

BARRIERS TO IMPLEMENTING CLINICAL PRACTICE GUIDELINE
NUTRITION RECOMMENDATIONS IN
MILD ACUTE PANCREATITIS PATIENTS:
PROVIDER'S KNOWLEDGE AND PRACTICE

by

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As members of the DNP Project Committee, we certify that we have read the DNP Project prepared by Jenna H. Gaines entitled “Barriers to Implementing Clinical Practice Guideline Nutrition Recommendations in Mild Acute Pancreatitis Patients: Provider’s Knowledge and Practice” and recommend that it be accepted as fulfilling the DNP Project requirement for the Degree of Doctor of Nursing Practice.

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Thank you to my DNP committee.

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DEDICATION

To my supportive and loving husband.

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ABSTRACT

The spectrum of acute pancreatitis (AP) affects between 4.9 and 73.4 patients out of 100,000 worldwide annually (Tenner, Baillie, DeWitt, & Vege, 2013). AP uses the Atlanta classification system to establish a diagnosis of mild, moderate, or severe. The American College of Gastroenterology (ACG) has established comprehensive clinical practice guidelines (CPG) for the management of AP, the most recent version published in 2013 (Tenner et al., 2013). There have been similar CPGs published internationally that integrate current evidence-based research into recommendations for practice. These guidelines along with the ACG's guidelines recommend initiating a diet for mild acute pancreatitis patients due to research findings of improved patient outcomes (i.e. reduced length of hospital stay, decreased rate of infections, and reduced mortality) (Horibe et al., 2015; Lariño-Noia et al., 2014). There is an international awareness of the need for increased CPG nutrition recommendation compliance in the practice setting as many studies have found providers prefer to keep patients *nil per os* (NPO) and do not adhere to CPGs (Andersson, Andrén-Sandberg, Nilsson, & Andersson, 2012; Greenberg et al., 2016; Sun et al., 2013). The purpose of this doctor of nursing practice (DNP) project is to assess providers' current nutrition therapy practice and knowledge of the ACG's CPG nutrition recommendations for mild AP patients. The researcher conducted the assessment with a hospitalist practice at Banner University Medical Center in Phoenix, Arizona. The results of the project contribute to the current body of research on national adherence to CPGs for AP and act as a needs assessment for future projects where a nutrition protocol order set may be established. The investigation of nutrition therapy for AP patients seeks to improve and standardize the care this patient population receives while in the acute care setting.

INTRODUCTION

Acute pancreatitis (AP) presents as an urgent disease process that requires appropriate and timely treatments to stabilize the patient, prevent deterioration, and initiate the healing process. AP is the largest gastrointestinal (GI) related diagnosis for hospital admission in the United States (U.S.) (Peery et al., 2012; Lankisch, Apte, & Banks, 2015; Wu & Banks, 2013). The annual cost of AP care is \$2.6 billion, average hospital length of stay (LOS) is five days, and mortality ranges from 3% to 30% dependent on the severity of AP at the time of presentation (Peery et al., 2012; Working Group IAP/APA Acute Pancreatitis Guidelines, 2013; Wu & Banks, 2013). As a prominent GI disease, evidence-based treatment is essential to ensure delivery of high quality care for AP patients.

The spectrum of acute pancreatitis is classified by The Atlanta classification system: mild (i.e. no organ failure), moderate (i.e. transient, <48 hour organ failure), and severe (i.e. persistent, >48 hour organ failure) with complications including multi-organ failure, pancreatic necrosis, and a systemic inflammatory response (Banks et al., 2013; Bollen, 2016; Lankisch et al., 2015). Diagnosis of AP requires two or more of the following three findings to be present: characteristic upper abdominal pain, amylase and/or lipase elevated three times the upper limit of normal, and imaging findings consistent with AP (Bollen, 2016). Mild AP comprises the majority of AP with 75-80% of cases diagnosed as mild and one in four AP cases progressing to severe (Bollen, 2016). There may be multiple reasons for disease progression including decreased provider awareness of current clinical practice guidelines (CPGs), providers' disbelief in CPG recommendations, lack of hospital pancreatitis and nutrition protocols, and lack of available resources leading to subsequent poor adherence to CPGs (Duggan et al., 2012; Greenberg et al., 2016; Sun et al., 2013). When current nutritional guidelines for mild AP are followed, patients

experience reduced length of hospital stay, decreased complications (i.e. lower rates of progression to moderate or severe AP and lower rates of infection), and reduced mortality (Horibe et al., 2015; Lariño-Noia et al., 2014; McClave et al., 2016). Thus, proper and diligent treatment of AP is required to ensure recovery with improved outcomes for patients and the healthcare system.

Background Knowledge

There are several current CPGs for the management of AP. The American College of Gastroenterology's (ACG), *Management of Acute Pancreatitis* was revised in 2013 (Tenner, Baillie, DeWitt, & Vege, 2013). The International Association of Pancreatology (IAP) in collaboration with the American Pancreatic Association (APA) released 2013 revised guidelines titled *IAP/APA Evidence-Based Guidelines for the Management of Acute Pancreatitis* (Working Group IAP/APA Acute Pancreatitis Guidelines, 2013). The American Society of Parenteral and Enteral Nutrition (ASPEN) in collaboration with the Society for Critical Care Medicine (SCCM) released a nutrition guideline for critically ill patients in 2016 that includes nutritional care for AP titled *Guidelines for the Provision and Assessment of Nutrition Support Therapy in the Adult Critically Ill Patient* (McClave et al., 2016). In the early 2000s, randomized control trials (RCTs), systematic reviews, and meta-analyses findings suggested all AP patients should be fed earlier than current standard practice and CPGs at the time were released with these updates.

History of AP Clinical Practice Guidelines

In order to appreciate the current struggle providers have adhering to CPGs, it is important to understand the history of CPGs and development of current AP knowledge over the last couple decades. The ACG first published AP "practice guidelines" by a single author in 1997 with no nutrition recommendations for mild AP (Banks, 1997). However, the ACG revision in

2006, recommended nutrition as important and stated timing of diet initiation and type of diet for mild AP were unknown (Banks et al., 2006). The IAP CPGs first iteration was published in 2002 and provided recommendations for surgical care through the spectrum of AP instead of medical management with no nutrition recommendations (Uhl et al., 2002). The 2016 ASPEN and SCCM CPG had its first iteration addressing nutrition in critically ill patients in 2009, which included the AP patient population (McClave et al., 2009). In the U.S., the ACG CPG and ASPEN/SCCM guideline are most widely used to direct nutritional treatments in the AP population.

Significance of Current Clinical Practice Guidelines

The CPGs guidelines are derived from current evidence-based research and outline specific treatments for nutritional care catered to the spectrum of AP. Current common practice for patients with mild AP centers on pancreatic rest where patients are kept NPO until abdominal pain, nausea, and vomiting resolve and normal bowel sounds return (Lariño-Noia et al., 2014). The theory behind this practice is that pancreatic rest will lead to less exocrine production of enzymes and therefore prevent further perpetuation of pancreatic inflammation (Lariño-Noia et al., 2014). Studies have found the notion behind an NPO treatment plan without merit as once originally hypothesized (Horibe et al., 2015; Lariño-Noia et al., 2014).

RCTs and meta-analyses have studied pancreatic exocrine function, comparing an NPO approach with various diets. Results suggest there is no benefit in keeping a patient from eating; findings reveal either no difference in outcomes or worse outcomes (i.e. longer length of hospital stay) when nutrition is withheld (Horibe et al., 2015; Lariño-Noia et al., 2014). Each of the aforementioned guidelines recommends feeding patients through the spectrum of AP; specifically, in mild AP patients' nutrition should not be withheld so to not increase length of stay (Tenner et al., 2013). To deliver high-quality patient care that is evidence-based, providers

must follow CPG recommendations for management of AP.

Local Problem

This doctor of nursing practice (DNP) project was carried out at Banner University Medical Center, Phoenix (BUMCP) in Arizona, a large metropolitan academic facility. In the practice setting this author has observed incongruent practice with the ACG CPGs nutrition recommendations for mild AP. Anecdotal evidence from a sister hospital to BUMCP indicates that mild AP patients typical hospital nutrition course of treatment is NPO until pain, nausea, and vomiting subside (Liana Hayes, personal communication, January 20, 2016). BUMCP campus is a level one-trauma hospital with Magnet designation (Banner University Medical Center [BUMC], 2015). It has 733 beds and is ranked one of the “Best Hospitals” by U.S. News & World Report (BUMC, n.d.; Banner University Medical Center, 2015). There are 39 hospitalists in the Banner University Medical Group (BUMG), a mix of direct care and academic providers (BUMC, 2016). These are the providers that were approached as participants for this DNP project. Two thirds of AP patients are cared for either solely by a hospitalist or before a gastroenterologist is consulted (Mofidi, Madhavan, Garden, & Parks, 2007). Thus, the BUMG hospitalists were an applicable provider group selection for this DNP project.

Presently only national statistics are available on the prevalence of AP. No local data in the state of Arizona exists. This was verified through the medical librarian at the University of Arizona Health Sciences Library (Mary Slebodnik, personal communication, February 16, 2016). This lack of data supported the need for this DNP project; assessment of providers offered data on AP care that did not exist locally.

Current Mild AP Nutrition Research

Many studies have focused specifically on nutrition in mild AP and recommended

findings to be implemented in acute care settings. In a prospective double-blind RCT, patients with mild AP received one of three diets: clear liquid, soft, and full solid (Moraes et al., 2010). Results revealed no difference in pain relapse between groups and patients in the full solid diet group had a median LOS one and half days less than the other two diet groups (Moraes et al., 2010). Another mild AP RCT study used two diet groups: one that began feeding once the lipase normalized and one that began feeding when that patient felt ready to eat (Teich et al., 2010). This study found no statistical differences in abdominal pain or LOS suggesting lipase is not an indicator to begin feedings (Teich et al., 2010). In another mild AP RCT, two diet groups were used: clear liquid and soft food (Rajkumar, Karthikeyan, Ali, Sistla, & Kate, 2013). Results found a statistically significant reduced LOS (four days less) in the soft food diet group, and no other statistically significant differences between groups in abdominal pain, nausea, vomiting, or diarrhea (Rajkumar et al., 2013). Another mild AP focused RCT utilized four groups to examine type of diet (liquid versus full solid) and timing of diet initiation (early versus standard after normalization of symptoms) (Lariño-Noia et al., 2014). Results found decreased LOS with groups that initiated an early diet and no difference between groups was found in tolerance (i.e. reoccurrence of symptoms) to timing of feedings (Lariño-Noia et al., 2014). The first and only systematic review and meta-analysis on the timing of oral feeding in mild AP found that early oral feeding reduced LOS and was not associated with adverse outcomes (i.e. abdominal discomfort, nausea, vomiting, diarrhea) (Horibe et al., 2015). Since the spectrum of AP nutrition care is reviewed due to the lack of research solely specific to mild AP, a brief discussion of current moderate and severe AP research and recommended practice follows.

