Surgery will be conducted in February of 2013 to explain the clinical protocol and target support from the Chair of each department for communication to their team members (J. Trombetta, personal communication, November 7, 2012).

The clinical protocol will be piloted on a medical-surgical unit that the admissions department has identified as having a high volume of post abdominal surgery admissions for a period of six months. Training for the staff will occur during the first two weeks of the pilot on the day, evening, and night shifts, as well as weekends to ensure education of all staff. Training will be conducted by the Project Manager (PM) from the development team and will consist of a unit meeting with a question-and-answer session for staff nurses, patient care technicians, charge nurses, primary care nurse specialists (PCNS), and advanced practice nurses (APN). A written copy of the eligibility criteria, clinical protocol, clinical protocol algorithm, and order set will accompany the presentation. Specifically, instruction will highlight the following: identifying eligible patients in the post-anesthesia care unit (PACU), requesting the surgeon to order the clinical protocol, labeling of the patient chart, ordering the gum from the pharmacy, administering one stick of sugar-free gum for 30 minutes three times a day while awake, and assessing bowel status with documentation of time of first flatus and first bowel movement. In addition, the training will highlight the potential benefits to patients including improvements in postoperative outcomes, safety, cost effectiveness of treatment, and relevance to the unit work flow with beneficial

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impact on nursing assignment acuity. Additional time will be spent with the PCNS and the APN as their roles on the unit include ensuring that all staff have been educated in any new treatments/protocols. Throughout the implementation phase, issues will be promptly identified and addressed. This six-month pilot will occur from April to September of 2013. Following the detailed training and implementation phase, data will be collected and analyzed to assess outcomes, adherence, and adverse events and to make adjustments, if needed. The clinical protocol will be submitted for re-review and approval by the CQI and, once approved, will be rolled out in a similar fashion to all medical-surgical units that admit post abdominal surgical patients in the hospital. This roll out will begin in November of 2013.

Throughout the first two weeks of the roll out, the PM from the development team will be present on the units assisting the PCNS in the PACU and on the units in identifying eligible patients and ensuring that the charge nurses and staff nurses are aware of clinical protocol orders and associated charting. The PM will be available to the staff nurses to answer any questions and ensure that the clinical protocol is being delivered appropriately and consistently. Being present on the units will give the PM the opportunity to promptly identify and address any barriers to effective implementation. After the first two weeks, the PM will no longer be present on the unit, but will be available by pager to answer any questions that may arise. To assist in effective clinical protocol recall, the clinical protocol algorithm will be posted in each patient room and at all nursing workstations.

Barriers to implementation

In order to successfully initiate and implement the gum chewing clinical protocol, barriers must be identified and plans put in place for resolution. The most obvious barrier would be resistance to participation and change from nursing and physician staff members.

Surgeons could potentially demonstrate unwillingness to try the intervention due to satisfaction with current standards and usual care. In addition, they may not perceive gum chewing as a serious intervention because it is a common and accessible item and is a simple task to perform. The nursing staff may present similar resistance to change and, in addition, they may view participation in the clinical protocol as another time consuming task to administer and chart. Strategies to overcome these barriers would be based on the foundation of the education that is provided in order to promote the culture of adaptation and change from usual standards of care and practices. Evidence-based clinical protocols that were successfully implemented and demonstrated significant positive results with similar structures could be highlighted to dispel any misconceptions. In an effort to recognize the staff and their contribution to the process, a survey will be developed to collect any information that could contribute to positive improvements to the practice change (discussed below).

The hospital staff that will be affected by the implementation of the clinical protocol include those already identified in the CQI approval process; nurse educators for teaching; direct patient care givers for implementation; pharmacy for stocking and delivering the gum, and surgeons for agreeing to participate in the implementation of a new clinical protocol. Lastly, the institution will be affected because this practice change is occurring on site in the healthcare facility. Institutional support will be ensured through sharing the results and demonstrating the effectiveness of the clinical protocol.