For moderate and severe AP, total parenteral nutrition (TPN) has been a traditional treatment to provide nutrition while allowing the pancreas “rest time.” However, recent studies

reveal the hypothesized rationale that pancreatic rest time would decrease perpetuation of pancreatic inflammation is not true and does not lead to improved outcomes instead worse patient outcomes have been found (Lariño-Noia et al., 2014; Sun, Mu, Tong, Li, & Zheng, 2013). In mild AP patients who are provided a diet immediately and moderate to severe AP patients who are provided enteral nutrition (EN) within 12-24 of admission: shorter LOS, decreased secondary infections, and reduced mortality are experienced in these patient populations (Horibe et al., 2015; Lariño-Noia et al., 2014; Sun et al., 2013). Thus, providing TPN as a nutrition therapy in moderate and severe AP when EN is available is no longer recommended and this is reflected in current CPGs including the ACG's CPGs. The next important facet in researching AP management is to understand various studies' findings of current provider's practices and barriers to CPG implementation.

Research Findings Comparing Current Practice with CPG Recommendations

An evaluation of current AP practice can outline the direction and next steps required to improve provider compliance with CPGs. Sparse research on mild AP treatment compliance with CPGs exists, thus a review of AP through the spectrum of stages can enlighten the scope of the problem. In a survey of physicians at Rush University Medical Center, 52% of attending physicians responded they initiate feedings with TPN for non-infected necrotizing pancreatitis patients and an overall provider preference for TPN over EN (Behara et al., 2008). These results demonstrated a lack of practice change when available research findings (five RCTs available when the study was conducted) revealed preference for EN over TPN in necrotizing pancreatitis (Behara et al., 2008). Results of a Swedish hospital questionnaire (n=58) aimed to identify current practice on surgical units in the management of AP revealed several discrepancies from current CPG recommendations (Andersson, Andrén-Sandberg, Nilsson, & Andersson, 2012). In

regards to nutrition, physician respondents stated a 93% preference for fasting, slight preference for EN (55%) over TPN (48%), and criteria to begin oral intake was vastly diverse in different hospitals (Andersson et al., 2012). The goal of this study was to establish a baseline for current Swedish practice of AP to lead to the development of national CPGs, as none currently exists (Andersson et al., 2012). In a survey of dietitians in the United Kingdom (U.K.), Republic of Ireland, and Canada in the care of AP, 37% reported use of EN (over TPN) and 7.8% reported never using EN (Duggan et al., 2012). The study indicated further need for quality improvement interventions to overcome barriers and increase use of current CPGs (Duggan et al., 2012). In Canada, a retrospective review of eight Toronto hospitals' CPG compliance for management of AP regarding nutritional care revealed: 80.6% of non-ICU patients were kept NPO and 34.6% of ICU patients received EN, which started on average seven and a half days after admission (Greenberg et al., 2016). The Greenberg et al. (2016) study results suggested the need for CPG knowledge translation strategies and an assessment of barriers to clinical implementation of CPGs in practice. Thus, these studies reveal a continued provider preference for TPN over EN and keeping non-ICU patients NPO in the practice setting in multiple countries suggesting a widespread need for improved adherence to CPGs. The review of studies in this section outlined how current practice does not align with CPGs. The following section is a review of research findings on the barriers to implementing CPGs.

Research Findings Specific to Non-Adherence to CPGs

A starting point for this project was guided by an understanding of common barriers to implementing CPGs after establishing that provider CPG compliance was low in the care of the AP population. This established the necessity of a needs assessment to understand the scope of the problem at BUMCP. In a systematic review of studies analyzing provider's adherence with

CPGs in general medical practice, results revealed low sustainability with 38% of the studies showing low long-term adherence (more than one year) to the identified CPG (Ament et al., 2015). This suggests further CPG sustainability research is needed as well as research into the methods of implementation utilized for each CPG (Ament et al., 2015). In a questionnaire survey at four North American conferences for internal medicine and gastroenterology, the management of AP was evaluated for compliance with ACG's CPGs and revealed a difference in nutritional practice based on specialty: 52% of academic physicians utilized EN versus 70% of private practice physicians utilized TPN and both gastroenterologists and private practice physicians favored use of TPN over EN (Sun et al., 2013). Providers who favored TPN stated the main reason for this preference was to provide complete bowel rest followed by lack of access to EN (Sun et al., 2013). These findings demonstrated poor compliance with CPGs. The authors concluded the need for further investigation of AP knowledge and barriers to increase provider adherence to guidelines (Sun et al., 2013). In the Duggan et al. (2012) survey of dietitians, the greatest barrier to implementing EN was identified as "medical preference" in the treatment of AP. The studies in this section reveal a myriad of potential gaps in provider knowledge, provider reluctance towards implementing new research in AP care, lack of facility resources, discrepancies in CPG awareness, and poor long-term CPG adherence.

Purpose

Hospital practice should reflect CPG recommendations through the care provided to the AP patient. Both the AP patient and the hospitalist providing patient care were stakeholders for this DNP project. The patient was the ultimate stakeholder who depends on their provider to incorporate evidence-based practice into their care. The hospitalist who provides care to AP patients may need more resources or education to implement CPGs recommendations depending

on outcomes found in this DNP project. To adopt a CPG and develop a protocol for hospital use, a committee must come together. Prior to convening a protocol development committee an assessment of current practice must be conducted to identify a need. The hospital may be a stakeholder as well since study results have found patient outcomes result in shorter lengths of stay when a solid diet is initiated first, thereby reducing care costs associated with mild AP (Lariño-Noia et al., 2014). Since hospitalists care for two thirds of mild AP patients, the BUMG hospitalists were an appropriate provider group for this DNP project (Mofidi et al., 2007). The purpose of this DNP project was to assess providers' current knowledge of CPGs and their practice as it relates to the nutritional treatment of mild AP.

A questionnaire was utilized to evaluate the study question. The questionnaire consisted of fifteen items about ACG CPG awareness, current nutrition therapy practice for mild AP patients, and knowledge of the ACG CPG nutrition recommendations. The hospitalists of BUMCP, a trauma one Magnet facility in downtown Phoenix, AZ, were the participants for this DNP project.

Study Question

In patients with mild AP, what barriers do providers face in implementing current clinical practice guidelines' nutrition recommendations in the hospital setting? This DNP project assessed one potential barrier to CPG implementation: provider knowledge of the ACG CPG nutrition recommendations. The questionnaire explored provider adherence to the ACG's CPGs by asking about their current nutritional practices for mild AP patients.

FRAMEWORK & SYNTHESIS OF EVIDENCE

Conceptual Framework

The conceptual framework selected to guide this DNP project was the Ottawa Model of

Research Use (OMRU). The OMRU was designed to aid in the translation of knowledge from the research setting into the practice setting (Graham & Logan, 2004). It was ideal for this project, which aimed to investigate gaps in provider knowledge and practice as recognized by current research and evidence-based CPGs. The OMRU has a process that includes six elements stemming from three main concepts to create practice change originating from evidence-based research (Estabrooks, Thompson, Lovely, & Hofmeyer, 2006; Graham & Logan, 2004). The purpose of this DNP project was to evaluate providers' CPG knowledge and current nutritional practice for mild AP patients and therefore potential barriers to implementation of current CPG nutrition recommendations in the acute care practice setting. Theories are the main source informing schematic models, it is important that the chosen model for a DNP project represents the key struggle that the purpose statement seeks to discover (Christenbery, 2011). Thus, at the core of this DNP project, the purpose sought to discover if evidence-based research was being carried out in practice, which was well aligned with the OMRU framework.

The two theoretical underpinnings of the OMRU supported the projects' purpose: diffusion of innovations and planned action theory (Manojlovich, Squires, Davies, & Graham, 2015). The diffusion of innovations theory was developed by Everett Rogers whereby diffusion of a new innovation (i.e. new research as related to this project's purpose) is communicated over time among people in a social system (Rogers, 2013). This is true of nutrition research where diffusion of new evidence occurs through reading articles or discussion among colleagues over time with providers caring for patients where the new research is relevant to their outcome (i.e. the social system). The planned action theory is a generic term for theories such as the theory of planned behavior that predict and explain how people and environmental forces react to change; planned action theories promote successful planned change (Straus, Tetroe, & Graham, 2013).

This project honors the planned action theory by being an initial investigation of provider knowledge and practice to establish if a next step to promote practice change was warranted by the results of the questionnaire (i.e. low practice adherence to CPG recommendations). The project results explain the people and environment to plan for change such as implementing a nutrition protocol for the mild AP patient population.

OMRU Concepts

The OMRU model guides implementation of practice change via three main concepts: intervention assessment, program monitoring, and evaluation of impact through assessment of (intended) outcomes (Estabrooks et al., 2006). These three concepts are expanded to comprise the six total elements of the OMRU model. These six elements include: evidence-based innovation, potential adopters, practice environment, intervention/transfer strategies, adoption, and outcomes (Graham & Logan, 2004). The first three elements comprise the intervention assessment, identifying any barriers or supports to implementation (Graham & Logan, 2004). Next, program monitoring of the intervention is accomplished through communication of intervention strategies and the practice change adoption process (Graham & Logan, 2004). Finally, the project is evaluated through an analysis of outcomes, which may include patients, nurses, providers, and/or the organization (Graham & Logan, 2004). The strength of the OMRU model is its thorough definitions of each element and its usefulness to healthcare providers and researchers (Estabrooks et al., 2006). The following highlights the application of this DNP project through the OMRU elements (see Appendix).

OMRU Elements

The assessment concept begins with the innovation element. The innovation was the end product this DNP project will provide: the questionnaire to assess provider's knowledge and

current practice for mild AP. Potential adopters included the provider participants of the questionnaire. The practice environment setting was BUMCP where the hospitalists of Banner University Medical group, Phoenix campus care for AP patients.

Next, the monitoring concept starts with an analysis of intervention strategies. Barriers, implementation strategies, and follow-up define the intervention strategy element. Potential barriers included lack of provider belief in CPGs, lack of administrative support, shame of provider knowledge deficits, and lack of time to fill out questionnaire. The intervention strategies included providing both an online and a hard copy version of the questionnaire. Follow-up strategies included analysis of the results of the completed questionnaires for interpretation. Adoption is the second element within the monitoring concept and included analysis of initial use and sustained use of the questionnaire. Initial use of the questionnaire identified gaps in provider knowledge and practice for nutritional care of the mild AP patient. To ensure the questionnaire provided accurate results that can be sustainable, the questionnaire was anonymous. Sustained use of the questionnaire could guide provider education as well as identify a need for future nutrition protocol development for the mild AP patient population.

The final concept is evaluation, which includes the outcomes element. To evaluate the questionnaire, it is necessary to review the innovation element from the assessment concept. The intended innovation was to identify provider practice and knowledge of current mild AP CPGs. Data analysis provided the outcomes of the innovation. The OMRU framework thus guided utilization of the questionnaire to establish if a future protocol was needed to increase CPG adherence through the process of exploring if evidence based research had been put into practice.

Concepts

The concepts in this DNP project outlined by the purpose statement guide an

understanding of the innate layers in assessing providers' knowledge and practice. Concept identification is important to the project process to acknowledge human actions with an understanding that patterns and routines in social phenomena govern implicit or explicit culture of a group (Manojlovich et al., 2015). For the hospitalist group who participated in this project general patterns and routines in caring for patients create a culture of care within the practice. The concepts specific to this project include knowledge, practice, nutrition, and mild AP.

The concepts of knowledge and practice were evaluated in the questionnaire with separate questions. The knowledge section used questions specific to the ACGs CPG, that asked directly if a provider knew the current nutritional recommendations for mild AP: specifically, the type of diet and the timing of when to start a diet. Knowledge can be implicit or explicit and managing knowledge can be useful for organizations to know where to provide events for further education (Donate & Canales, 2012). Thus, the questionnaire ascertained provider knowledge setting the foundation for potential future education and/or a nutrition protocol. Practice was assessed using questions that directly asked the provider the type of diet and the timing of starting a diet that they select for their mild AP patients. The explicit nature of practice was explored and results reflected how providers care for their mild AP patients.

Nutrition is often viewed differently depending on cultural upbringing, environment, access to food, and knowledge of foods. It was important to recognize that providers may differ in their knowledge and value of nutrition, which would implicitly affect this aspect of care provided to their patients. The Academy of Nutrition and Dietetics states the "overall pattern of food eaten is the most important focus of healthy eating" (p. 307) and reports the dynamic practice of nutrition includes "food preferences, weight concerns, physiology, time and convenience, environment, abundance of foods, economics, media/marketing, perceived product

safety, culture, and attitudes/belief” (Freeland-Graves & Nitzke, 2013, p. 307). Thus, if a provider’s attitudes about food reflect a “less is more” mentality, a NPO diet may not seem extreme to them, however a provider who subscribes to a cultural norm such as “feed a cold, starve a fever,” may view an NPO diet as extreme and may be more inclined to order a full diet as opposed to a liquid diet for a mild AP patient. Provider’s nutritional practices in caring for mild AP patients were investigated in the questionnaire.

The ACG defines mild AP in their CPG as: usually self-limiting, organ failure is absent, pancreatic necrosis is absent, and hospital length of stay is brief (Tenner et al., 2013). This definition that can be subjective to some extent, however absence of organ failure and pancreatic necrosis is objective. The definition was displayed at the top of the questionnaire, which provided a unified understanding of mild AP for participants as they began the questionnaire.

These concepts and the OMRU framework assisted in the exploration of provider knowledge and practice regarding the nutritional care of mild AP. The OMRU and the theoretical underpinnings of the framework were an ideal selection for this DNP project, as they guided the questionnaire design and implementation.

Synthesis of Evidence

There is a known divide between research and practice that is not a new phenomenon in healthcare; the field of implementation science has sought to improve this gap (Glasgow et al., 2015). Providers in the acute care setting seek to care for the mild AP patient population with knowledge that may not translate current research findings. Current CPGs from the ACG’s, *Management of Acute Pancreatitis* inform practice for the care of mild AP based on latest collected research findings (Tenner et al., 2013). CPGs are developed with the intention of analyzing current research and presenting evidence-based recommendations for care of a specific

patient population and/or condition (Woolf, Schünemann, Eccles, Grimshaw, & Shekelle, 2012). The nutrition recommendations from the ACGs guidelines state to feed patients once nausea and vomiting have subsided with a low-fat solid diet, since not feeding a patient or instituting a clear liquid diet have not shown improved outcomes in large RCTs (Tenner et al., 2013). Current provider practice has not been observed and/or reported to be consistent with these CPGs (Duggan et al., 2012; Sun et al., 2013). Thus, the purpose of this DNP project was to assess providers' current knowledge of CPGs and their practice as it relates to the nutritional treatment of mild AP patients.

Search Strategy

A review and synthesis of the literature provided more information on the state of current provider knowledge and practice in the nutritional care of the mild AP patient. Literature searches were conducted in PubMed, Cumulative Index of Nursing and Allied Health Literature (CINAHL), Google Scholar, and Scopus. The following MESH terms were used in PubMed: "pancreatitis," "practice guidelines as topic," and "practice patterns, physicians." The following key words were used in the CINAHL search: "pancreatitis," "practice pattern," and "clinical practice guideline." The following key words were used in Google Scholar: "providers," "current practice," "knowledge," "mild acute pancreatitis," and "clinical practice guidelines." The following key terms were used in the Scopus search: "pancreatitis," "nutrition," and "physician practice."

The PubMed search yielded 14 results, three of the results were relevant to this project's purpose. The CINAHL search yielded one result, which was relevant to the project's purpose. The article found in the CINAHL query was searched in Google Scholar and yielded 42 "cited by" articles, of which two were selected as relevant. The Google Scholar search yielded 16,100

results with the year constraint set to 2006 to result one top result that was relevant to this project's purpose. This one article offered 61 "cited by" articles, which were further reduced to 55 after including only those with "pancreatitis" in the title and further reduced to 17 after restricting the year to 2012. Of those 17 articles, two articles were relevant to the project's purpose. The Scopus search yielded 28 results, most already found in the PubMed search, except one from 2004 with 11 "cited by" articles that yielded one article relevant to the project's purpose. This provides a total of ten retained articles (see table 1). Exclusion criteria included content with pediatric populations, non-English language journals, and single author/opinion pieces.

Discussion of the Search Strengths, Weaknesses, and Limitations

The strengths, weaknesses, and limitations of this search centered on the lack of specific research available that was directly related to the project's purpose. The strengths of the search included all articles were not more than ten years old and a majority were from the last five years. The key search terms "providers' knowledge" or "providers' practice" were reflected in each article, which directly aligned with the projects' purpose.

The weaknesses and limitations of the search reflected the existing gap in the literature regarding information about provider knowledge and practice for the mild AP patient. The weaknesses of the search included not all articles related specifically to nutrition in pancreatitis instead some discussed nutrition in the critically ill patient. Some of the articles were international, which can decrease the generalizability of conclusions. Not all articles were about provider knowledge and practice; some surveyed dietitians, nurses, and medical residents. The limitations of the search included incorporating articles that explored nutrition practices in caring for pancreatitis or critically ill patients. This was allowed since the spectrum of pancreatitis

ranges to critically ill patients with severe AP. An analysis of nutritional care in the spectrum of pancreatitis could still inform the researcher about providers' practice and/or knowledge of AP CPG nutrition recommendations.

TABLE 1. Literature Search Results

Reference	Research Question/Hypothesis	Study Design	Sample and Setting	Methods for Data Collection and Data Analysis	Findings
<p>Sekimoto, M., Shikata, S., Takada, T., Hirata, K., Yoshida, M., Hirota, M., Kitamura, N., Shirai, K., Kimura, Y., Wada, K., Amano, H., Kiriya, S., Arata, S., Gabata, T., Hirota, M., Takeda, K., Yokoe, M., & Mayumi, T. (2010). Changes in management of acute pancreatitis before and after the publication of evidence-based practice guidelines in 2003. <i>Journal of Hepatobiliary Pancreatic Science</i>, 17(1), 17-23. doi: 10.1007/s00534-009-0212-5</p>	<p>The Japanese Guidelines for the Management of Acute Pancreatitis was published in 2003. Current studies reveal adherence to these guideline recommendations is low. This study seeks to examine current medical care of AP in relation to guidelines adherence</p>	<p>Descriptive</p>	<p>Sample: 590 participants randomly selected from members of the Japanese Society of Abdominal Emergency Medicine, the Japan Pancreas Society, and the Japanese Society of Hepato-Biliary-Pancreatic Surgery.</p> <p>Setting: Japan</p>	<p>Data Collection: Questionnaire survey with questions concerning diagnosis and treatment important in the management of AP; as well as demographic data, medical experience, and participants' area of specialty.</p> <p>Data Analysis: Participants were first divided into those who had read the CPG then into three subsequent groups: "those who did not perform the clinical practice in the past but who perform it now, those who performed the practice in the past but do not perform it now, and those for whom no changes were observed or who did not provide answer" (p. 18)</p> <p>Differences in clinical practice between the two groups were analyzed with Mann-Whitney U tests.</p>	<p>Response rate: 59% (590 of 1,000)</p> <p>Two Initial Groups: Those who had read the guideline: 463 Had not read the guideline: 127</p> <ul style="list-style-type: none"> • Significant differences found only between those who use lipase for diagnosis decision and use of enteral nutrition for mild AP (both higher in the group that read the guideline) <p>Significant clinical practice changes comparing before and after guidelines publication:</p> <ul style="list-style-type: none"> • Lipase measurements for diagnostic decisions (increased) • Prophylactic antibiotic administration in mild cases (decreased) • Prophylactic use of protease inhibitors in mild cases (decreased) • Use of H2 receptor antagonists in moderate cases (decreased) • Use of enteral feeding in severe cases (increased)