Evaluation of the clinical protocol

Evaluation is a critical component to effectively implementing and sustaining the gum chewing clinical protocol. It is essential that the development team adequately evaluates the effects of this clinical protocol in order to demonstrate the profound impact that gum chewing can reduce the risk of paralytic postoperative ileus. If the development team can adequately evaluate the effectiveness and report positive findings, this clinical protocol can be disseminated to a large population of surgical patients and have a great impact on patient outcomes.

Retrospective data on time to first flatus and time to first bowel movement will be collected for the six-month period prior to the implementation of the clinical protocol in order to have comparison data. Retrospective data will be collected pre-protocol implementation for patients identified as potential candidates for the clinical protocol. These patients will not receive the gum chewing clinical protocol, but their data will be used to detect a clinically significant change in patient outcomes post-protocol implementation.

The next step for evaluation will begin during the pilot with members of the development team reviewing the electronic medical record (EMR) on a daily basis to ensure that patients are being correctly identified and that the clinical protocol is being properly delivered to eligible patients. If the clinical

protocol is not being appropriately delivered or if any barriers to implementation are identified, the charge nurse as well as the PCNS and APN will be promptly alerted and re-education will occur at that time through one-on-one sessions or group in-services as deemed necessary by the development team. Data collection will occur during this EMR review throughout the pilot. Data analysis will be performed by the development team throughout the pilot. If at any time a negative impact on patient outcomes is identified, the clinical protocol will be stopped and the cause will be further investigated.

At the end of the six-month pilot, the development team will disseminate the findings to all involved in order to encourage continued support and consistent implementation of the clinical protocol to all eligible patients during the transition of the clinical protocol from pilot to a component of usual care. This session will also be used for brief re-education to ensure that drifting from the clinical protocol has not occurred. The development team will appropriately convey the impact that this clinical protocol has had on patient outcomes to everyone involved in order to recognize them for their key role in improving patient outcomes.

If the results demonstrate a clinically significant improvement in patient outcomes and the CQI approves, the development team will roll out the clinical protocol to all units in the hospital that care for post-surgical patients as previously discussed in the implementation plan. The plan for implementation as detailed for the pilot will remain the same and the PM will be available to assist in effective education and training of staff. Because detailed evaluation will be more difficult during a large scale roll-out, the development team will periodically review the EMR of all participating units to ensure proper identification of eligible patients and effective implementation of the clinical protocol. If any decline in clinical protocol adherence is noted, increased education and guidance will be provided to staff of the nursing care area identified. In order to ensure that the practice change will be sustained, the development team will re-educate all staff on a periodic basis. The development team will work with the Information Technology (IT) department to continue high quality implementation of the gum chewing clinical protocol. IT staff will create innovative reminders on the EMR to alert staff to eligible patients for the gum chewing clinical protocol so they can request that the patient's surgeon order the gum chewing intervention. These innovative reminders will help to ensure that this clinical protocol becomes part of routine care and that adherence does not decrease over time. The IT staff will also help the development team to generate reports detailing the number of postoperative patients who received the gum chewing clinical protocol and the overall patient outcomes. These results will be helpful to review trends over time and will not require time-intensive EMR review by the development team. Decreasing the time required by the development team will help to ensure that this clinical protocol can be sustained long-term and does not require a large budget.

Discussion of tools used to evaluate the change in practice

In order to demonstrate the effectiveness of this clinical protocol, appropriate tools will be utilized to measure outcomes and satisfaction. The first tool is a Chart Audit Form (see Appendix 1). This form will be used to collect outcome data for the retrospective period and throughout the pilot as well as to collect data necessary for adherence assessment and adverse event reporting during implementation of the clinical protocol. The form will primarily be utilized by members of the development team for data collection purposes. The form will provide consistent data collection across all pre- and post-protocol implementation chart abstraction. Data on time to first flatus and time to first bowel movement can then be compared pre- and post-protocol implementation.

In addition to thorough data collection, it will be essential to assess nurse and patient satisfaction with the clinical protocol. For this reason, a Nurse Satisfaction Survey (see Appendix 2) as well as a Patient Satisfaction Survey (see Appendix 3) will be administered. All patients will receive the survey during implementation of the clinical protocol, and nurses will receive the survey at the end of implemention.