TABLE 1 – Continued

<p>Vlada, A. C., Schmit, B., Perry, A., Trevino, J. G., Behrns, K. E., & Hughes, S. J. (2013). Failure to follow evidence-based best practice guidelines in the treatment of severe acute pancreatitis. <i>Hepato-Pancreato-Biliary (Oxford)</i>, 15(10), 822-827. doi: 10.1111/hpb.12140</p>	<p>Investigate adherence to best-practice guidelines from American College of Gastroenterology (ACG) and the Atlanta Classification criteria for severe AP (SAP)</p> <p>Hypothesis is low adherence due to European studies findings of low adherence to CPGs</p>	<p>Cross-sectional</p>	<p>Sample: 538 patient medical records were reviewed and 67 were selected based on the Atlanta criteria for SAP</p> <p>Male: 44 Female: 23</p> <p>Setting: University of Florida and Shands Teaching Hospital, Florida</p>	<p>Data Collection: Patient charts were reviewed who were admitted with an ICD-9 code of AP (577.0).</p> <p>Inclusion: met Atlanta criteria with presence of organ failure and/or local complications. Exclusion: less than 18 years of age</p> <p>Three guideline components were assessed:</p> <ul style="list-style-type: none"> • Use and timing of appropriate imaging (contrast-enhanced CT) • Use and type of antibiotics • Timing of initiation and type of nutritional support <p>Data Analysis: Reviewed records reported adherence to three recommendations of current CPGs</p>	<p>Imaging:</p> <ul style="list-style-type: none"> • 72% used CT with IV contrast • 18% used CT without IV contrast • 8% used abdominal ultrasound • 1.5% did not use imaging • 66% received CT at time of admission • 25% received CT after admission • 31% received CT with IV contrast at 48-72 hours after admission <p>Antibiotics:</p> <ul style="list-style-type: none"> • 53% used prophylactic antibiotics • 42% used carbapenem antibiotics • 48% used non-carbapenem antibiotics <p>Nutrition:</p> <ul style="list-style-type: none"> • Mean days without nutrition: 2.6 • 17% received enteral feedings • 60% used total parenteral nutrition • 23% used oral or enteral feeding first <p>Conclusion: Poor compliance with ACG guidelines.</p>
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TABLE 1 – Continued

<p>Sun, E., Tharakan, M., Kapoor, S., Chakravarty, R., Salhab, A., Buscaglia, J.M., Nagula, S. (2013). Poor compliance with ACG guidelines for nutrition and antibiotics in the management of acute pancreatitis: A North American of gastrointestinal specialists and primary care physicians. <i>Journal of the Pancreas</i>, 14(3), 221-227.</p>	<p>Assess physician adherence to clinical practice guidelines (CPGs) for antibiotic use and nutrition in the management of acute pancreatitis</p>	<p>Cross-sectional</p>	<p>Sample: 414 respondents</p> <p>Internal medicine: 243 (58%) Gastroenterology: 171 (41.3%)</p> <p>No gender information available</p> <p>Setting: North American conferences:</p> <ul style="list-style-type: none"> • 2009 New York Society for Gastrointestinal Endoscopy Post Graduate Course in New York, NY, USA • 2009 American College of Gastroenterology in San Diego, CA, USA • 2010 Digestive Diseases Week in New Orleans, LA, USA • 2010 American College of Physicians Annual Internal Medicine Meeting in Toronto, Ontario, Canada 	<p>Data Collection: Surveys were handed out at each conference randomly for the first three days of each conference and collected immediately after completion</p> <p>20-question survey regarding “physician attitudes toward the use of nutrition and antibiotics in acute pancreatitis” (p. 222)</p> <p>Data Analysis: Survey responses were entered into a centralized database</p> <p>The following analysis methods were used with the program Stata v9.0 (Stata Corp, College Station, TX, USA):</p> <ul style="list-style-type: none"> • Chi-square: assessed association between demographic variables and survey responses • Univariate and multivariate logistic regression: assessed if demographic variables were independently associated with nutrition route • 95% confidence intervals utilized for all logistic regression analyses • A two-tailed P value less than 0.05 was considered statistically significant 	<p>Nutrition and AP:</p> <p>Preference of route for feedings:</p> <ul style="list-style-type: none"> • 43.1% TPN/PPN • 36.5% NJ tube • 52.1% of academic physicians were more likely to use NJ tube feedings compared to 19.9% of private practice physicians • 70.2% of private practice physicians were more likely to use TPN/PPN feedings than 20.5% of academic physicians <p>Two main reasons providers gave for not initiating enteral feedings were:</p> <ul style="list-style-type: none"> • Need for bowel rest • Ease of access to feedings <p>Antibiotics and AP:</p> <p>62.3% of respondents replied they use antibiotics less than 25% of the time for patients with AP</p> <p>Two most common reasons for initiating antibiotics were:</p> <ul style="list-style-type: none"> • Fever • Prophylaxis against infection <p>40.9% of respondents started antibiotics in severe AP more than 75% of the time</p> <ul style="list-style-type: none"> • Academic physicians and gastroenterologists started antibiotics less often for severe AP than private practice physicians • The two most common reasons antibiotics were started in severe AP was for pancreatic necrosis, positive cultures, and fever
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TABLE 1 – *Continued*

<p>Cahill, N. E., Narasimhan, S., Dhaliwal, R., & Heyland, D. K. (2010). Attitudes and beliefs related to the Canadian critical care nutrition practice guidelines an international survey of critical care physicians and dietitians. <i>Journal of Parenteral and Enteral Nutrition</i>, 34(6), 685-696. doi: 10.1177/0148607110361908</p>	<p>Increase the understanding of dietitians and physicians' attitudes and beliefs about the Canadian Critical Care Nutrition CPGs</p> <p>Explore if differences exist between dietitians and physicians in their attitudes and beliefs about nutrition</p>	<p>Descriptive Cross-sectional</p>	<p>Sample: 514 respondents</p> <p>115 respondents from Canada 180 from the United States (U.S.)</p> <p>212 were dietitians 234 were physicians</p> <ul style="list-style-type: none"> • (134 were intensivists) <p>Male: 209 Female: 249</p> <p>Setting: Canada</p>	<p>Data Collection: Survey Monkey questionnaire containing three parts</p> <p>Part 1: 5 questions about the respondents' beliefs about nutrition guidelines and specifically the Canadian nutrition CPGs</p> <p>Part 2: questions that asked respondents to "provide their strength of recommendation for 26 of the nutrition practices" in the CPG</p> <p>Part 3: asked questions about the respondent's personal demographics</p> <p>Data Analysis: Microsoft Office Excel 2007 version (Microsoft Corporation, Redmond, WA)</p>	<p>60% of respondents were familiar with the Canadian CPG for nutrition</p> <p>55.8% stated they believed the Canadian nutrition CPG represented best practices</p> <ul style="list-style-type: none"> • 6.3% stated that the CPG did not represent best practice for nutrition therapy in the critically ill • Dietitians (63%) believed the Canadian CPG represented best practice more frequently than physicians (52.8%) <p>66% of respondents agreed with the Canadian CPG</p> <p>64.2% stated they used nutrition guidelines in their ICU</p> <ul style="list-style-type: none"> • Of those, 40% used the Canadian CPG • 34.5% used the American Society of Parenteral and Enteral Nutrition (ASPEN) guidelines for nutrition in the critically ill <p>Conclusions:</p> <ul style="list-style-type: none"> • Dietitians and physicians believe nutrition therapy is important • Most providers use nutrition CPGs to guide nutrition therapy in the critically ill • Majority of respondents agreed with the Canadian nutrition CPG
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TABLE 1 – Continued

<p>Stamp, N., & Davis, A. M. (2013). Identifying barriers to implementing nutrition recommendations. <i>Topics in Clinical Nutrition</i>, 28(3), 249-261. doi: 10.1097/TIN.0b013e31829dedb1</p>	<p>Physicians rely on registered dietitians (RDs) to provide guidance on nutrition, however they often do not implement the recommendations</p> <p>Identify physician barriers to implementing nutrition recommendations from RD consults</p>	<p>Phase 1: Retrospective chart review</p> <p>Phase 2: Prospective convenience sample survey</p>	<p>Sample: <u>Phase 1:</u> 1240 RNs consulted an RD, 72.4% of consults</p> <p>332 MDs consulted an RD, 19.4% of consults</p> <p><u>Phase 2:</u> Survey sent to 582 physicians, 117 responded</p> <p>Male: 70 Female: 47</p> <p>32% hospitalists/intensivists 19% surgeons 18% medical specialists 10% obstetricians</p> <p>Setting: 555-bed tertiary teaching hospital in southwest Ohio</p>	<p>Data Collection: <u>Phase 1:</u> Tracked if RD consulted, who made the consult, for what purpose, were the recommendations implemented, and if so who initiated the implementation</p> <p><u>Phase 2:</u> 14-question survey using the Likert scale: asked demographic information, years in practice, nutrition training, frequency of nutrition consults, importance of nutrition care to patient treatment, and consult follow-up including communication with RDs</p> <p>Data Analysis: <u>Phase 1:</u> The data were uploaded into the IBM SPSS version 19 (IBM, Raleigh, North Carolina) for statistical analysis.</p> <p><u>Phase 2:</u> Survey Monkey, The survey was not validated or tested for specificity or sensitivity before implementation</p>	<p>Phase 1: 78% consults by a physician were for nutrition support recommendations (ie, enteral nutrition protocol, TF, PN, and percutaneous endoscopic gastrostomy tube)</p> <p>3% of physician consults were for malnutrition and/or wound healing</p> <p>73% of the RD recommendations were implemented by physicians</p> <ul style="list-style-type: none"> • 58% of those were for feedings <p>Phase 2: 43% in practice less than 10 years</p> <p>60% of the respondents did not take a nutrition course</p> <p>42% of physicians stated they order nutrition consults for their patients weekly</p> <p>Physicians were more likely to order a RD consult when they viewed nutrition as important to the patient's treatment</p> <p>The primary reason physicians stated they did not implement nutrition recommendations was "I thought the RD implemented the recommendation."</p>
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TABLE 1 – Continued

<p>Westfal, S., Burrowes, J. D., Shorter, B., & Wright, J. (2011). Medical residents and nutrition support in critical care: A survey of knowledge, attitudes, and practice. <i>Topics in Clinical Nutrition</i>, 26(4), 335-345. doi: 10.1097/TIN.0b013e318237932f</p>	<p>Investigate medical residents' attitudes, knowledge, and practices in the care and management of nutrition in the critically ill population, specifically regarding use of enteral nutrition (EN)</p>	<p>Cross-sectional</p>	<p>Sample: Survey sent to 643 medical residents</p> <p>56 responded (8.6% response rate)</p> <p>Male: 33 Female: 20</p> <p>Setting: Eleven academic hospitals in New York and Connecticut</p>	<p>Data Collection: Two part 21 item web-based survey that used the 5-point Likert scale</p> <p>Part 1: 5 questions about attitudes; 5 questions about knowledge; and 11 questions about 1 practice</p> <p>Part 2: Questions regarding demographics (age, gender, year in residency, medical degree, specialty area, and additional training in nutrition)</p> <p>Data Analysis: Descriptive statistics compared responses</p>	<p>Attitudes about EN:</p> <ul style="list-style-type: none"> • 98% agreed or strongly agreed nutrition is important • 56% agreed or strongly agreed other aspects of critical care are more important than nutrition • One respondent disagreed that a feeding protocol should be used for EN <p>Knowledge about EN:</p> <ul style="list-style-type: none"> • 7.1% had specialized training in nutrition support • 57% felt that could adequately provide nutrition therapy • 41% felt they could not adequately provide nutrition support • 20% agreed they know they knew their hospital's nutrition formulary • Less than half responded they knew how to progress feedings to the goal rate, knew how to calculate nutrition intake from EN for calories, protein, and fluid <p>Practice regarding EN:</p> <ul style="list-style-type: none"> • 79% agreed or strongly agreed parenteral nutrition (PN) should not be used in patients with an intact gastrointestinal tract • 84% agreed EN should be used in preference to PN • 69% agreed or strongly agreed that EN should be initiated within 24-48 hours of admission • 86% of respondents took formula characteristics into consideration for each patient • 66% agreed they would change formula based on lab values • 86% agreed they would take RD recommendations into consideration when prescribing EN
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TABLE 1 – Continued

<p>Mofidi, R., Madhavan, K. K., Garden, O. J., & Parks, R. W. (2007). An audit of the management of patients with acute pancreatitis against national standards of practice. <i>British Journal of Surgery</i>, 94(7), 844-848. doi: 10.1002/bjs.5670</p>	<p>Evaluate management and outcomes of AP patients against the British Society for Gastroenterology, the Association of Surgeons of Great Britain and Ireland, the Pancreatic Society and the Association of Upper Gastrointestinal Surgeons evidence-based guidelines for AP</p>	<p>Cross-sectional</p>	<p>Sample: 759 patients reviewed Male: 388 Female: 371 219 patients with SAP Setting: United Kingdom (U.K.)</p>	<p>Data Collection: Chart audit from the Lothian Surgical Audit database from a regional upper gastrointestinal and HPB surgery service Patients were classified as mild, moderate, or severe using the diagnostic criteria of the Atlanta system Collected the following on each patient:</p> <ul style="list-style-type: none"> • Age • Sex • APACHE II score • Glasgow severity scores (GSS) • Serum C-reactive protein (CRP) levels • Presence or absence of systemic inflammatory response syndrome • Length of stay (in hospital and ICU) • Timing to imaging • Mortality <p>Data Analysis: Statistical Package for Social Sciences version 12 SPSS® Values were stated as median P < 0.050 was considered significant</p>	<p>96.3% diagnosed with AP within 48 hours of admission 91.6% had severity documented on admission or shortly after with GSS 97.1% had an APACHE score available in the first 24 hours of admission, only 7.8% had a formal score documented 62.5% had a CRP documented on admission and 88.7% of patients had CRP documented with 48 hours of admission APACHE score at admission with statistically more accurate that GSS on admission for prediction of severity of SAP (P < 0.001 and P = 0.005 respectively) Median length of hospital stay was 6 (range 2–194) days 5.9% of patients (45) died from AP and/or its complications</p>
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TABLE 1 – Continued

<p>Rebours, V., Levy, P., Bretagne, J. F., Bommelaer, G., Hammel, P., & Ruszniewski, P. (2012). Do guidelines influence medical practice? Changes in management of acute pancreatitis 7 years after the publication of the French guidelines. <i>European Journal of Gastroenterology & Hepatology</i>, 24(2), 143-148. doi: 10.1097/MEG.0b013e32834d864f</p>	<p>Evaluate current medical management of AP, assess compliance to the French Society of Gastroenterology guidelines over a seven year period following its publication, and determine if specific training about the guidelines would be beneficial to AP management</p>	<p>Cross-sectional</p>	<p>Sample: 176 participants responded</p> <p>Setting: Academic, public, nonacademic/private hospitals with gastroenterology (GI) units in France</p>	<p>Data Collection: Same questionnaire sent out in 2001 and 2008 with questions regarding:</p> <ul style="list-style-type: none"> • Diagnosis • Site of hospitalization • Evaluation of severity • Artificial nutrition • Antibiotic treatment. <p>In the second questionnaire in 2008, additional questions included:</p> <ul style="list-style-type: none"> • Demographic data • Experience in medical care and area of specialty of the responders • Characteristics of the GI Unit • Continuing Medical Education programs about pancreatitis attended by the physician <ul style="list-style-type: none"> ○ Number of training courses ○ Subscription to international or national medical journals ○ Reception of the guidelines by mail or e-mail <p>Data Analysis: Kruskal–Wallis test for continuous data and the [chi]2-test or the Fisher’s exact test as needed for categorical data with SAS 9.1 statistical software for Windows (SAS Institute Inc., Cary, North Carolina, USA)</p> <p>P < 0.050 was considered significant</p>	<p>In 2001:</p> <ul style="list-style-type: none"> • 97% diagnosed AP with amylase • 70% performed CT at admission to evaluate severity • 57% used prophylactic antibiotics in necrotic AP • 75% provided artificial nutrition via total parenteral nutrition <ul style="list-style-type: none"> ○ 35% administered feedings through an nasogastric tube <p>In 2008:</p> <ul style="list-style-type: none"> • 46% diagnosed AP with amylase • 28% performed CT at admission to evaluate severity • 20% used prophylactic antibiotics • 42% provided artificial nutrition via total parenteral nutrition instead of enteral nutrition <p>Training:</p> <ul style="list-style-type: none"> • 80% of respondents received specific training regarding AP • Those who attended training were more likely to have appropriate timing of CT scan and not use of preventative antibiotics as per the guidelines • 77% of providers at academic hospitals has journal subscriptions compared to 27% at private/nonacademic hospitals
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TABLE 1 – Continued

<p>DiMagno, M. J., Wamsteker, E. J., Rizk, R. S., Spaete, J. P., Gupta, S., Sahay, T., ... & Desmond, J. S. (2014). A combined paging alert and web-based instrument alters clinician behavior and shortens hospital length of stay in acute pancreatitis. <i>The American Journal of Gastroenterology</i>, 109(3), 306-315. doi: 10.1038/ajg.2013.282</p>	<p>Hypothesized that a clinical decision support (CDS) tool would increase compliance with the known inconsistent compliance with clinical practice guidelines for AP, thereby improving patient outcomes (i.e. specifically for length of stay (LOS) and clinician behavior)</p>	<p>Observational</p>	<p>Sample: (n=number of patients)</p> <p><u>Pre-CDS tool:</u> 110 Mild AP: 88 Moderate-severe AP: 22</p> <p>Male: 44 Female: 66</p> <p><u>Post CDS tool:</u> 113 Mild AP: 87 Moderate-severe AP: 27</p> <p>Male: 42 Female: 71</p> <p>Setting: Michigan academic hospital</p>	<p>Data Collection: Co-investigators used the search engine EMERSE to collect and tabulate data from the electronic health record (EHR)</p> <p>Data was entered into the spreadsheet manually from the EHR</p> <p>Data Analysis: Microsoft Excel (Microsoft, Redmond, WA)</p> <p>Categorical and dichotomous variables were analyzed with χ^2-tests or Fisher's exact test</p> <p>Continuous variables were analyzed with two sample t-tests for normally distributed variables and the Wilcoxon rank-sum test for non-parametric continuous data</p> <p>Statistical significance was defined as $P < 0.05$</p> <ul style="list-style-type: none"> • Statistical analyses were performed using JMP version Pro 10 (SAS Institute, Cary, NC) 	<p>Pre- and post-CDS tool: 78.5% had mild AP 13% had moderate AP 8.5% had severe AP</p> <p>Effect on management: Two of the seven early management goals were met with the CDS tool:</p> <ul style="list-style-type: none"> • Risk stratifying patient in the emergency department (ED) • Early administration of fluids <p>Effect on outcomes: LOS was significantly shorter in the post-CDS tool group:</p> <ul style="list-style-type: none"> • Mild AP: 4.0 days post-CDS vs. 4.9 day pre-CDS • Moderate-severe AP: 7.0 days post-CDS vs. 14.5 days pre-CDS <p>Based on the reduced LOS, the study estimated and overall reduction in costs of "\$1,845 a day for AP from the 2009 Nationwide Inpatient Sample" (p.313) and "implementation of the CDS-Tool would reduce annual institutional costs by 0.4 million dollars and annual costs in the United States by 1.06 billion dollars for 274,119 AP hospital discharges" (p. 313)</p>
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TABLE 1 – Continued

<p>Duggan, S. N., Smyth, N. D., Sullivan, M., Feehan, S., Ridgway, P. F., & Conlon, K. C. (2012). A transatlantic survey of nutrition practice in acute pancreatitis. <i>Journal of Human Nutrition and Dietetics</i>, 25(4), 388-397. doi: 10.1111/j.1365-277X.2012.01256.x</p>	<p>Examine feeding practices for AP in Europe and North America, specifically timing of feedings, route, type of feeding, and existence of feeding protocols</p>	<p>Cross-sectional Descriptive</p>	<p>Sample: 204 dieticians completed the survey and saw patients with AP</p> <p>Female: 188 Male: 16</p> <p>Setting: United Kingdom (U.K.) (England, Scotland, Wales, Northern Ireland), Republic of Ireland, and Canada</p>	<p>Data Collection: 37-question survey electronically distributed to dieticians in the countries listed in the setting section through their national dietician society/association</p> <p>Data Analysis: Minitab, version 15 (Minitab Inc., State College, PA, USA)</p> <p>Chi-squared tests were used to investigate differences in categorical variables</p> <p>$P < 0.05$ was considered statistically significant.</p>	<p>Formal feeding protocol:</p> <ul style="list-style-type: none"> • 16.6% in the UK • 6.0% in Canada • 5.5% in Ireland <p>Initiation of feeding:</p> <ul style="list-style-type: none"> • 50.8% considered early feedings to mean less than 24 hours after admission • Dieticians from academic institutions were more likely to feed AP patients earlier <p>Enteral feeding:</p> <ul style="list-style-type: none"> • 37.7% reported feeding with enteral feedings • Dieticians from academic institutions were more likely to use enteral feedings than dieticians from general/county hospitals <p>Route of feeding:</p> <ul style="list-style-type: none"> • 62.4% of dieticians reported jejunal was their preferred route of administration • 70.8% of academic hospital dieticians preferred jejunal feedings compared to 57% of general/county hospital dieticians <p>40.7% of dieticians answered they were most familiar with American Society for Parenteral and Enteral Nutrition (ASPEN) guidelines for management of AP</p>
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Findings from Synthesis of Evidence

The discussion of findings from the synthesis of literature outlined the need for this DNP project. There is a vast range of literature available regarding AP and nutrition practices. However, the literature is internationally focused, reveals low compliance with CPGs, and suggests gaps in provider knowledge, disbelief in CPG recommendations, and/or lack of resources to implement CPG recommendations (Sekimoto et al., 2010, Stamp & Davis, 2013; Vlada et al., 2013). More local research is needed that focuses on provider knowledge and practice for care of the AP patient in Arizona. This is an area where hospitals can improve care through analysis of CPG compliance and investigation of methods to increase compliance. Recently, nutrition protocol implementation has been used to increase CPG compliance with improved patient outcomes (DiMagno et al., 2014). Vlada et al. (2013) found low provider practice compliance with the ACG CPG recommendations. Cahill et al. (2010) found that most providers agreed with the Canadian nutrition CPG. However, Sekimoto et al. (2010) revealed 21% of physicians had not read the Japanese CPG for AP management. Thus, barriers such as these may play a role in reducing CPG use in practice. If providers are not aware that a guideline exists, have not read the latest guideline, do not agree with guideline recommendations, or do not have local resources to implement guidelines, these barriers will all affect CPG compliance and consequently patient outcomes.