Economic impact of the clinical protocol

The development of a paralytic postoperative ileus leads to longer recovery times and increased lengths of stay in the hospital. The increased length of stay yields a substantial economic burden. In the United States alone, this increased length of stay translates to health care expenditures of approximately $750 million in 1986, and an estimate of up to $1 billion in 2000 (Bosio et al., 2005). Salvador et al. (2005) reviewed clinical and economic outcomes of prolonged postoperative ileus in patients undergoing hysterectomy and hemicolectomy and found that the mean length of stay for hemicolectomy patients with prolonged postoperative ileus was eight days longer

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than that for hemicolectomy patients without prolonged postoperative ileus and the total mean cost was $12,416 higher. This tremendous cost demands increased attention to efforts to decrease the occurrence of postoperative ileus.

This complication that has previously been considered "an inevitable consequence of abdominal surgery" (Fitzgerald, Ahmed, 2009) has the potential to be significantly reduced through a cost-effective intervention. Gum chewing is easy to implement and does not require a costly investment from the institution implementing the clinical protocol. Through reducing the period of postoperative ileus and the length of hospital stay, this intervention will consequently reduce the overall health care expenditure in relation to postoperative ileus.

General considerations

Even though writing a clinical protocol requires significant time and effort, the work does not end after the protocol is drawn up. Once a clinical protocol is in use, unforeseen problems may become evident. Further, there is always novel evidence, fresh guidelines, and new treatments. Therefore, clinical protocols should be systematically reviewed and revised on an annual basis (Rich, Newland, 2006, p. 130).

Clinical protocols can be excellent resources for the novice practitioner, and the processes of protocol creation and revision compel providers to examine their practices in light of the most current evidence. As they constitute a basic foundation of advanced nursing practice, clinical protocols must be reflective of the most current and best available evidence (Rich, Newland, 2006, p. 121).

Conclusion

Clinical protocols are key components of advanced nursing practice (Rich, Newland, 2006, p. 121). The proposed evidence-based clinical protocol can be used to identify patients eligible for gum chewing and its implementation can serve to reduce the risk of paralytic postoperative ileus after abdominal surgery. Once implemented, it would naturally need to be evaluated for effectiveness and modified accordingly. During implementation, problems could be identified and midstream corrections made. Periodic follow-up is necessary until the clinical protocol becomes part of routine care.

Ethical aspects and conflict of interest

There is no conflict of interest to be disclosed. Because our review did not involve human subjects, medical records, or human tissues, Institutional Review Board approval was not required.

Contribution to authorship

All of the authors made substantial contributions to the conception and design of the review, and all were involved in the literature search, analysis and interpretation of the data, and in the drafting and revision of the paper. E. Schlenk supervised the course project and critiqued the final draft of the paper.

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References

ABD-EL-MAEBOUD, K. H. I. et al. Gum chewing stimulates early return of bowel motility after caesarean section. *BJOG: An International Journal of Obstetrics and Gynaecology.* 2009, 116(10), 1334-1339.

ASAO, T. et al. Gum chewing enhances early recovery from postoperative ileus after laparoscopic colectomy. *Journal of American College of Surgeons.* 2002, 195(1), 30-32.

ATKINSON, M. Introduction. In BOWKER, R. et al. *How to write a guideline from start to finish: A handbook for healthcare professionals.* 1st ed. Philadelphia: Elsevier/Churchill Livingstone, 2008. p. 1-12.

BOSIO, R. M., DELANEY, C. P., SENAGORE, A. J. Economic impact of POI and prolonged length of stay. *Seminars in Colon and Rectal Surgery.*2005, 16(4), 235-238.

CHOI, H. et al. Chewing gum has a stimulatory effect on bowel motility in patients after open or robotic radical cystectomy for bladder cancer: A prospective randomized comparative study. *Urology*. 2011, 77(4), 884-890.