Practitioners Evaluated

An exploration of who was surveyed or monitored in each study was an important consideration for each of the articles in the synthesis of evidence. There were five studies that specifically focused on physicians' knowledge and practice in the care of AP patients (Sekimoto et al., 2010; Sun et al., 2013; Cahill, Narasimhan, Dhaliwal, & Heyland, 2010; Stamp & Davis,

2013; Rebours et al., 2012). There were two studies that reviewed patient charts to determine compliance with CPGs depending on provider orders and patient outcomes (Vlada et al., 2013; Mofidi, Madhavan, Garden, & Parks, 2007). One study surveyed medical residents' knowledge and practice in the care of critically ill patients, specifically regarding their nutritional practices (Westfal, Burrowes, Shorter, & Wright, 2011). Three studies surveyed dieticians and Stamp & Davis (2013) included registered nurses in their survey (Cahill et al., 2010; Stamp & Davis, 2013; Duggan et al., 2012). Thus, the available research is not solely focused on providers; other members of interdisciplinary team have been studied. These other perspectives can be useful when looking to implement a nutrition protocol, however it is necessary to first establish if a problem exists whereby a protocol would improve patient outcomes. Therefore, the lack of research specific to provider knowledge and practice lends cause to the need for this DNP project.

Location of Study

Next, the location of each study was another important consideration to understand the range of compliance versus non-compliance with CPGs. There were six international studies that were conducted in Japan, Canada, countries through the U.K., Republic of Ireland, and France (Cahill et al., 2010; Duggan et al. 2012; Mofidi et al. 2007; Rebours et al. 2012; Sekimoto et al., 2010; Sun et al., 2013). There were five U.S. studies conducted in the following states: Connecticut, Florida, Michigan, New York, and Ohio (DiMagno et al., 2014; Stamp & Davis, 2013; Sun et al., 2013; Vlada et al., 2013; Westfal et al., 2011). The synthesis of evidence described an international snapshot of practice, attitudes, and knowledge, with a notable limitation being a lack of abundant national and local research.

The location of each study also outlined the lack of information about providers specifically in the U.S. Of the studies in the U.S., Sun et al. (2013) evaluated providers' practice but not knowledge of CPGs, Stamp & Davis (2013) found physicians "thought" dietitians were responsible for implementing feedings, Westfal et al. (2011) revealed medical residents would almost always implement dietitian recommendations (which was consistent with Stamp & Davis' (2013) findings from physicians), and DiMagno et al. (2014) demonstrated increased CPG compliance and reduced LOS when a clinical decision support (CDS) tool was utilized in the electronic health record (EHR). The lack of local research demonstrated the need for this DNP project as provider knowledge and practice was different from country to country as well as state-to-state. For example, in the Vlada et al. (2013) study in Florida, providers' practice was evaluated through chart reviews which revealed 17% of patients received enteral feedings, 60% of patients received TPN, and 23% of patients received oral or enteral feeding first (prior to TPN use, if necessary). In the Westfal et al. (2011) study, 79% of medical residents in New York and Connecticut agreed TPN should not be used in patients with an intact gastrointestinal tract, 84% agreed EN should be used in preference to TPN, and 69% agreed EN should be initiated within 24-48 hours of admission. This demonstrated difference in practice between states, which may be partly attributed to physicians versus medical residents. Also, the difference between what providers state they would do (i.e. Westfal et al. (2011) study) versus what they actually did (i.e. Vlada et al. (2013) study) may be attributed to previously identified barriers (i.e. local resources) to implementing treatment regimens consistent with CPGs. Therefore, this DNP project assisted in uncovering provider knowledge and practice locally in Phoenix, Arizona.

Academic Versus Non-Academic Hospitals

The type of institution that consistently revealed increased compliance with CPG recommendations was academic hospitals either through congruent attitudes and/or practice. Sun et al. (2013) found that private practice physicians were more likely to use TPN and delay feedings compared to physicians from academic institutions. The DiMagno et al. (2014) study was performed at an academic hospital, which implemented a CDS tool in the EHR that demonstrated improved CPG compliance, decreased hospital LOS, and decreased costs of healthcare for AP patients. Finally, Duggan et al. (2012) found that dieticians from academic hospital were more likely to feed patients earlier and use EN over TPN for feedings. This DNP project took place at an academic hospital and provided information about local practice in a setting that has been found to have an increased compliance with CPGs.

Through this synthesis of evidence, it became apparent where similarities and differences could be found in the literature. Providers, dieticians, and registered nurses have all been studied regarding their nutritional practices for AP patients. International studies have been conducted for nutritional care of AP, however more local research is needed. Thus, this DNP project explored potential gaps in provider knowledge and practice that would provide a foundation of evidence for the next steps in increasing CPG compliance locally in the care of the AP patient.

METHODS

Design

This DNP project utilized a quantitative non-experimental descriptive method with clinical inquiry to explore provider knowledge and practice of nutritional care in the mild AP patient. A non-experimental design includes data collection through observation where there is no manipulation of variables (Moran, 2014; Polit & Beck, 2013). The variables being investigated were provider knowledge of CPG nutritional recommendations and provider

practice in the nutritional care of the mild AP patient; both variables were investigated and not manipulated in this project. Clinical inquiry is one approach to quantitative research where the relationship between clinical factors and outcomes are investigated such as provider compliance with CPGs (Rouen, 2014). A descriptive design is appropriate when the independent variables (i.e. providers' knowledge and practice of nutrition in mild AP patients) cannot be manipulated or it would be unethical to manipulate (Polit & Beck, 2013). Since the purpose of this project was to investigate providers' nutrition knowledge and practice for mild AP, a descriptive design method appropriately investigated these independent variables of nutritional care in mild AP patients. The descriptive design method is used to attain information that can drive future improvements (Rouen, 2014), such as a nutrition protocol for mild AP.

Ethical Considerations

Ethical considerations are a cornerstone in the process of conducting research with human subjects. Three relevant ethical principles for this DNP project include respect for persons, beneficence, and justice. Evaluating ethical principles allows the researcher to uphold high standards of integrity and prevent misconduct that may harm the participants (Polit & Beck, 2013). By reviewing ethical principles, researchers demonstrate a level of involvement in their own work that builds the public's trust (Lachman, Swanson, & Winland-Brown, 2014). The following is a discussion of these principles in relation to this DNP project.

Respect for Persons

The Belmont Report was issued in 1979 by the Department of Health and Human Services after a four-day conference and addressed the protection of human research subjects. Respect for persons is a two-part definition wherein the individuals' autonomy is respected and those with diminished autonomy are protected (U.S. Department of Health & Human Services

[USDHHS], 1979). The questionnaire was available to all hospitalists who choose to participate. The participants' identity was protected since the questionnaire was anonymous. There was no interaction from the researcher, rather the research assistant set-up and collected the questionnaires. The questionnaire was placed in the hospitalists' office where the research assistant could not see who participated. This was designed to alleviate pressure to participate and respect those hospitalists' decision to opt out of completing the questionnaire. Additionally, respect for persons includes the right to full-disclosure, where the participant is informed of the research being conducted to opt in or out of participation (Polit & Beck, 2008). The supplies mailed to the research assistant included instructions that were set-up with the questionnaires to inform the hospitalists of the DNP project and thereby provide full disclosure.

Beneficence

Beneficence is the duty to protect human research subjects from harm, respect their decisions, and promote their well-being (USDHHS, 1979). Protection of research participants from harm includes both psychological and physical harm as well as exploitation (Polit & Beck, 2013). The participants were informed of the purpose of the questionnaire and were free to decide to participate or not. For those that did participate, answering the questionnaire did not harm them physically or psychologically. The questionnaire sought to assess the current state of provider knowledge and practice; it did not seek to influence their actions or thoughts.

Justice

The principle of justice theorizes that those who are advantaged and disadvantaged be treated equally (USDHHS, 1979). This includes the potential benefit and/or burden of the research to the participants who choose to participate (Polit & Beck, 2008). All hospitalists were offered the questionnaire in the form of its presence in their office, no exclusion of any providers

was intended. This was aimed at equally offering the questionnaire to all providers in the practice group. The hospitalist group is not a vulnerable population as they have education and training, which supports their practice. The questionnaire sought to assess and learn how the providers practiced, it did not jeopardize or burden their practice.

Prior to the initiation of this project, Institutional Review Board (IRB) approval was obtained from the College of Nursing, The University of Arizona, and Banner University Medical Center, Phoenix. The IRB process is required by universities and ensures that the safety of the participants is considered and upheld (Moran, 2014; Polit & Beck, 2013). The consideration of ethical principles and the IRB process served to protect the study participants.

Setting

This DNP project took place at BUMCP in downtown Phoenix, Arizona. The BUMCP campus is a partner facility to Banner University Medical Center, Tucson, which are both collaborative facilities with the University of Arizona. BUMCP is a level one-trauma hospital with Magnet designation (BUMC, 2015). This is an academic hospital in a metropolitan city and was chosen because of increased awareness of CPGs in providers in this healthcare setting (Duggan et al., 2012; Sun et al., 2013) and established participation with the research assistant. Thus, results may be consistent or inconsistent with other studies that have found increased awareness and compliance in providers at academic hospitals.

Participants

The participants of this project included the Banner University Medical Group (BUMG) hospitalists of BUMCP. The setting and participants outline the generalizability of this DNP project once results are generated (Moran, 2014). BUMG includes academic and non-academic providers. There are 32 direct care hospitalists (two lead hospitalist physicians, 26 physicians,

two nurse practitioners, and two per diem physicians) and 7 academic physicians (two are 50/50 academic and direct care and five are solely academic) (BUMC, 2016). Hospitalists were selected, as this is the leading practitioner in the acute care setting who fields the consultation to gastroenterologist or cares for the mild AP process independently (Mofidi et al., 2007). Thus, by investigating hospitalists' knowledge and practice of the mild AP patient, compliance with CPGs could be assessed at the patient's point of entry into the acute care setting after emergency department identification of pancreatitis and consult to a hospitalist.

A \$5 Starbucks gift card was provided to each participant. This acted as a recruitment incentive to participate since the participants' time was compensated through a gift card. This was also a "thank you" gift from the researcher for completing the questionnaire. The gift card was provided on the honor system, each participant was notified to take a gift card once the questionnaire is completed.

A research assistant facilitated the data collection process. The questionnaire was disseminated to the BUMG hospitalists with the assistance of the research assistant. The research assistant was a provider in the hospitalist group, who has agreed to be a part of the project and was not a questionnaire participant. Therefore, there was a potential for a total of 38 hospitalist participants in the project.

Data Collection

The data collected for this DNP project was original data not previously obtained (Polit & Beck, 2013) through use of a questionnaire. Data collection was done via an online platform, Qualtrics (<http://www.qualtrics.com>), and a written platform for those who preferred to not use a computer. This dual response option approach was intended to increase participation from the hospitalists (Moran, 2014). Once IRB approval was complete and the project commenced, the

Qualtrics link went live and was provided in the instructions mailed to research assistant who set out the folder that was affixed with the printed instructions. The written responses were entered into Qualtrics to allow for ease and uniformity of data analysis.

The researcher lived in North Carolina and the research assistant lived in Arizona and worked with the BUMG hospitalists and agreed to assist with data collection. The research assistant was mailed supplies for the data collection process in Arizona. This included instructions to the hospitalists to complete a written version or online version (through Qualtrics) of the questionnaire. Forty questionnaires were mailed including enough for all hospitalists if they prefer not to use the online option as well as extras. There was a large envelope with instructions attached to the front for the written questionnaire: there was a labeled section with the blank questionnaires and a labeled section to place the completed questionnaire in the envelope. Once the questionnaire process was complete the research assistant mailed back the completed questionnaires in a pre-paid shipping envelope to the researcher in North Carolina.

Questionnaire

The questionnaire was developed to assess provider knowledge and practice of nutritional care in the mild AP patient (see Appendix B). The utility of a questionnaire has been demonstrated with several of the studies included in the synthesis of evidence table. To ensure the questionnaire provided accurate results that can be sustainable and candid, the questionnaire was anonymous, which can improve response rates (Polit & Beck, 2004). The questionnaire began with two demographic questions about the participants, which was used to describe the population of hospitalists (Moran, 2014). The 5-point Likert scale was used for the response options to six questions that investigated provider practice in the nutritional care of the mild AP patient. The 5-point Likert scale uses closed ended responses to measure different constructs in a

survey (Artino Jr, La Rochelle, Dezee, & Gehlbach, 2014), such as assessing provider compliance with CPGs. Five questions used true/false response options to investigate provider knowledge of CPG recommendations. The final two questions investigated if the providers have read the ACG's CPG and if they felt the guidelines represented best practice.

The demographic questions asked the participant about gender and years in practice. The final two questions asked if the participant had read the ACG CPG, and if the participant agrees that the ACGs CPGs represented best practice (skipped if participants answered "no" to having read the CPGs). The latter two questions were adapted from the Sekimoto et al. (2010) study, which asked if the participants had read the Japanese AP guidelines and revealed 21% responded "no." This study suggested lack of having read the guideline as a barrier to guideline compliance. Thus, in developing questions, this approach to identify barriers was incorporated in the questionnaire.

The eleven questions that assessed providers' knowledge and practice were developed from the ACG CPG. In the mild AP nutrition section of the ACG's CPG, recommendations specifically state oral feedings should begin immediately with a low-fat solid diet if there is no nausea, vomiting, and resolution of abdominal pain is present (Tenner et al., 2013). These recommendations were broken down into questions regarding diet of choice, timing, and symptom involvement for both providers' current practice and providers' ACG's CPG knowledge. The Sekimoto et al. (2010) study focused on evaluating practice before and after the Japanese guideline was published, thus no further questions could be repeated. However, their questions utilized a point-blank statement approach such as "Do you order TPN for severe AP?" to evaluate current practice. This style of questioning was incorporated in the development of the five questions about provider practice.

The questionnaire was created specifically for this project, thus reliability and validity cannot be ensured. Reliability demonstrates how well an instrument can reproduce the same results if repeated (Moran, 2014). A multi-center study is a good method to ensure reliability as responses between groups (i.e. hospitals) can be compared for similarities, which demonstrates repeatability of the study (Polit & Beck, 2013). Since this was a single center study, repeatability cannot be specifically measured. However, previous studies discussed in the synthesis of evidence table conducted at academic hospitals utilized questionnaires to investigate providers' perceptions, attitudes, and knowledge of CPGs as well as provider practice. Thus, utilizing a questionnaire for this DNP project for data collection repeated the method used by previous studies to obtain information about nutritional treatments in the mild AP patient.

Validity reveals how well an instrument measures what it is intended to measure (Moran, 2014). Face validity measures if an instrument (i.e. the questionnaire) appears to measure its intended construct such as provider knowledge (Polit & Beck, 2008). Content validity measures affective and cognitive construct domains such as provider practice (Polit & Beck, 2008). The questionnaire was administered to an expert panel of three acute care providers prior to initiation of the questionnaire being administered to the BUMG hospitalists. The feedback provided by the expert panel was incorporated in revisions of the questions. This tested face and content validity. The use of the Likert scale can help decrease attitudes, perceptions, and psychological traits in responses compared to other open-ended questionnaire response styles (Polit & Beck, 2013). This could improve validity as bias is decreased through the uniformity of response options offered with the Likert scale, ensuring providers responded to each question with a standardized answer that accounted for variability in providers' knowledge and practices.

Expert panel. Three hospitalists were asked to review and provide feedback on the

questionnaire prior to implementation with the BUMG hospitalists. This expert panel of hospitalists was not employed by BUMCP and has an aggregate of more than fifteen years of experience. The first provided feedback about order of questions and changing response options. Originally, there was a third demographic question asking the type of provider (e.g. MD, DO, NP, PA, etc.), and the questions asking if the providers had read the guideline followed the demographics questions. Also, the Likert scale was used for all responses, except the demographic questions. Since the BUMG practice are mostly MDs, only two NPs, and no PAs in the group, this demographic question was dropped to not single out the NPs and maintain anonymity. The questions that asked if the providers had read the CPG was moved to the end of the questionnaire to aid in decreasing response bias knowing this was being investigated at the beginning of the questionnaire. The Likert style responses were kept for the six questions evaluating practice, and dropped for the questions evaluating CPG knowledge. True/false responses were used for the five ACG CPG knowledge questions. An additional question regarding timing of nutrition (e.g. starting a diet) was added to evaluate if any provider utilized lipase levels as an indicator of nutritional readiness.

The second provider on the panel suggested adding type of provider and definition of mild AP to prevent misinterpretation of the diagnosis and therefore incorrect nutritional treatment. Rationale for not including type of provider per the feedback from the first expert panel provider was explained to the second expert panel member. The third provider on the panel suggested providing a definition of mild AP for the same reason as the second expert panel provider. Thus, the ACG and Atlanta classification definitions were briefly stated and added to the top of the questionnaire.

Resources and Budget

The resources and budget for this DNP project were attainable and minimal, respectively. To create the questionnaire portion, a computer was used as well as access to Internet. For participants, either the online questionnaire or written questionnaire could have been completed. The use of Qualtrics was a free service to University of Arizona students (Arizona Board of Regents, 2016). The researcher anticipated costs for the following items: printing of questionnaire and instructions, mailing of questionnaire and instructions with return postage, and “thank you” gift cards. The expense for printing of the questionnaire was negligible, as the 40 copies were printed in the researcher’s home. The cost of mailing supplies to Arizona and back to North Carolina was \$19.90 per the United States Postal Service (U.S.P.S.) flat-rate price for a medium-sized box and large envelope (United States Postal Service [USPS], 2016). The medium box was appropriately sized to fit the contents to be mailed to Arizona and the large flat rate envelope was appropriately sized to mail back the completed questionnaires to North Carolina (USPS, 2016). The budget for the envelope for completed questionnaires was \$3. The use of Qualtrics allowed the participants time to respond via an online platform or written platform. The use of Microsoft Excel for data analysis was without associated cost, as the researcher currently owns this software program. A “thank you” gift for completing the questionnaire was a \$5 Starbucks card included in the supplies mailed to the research assistant. The budget is outlined in Appendix C.

RESULTS

Data Analysis

There were two options for participants to complete the questionnaires, a written option and an online option through Qualtrics. The written responses were input into Qualtrics by the principal investigator to allow for uniform data analysis. The responses from Qualtrics were

exported to Microsoft Excel (Redmond, WA) for analysis (Q Support, 2016). Descriptive statistics were used to assess the responses and reveal characteristics of the participants (i.e. demographics), responses from the Likert scale, and true/false responses, which investigated the project's purpose to assess provider knowledge and practice (Rouen, 2014). The Likert scale allowed for comparison of responses in quantitative studies (Boone & Boone, 2012). The results of data collected with the Likert scale produces interval data for analysis where a meaning can be reflected in the range of responses (Boone & Boone, 2012). For example, if all providers answered they "strongly disagree" (versus "strongly agree") that they start their mild AP patients on a low-fat diet, it can be inferred that their practice does not reflect the ACG's CPGs recommendations to start mild AP patients on a low-fat diet. Likert scale responses provided descriptive statistics; however, these responses were grouped for data analysis to further derive meaning from each respondent's selection (Boone & Boone, 2012). For example, the "strongly agree" and "agree" responses were grouped and the "strongly disagree" and "disagree" responses were grouped to provide information about provider's practice. The "neutral" responses were reported in the results section. The questionnaire responses were analyzed for whose practice and knowledge correctly aligned with ACG CPG recommendations.

The questionnaire provided sustainable information about BUMG provider nutrition practices and CPG knowledge. The results identified needs for provider CPG education and future nutrition protocol for mild AP patients. Sustained use of the questionnaire in different facilities with similar provider groups could guide future provider education when CPG knowledge deficits exist. Also, the questionnaire assisted in identifying needs for future nutrition protocol development for the mild AP patient population.

Outcomes

The questionnaire was mailed via USPS from North Carolina on December 31, 2016 and arrived in Arizona on January 5, 2017. The completed questionnaires were mailed by the research assistant from Arizona on February 16, 2017 and arrived in North Carolina on February 18, 2017. There were 38 potential respondents, 30 completed questionnaires were returned. This was a 78.95% response rate. The 30 questionnaires were completed via the written option; no questionnaires were completed online. The completed questionnaires were input into Qualtrics for ease of data analysis by the principal investigator. Qualtrics analyzed the data and this was exported into Microsoft Excel for ease of formatting results.