FITZGERALD, J. E. F., AHMED, I. Systematic review and meta-analysis of chewing-gum therapy in the reduction of postoperative paralytic ileus following gastrointestinal surgery. *World Journal of Surgery*. 2009, 33(12), 2557-2566.

RICH, E. R., NEWLAND, J. A. Creating clinical protocols with an apgar of 10. In LEVIN, R. F., FELDMAN, H. R. (eds.). *Teaching evidence-based practice in nursing. A guide for academic and clinical settings.* 1st ed. New York, Springer, 2006. p. 121-132.

SALVADOR, C. G. et al. Clinical and economic outcomes of prolonged postoperative ileus in patients undergoing hysterectomy and hemicolectomy. *Pharmacy & Therapeutics*. 2005, 30(10), 590-595.

SCHUSTER, R. et al. Gum chewing reduces ileus after elective open sigmoid colectomy. *Archives of Surgery.* 2006, 141(2), 174-176.

VÁSQUEZ, W., HERNÁNDEZ, A. V., GARCIA-SABRIDO, J. L. Is gum chewing useful for ileus after elective colorectal surgery? A systematic review and meta-analysis of randomized clinical trials. *Journal of Gastrointestinal Surgery.* 2009, 13(4), 649-656.

ZELENÍKOVÁ, R. et al. The use of gum chewing in postoperative care of patients with abdominal surgery: developing an evidence-based clinical protocol - part I. *Ošetřovatelství a porodní asistence.* 2013, 4(1), 537-545.

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Appendix 1

Gum Chewing Clinical Protocol
Chart Audit Form

Patient Data	
Patient ID _____	Date of admission to hospital _____
Age _____	Sex _____
Race _____	Ethnicity _____

Surgical Data	
Type of Surgery _____	Date/time of surgery _____
Surgical method _____	Elective/Emergency _____
NPO order date _____	

Outcome Data	
Time to first flatus _____	Time to first bowel movement _____
Date NPO order discontinued _____	Date of hospital discharge _____
Discharge disposition _____	Did patient develop a PPOI? _____ If yes, date of documentation of PPOI _____

Adherence Assessment
Adherence Rate _____
Adherence Comments _____ _____

Adverse Event Reporting	
Did any adverse event occur? _____	Was the event related to the gum chewing clinical protocol? _____
Date of Event _____	Was the event life-threatening? _____
Detailed description of event: _____ _____	Resolution of event: _____ _____

PPOI = paralytic postoperative ileus

Appendix 2

Gum Chewing Clinical Protocol
Nurse Satisfaction Survey

Please place a check mark in the box that most closely represents your level of agreement with the below statements:

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
Identifying eligible patients for the gum chewing protocol is easy.	1	2	3	4	5
Implementing the gum chewing protocol is not time consuming.	1	2	3	4	5
Documenting the gum chewing protocol is not time consuming.	1	2	3	4	5
Patient compliance is a barrier to implementing the gum chewing protocol.	1	2	3	4	5
I believe the gum chewing protocol is effective and worthwhile to implement.	1	2	3	4	5

How to calculate score: Add all items. Range of score: 5 - 25.
The higher the score, the greater the satisfaction.

Additional comments/recommendations regarding the gum chewing protocol:

Thank you for taking the time to evaluate the gum chewing protocol and share your comments with us. We appreciate all that you do to help improve the lives of our patients!

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Appendix 3

Gum Chewing Clinical Protocol
Patient Satisfaction Survey

Please place a check mark in the box that most closely represents your level of agreement with the below statements:

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
Following the gum chewing schedule is easy.	1	2	3	4	5
I do enjoy chewing gum on a regular basis.	1	2	3	4	5
I believe that this gum chewing protocol is helpful to patients in my situation.	1	2	3	4	5
I would recommend gum chewing to a friend undergoing a surgical procedure.	1	2	3	4	5

How to calculate score: Add all items. Range of score: 4 - 20.
The higher the score, the greater the satisfaction.

Additional comments/recommendations regarding the gum chewing protocol:

Thank you for taking the time to evaluate the gum chewing protocol and sharing your comments with us. We are constantly striving to improve the lives of our patients and your input is truly appreciated!