Demographics

There were a total of 30 participants. The reported gender breakdown is nine male participants (30%), 20 female participants (66.67%), and one “preferred not to say” (3.33%) (see table 2).

TABLE 2. *Question 1 Gender.*

Answer	%	Count
Male	30.00%	9
Female	66.67%	20
Prefer not to say	3.33%	1
<i>Totals</i>	<i>100%</i>	<i>30</i>

Years in practice was the next reported demographic. Three participants have been in practice for zero to one year (10%). Thirteen participants have been in practice for two to five years (43.33%). Eleven participants have been in practice for six to ten years (36.67%). Three participants have been in practice for 11 to 15 years (10%). No participants have been in practice for greater than 15 years as there were no responses for the 16 to 20 or 20+ categories (see table 3).

TABLE 3. *Question 2 Years in Practice.*

Answer	%	Count
0-1	10.00%	3
2-5	43.33%	13
6-10	36.67%	11
11-15	10.00%	3
16-20	0.00%	0
20+	0.00%	0
<i>Totals</i>	<i>100%</i>	<i>30</i>

Practice Questions

There were six practice related questions that investigated BUMG providers' current nutritional care and treatments for mild AP patients. These questions utilized Likert style response options. The first question asked if participants ordered a diet once their patient's symptoms had resolved. The ACG CPGs defines "symptoms" as abdominal pain, nausea, and vomiting, which is how symptoms were defined for the questionnaire (Tenner et al., 2013). Twenty-nine participants selected "strongly agree" or "agree" (96.67%) and one participant selected "strongly disagree" (3.33%). There were zero "neutral" or "disagree" responses selected (see table 4).

TABLE 4. *Question 3 Routinely Order a Diet Once Symptoms Resolve.*

Answer	%	Count
Strongly Agree	33.33%	10
Agree	63.33%	19
Neutral	0.00%	0
Disagree	0.00%	0
Strongly Disagree	3.33%	1
<i>Totals</i>	<i>100%</i>	<i>30</i>

The second practice question asked if providers routinely order a diet once lipase levels have normalized. Eight participants selected "strongly agree" or "agree" (26.67%), five selected neutral (16.67%), and seventeen selected "strongly disagree" or "disagree" (56.67%) (see table 5).

TABLE 5. *Question 4 Routinely Order a Diet Once Lipase Levels Normalize.*

Answer	%	Count
Strongly Agree	13.33%	4
Agree	13.33%	4
Neutral	16.67%	5
Disagree	40.00%	12
Strongly Disagree	16.67%	5
<i>Totals</i>	<i>100%</i>	<i>30</i>

The third practice question asked if providers keep their patients NPO for 48-72 hours prior to starting a diet. Two participants selected “agree” (6.67%), six selected “neutral” (20%), and twenty-two selected “strongly disagree” or “disagree” (73.33%). There were zero responses for “strongly agree” (see table 5).

TABLE 6. *Question 5 Routinely Keep Patients NPO for 48-72 Hours Prior to Starting a Diet.*

Answer	%	Count
Strongly Agree	0.00%	0
Agree	6.67%	2
Neutral	20.00%	6
Disagree	63.33%	19
Strongly Disagree	10.00%	3
<i>Totals</i>	<i>100%</i>	<i>30</i>

The fourth practice question asked providers when they do start a diet, if they routinely start a diet that is a low-fat solid diet. Ten participants selected “strongly agree” or “agree” (33.33%), three selected “neutral” (10%), and seventeen selected “disagree” (56.67%). There were zero responses selected for “strongly disagree” (see table 7).

TABLE 7. *Question 6 Initiate a Diet with a Low-Fat Solid Diet.*

Answer	%	Count
Strongly Agree	6.67%	2
Agree	26.67%	8
Neutral	10.00%	3
Disagree	56.67%	17
Strongly Disagree	0.00%	0
<i>Totals</i>	<i>100%</i>	<i>30</i>

The fifth practice question asked providers when they do start a diet, if they routinely start a diet that is a clear liquid diet. Twenty-seven selected “strongly agree” or “agree” (90%), two selected “neutral” (6.67%), and one selected “disagree” (3.33%). There were zero “strongly disagree” responses (see table 8).

TABLE 8. *Question 7 Initiate a Diet with a Clear Liquid Diet.*

Answer	%	Count
Strongly Agree	13.33%	4
Agree	76.67%	23
Neutral	6.67%	2
Disagree	3.33%	1
Strongly Disagree	0.00%	0
<i>Totals</i>	<i>100%</i>	<i>30</i>

The sixth practice question asked if providers utilized a step-wise approach when they initiate a diet (i.e. clear liquid to solid diet as tolerated by patient’s symptoms). Twenty-four selected “strongly agree” or “agree” (80%), four selected “neutral” (13.33%), and two selected “disagree” (6.67%). There were zero “strongly disagree” responses (see table 9).

TABLE 9. *Question 8 Initiate a Diet with a Step-Wise Approach.*

Answer	%	Count
Strongly Agree	26.67%	8
Agree	53.33%	16
Neutral	13.33%	4
Disagree	6.67%	2
Strongly Disagree	0.00%	0
<i>Totals</i>	<i>100%</i>	<i>30</i>

Note. Step-wise approach: clear liquid diet advanced if no symptoms and solid-diet reduced if symptoms present

Knowledge Questions

There were five questions evaluating provider knowledge of the ACG’s CPG nutritional recommendations for mild AP. These questions are directly from the CPG, thus true/false responses were used as there is only one correct answer. The first knowledge question asked if

the CPG states to begin oral feedings once symptoms have resolved. Twenty-seven selected “true” (90%) and three selected “false” (10%) (see table 10).

TABLE 10. *Question 9 ACG's CPGs State to Initiate Oral Feedings Immediately Once Symptoms Resolved.*

Answer	%	Count
TRUE	90.00%	27
FALSE	10.00%	3
<i>Totals</i>	<i>100%</i>	<i>30</i>

The second knowledge question asked if the CPG states to keep patients NPO for 48-72 hours for bowel rest regardless of symptoms. Three selected “true” (10%), and twenty-seven selected “false” (90%) (see table 11).

TABLE 11. *Question 10 ACG's CPGs State to Keep Patients NPO for Bowel Rest Regardless of Symptoms.*

Answer	%	Count
TRUE	10.00%	3
FALSE	90.00%	27
<i>Totals</i>	<i>100%</i>	<i>30</i>

The third knowledge question asked if the CPG states to begin oral feedings in a step-wise approach. Twenty-three selected “true” (79.31%), six selected “false” (20%), and there was one no response (see table 12).

TABLE 12. *Question 11 ACG's CPGs State to Begin Oral Feedings in a Step-Wise Approach (i.e., Clear, Soft, Solid).*

Answer	%	Count
TRUE	79.31%	23
FALSE	20.69%	6
<i>Totals</i>	<i>100%</i>	<i>29</i>

Note. There was one unanswered response.

The fourth knowledge question asked if the CPG states to initiate a diet with a low-fat solid diet once symptoms have resolved. Twenty selected “true” (66.67%) and ten selected “false” (33.33%) (see table 12).

TABLE 13. *Question 12 ACG's CPGs State to Feed Patients a Low-Fat Diet Once Symptoms Resolved*

Answer	%	Count
TRUE	66.67%	20
FALSE	33.33%	10
<i>Totals</i>	<i>100%</i>	<i>30</i>

The fifth knowledge question asked if the CPG states to initiate a diet with a clear liquid diet once symptoms have resolved. Eighteen selected “true” (60%) and twelve selected “false” (40%) (see table 14).

TABLE 14. *Question 13 ACG's CPGs State to Feed Patients a Clear Liquid Once Symptoms Resolved.*

Answer	%	Count
TRUE	60.00%	18
FALSE	40.00%	12
<i>Totals</i>	<i>100%</i>	<i>30</i>

Clinical Practice Guideline Evaluation

The last two questions asked if the provider has read the ACG CPG and if the CPG represents best practice for mild AP patients. These utilized yes/no responses with a “not applicable” response if the provider selected that they had not read the CPG. There were twelve who selected “yes” (40%) they had read the guideline and eighteen who selected “no” (60%) they had not read the guideline. Eleven selected “yes” (36.67%) the CPG represented best practice, zero “no” responses were selected, and nineteen “N/A” responses were selected.

TABLE 15. *Question 14 Have You Read the ACG's CPGs for Management of Acute Pancreatitis?*

Answer	%	Count
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Yes	40.00%	12
No	60.00%	18
<i>Totals</i>	<i>100%</i>	<i>30</i>

TABLE 16. *Question 15 The ACG's CPGs Represent Best Practice for Mild AP Patients.*

Answer	%	Count
Yes	36.67%	11
No	0.00%	0
N/A	63.33%	19
<i>Totals</i>	<i>100%</i>	<i>30</i>

Note. Mark N/A if answered "no" to question 14.

DISCUSSION

Interpretation of Questionnaire Results

The results of the questionnaire outlined how BUMG providers provide nutritional care for their mild AP patients as well as their knowledge of the current ACG CPGs. Through each of the four sections of the questionnaire, responses illuminated information about provider practice and knowledge.

Demographics

The demographics section includes the first two questions which ask gender and years in practice. Most of the participants were female at 66.67% and only one participant selected “prefer not to say.” The majority of participants have been in practice between two and five years at 43.33%. None of the participants have been in practice longer than 15 years as the 16-20 years and greater than 20 years had no responses. Thus, most providers in this practice are competent to proficient on Benner’s stages of clinical competence from Novice to Expert (Benner, 1982). A competent clinician has two to three years of experience and has awareness of long-term goals (i.e. how to get an AP patient back to home) and perspective of their own planning to achieve this goal (Benner, 1982). This reflects a practice where most providers are on their way to becoming experts in their field.

Practice Questions

The practice questions revealed information about how the BUMG providers deliver nutritional treatments for their patients. There were six questions in this section that used the 5-point Likert scale for responses. The first question asked if providers routinely order a diet once symptoms (i.e. nausea, vomiting, and abdominal pain) resolve. This is a ACG recommendation that a diet be started once symptoms resolve (Tenner et al., 2013). All respondents (96.67%) but one stated they “agreed” meaning they do routinely start a diet once symptoms resolve. This reflects practice that is consistent with ACG CPG recommendations.

The second question in this section asked if providers routinely order a diet once lipase levels normalize. The CPGs discuss the specificity of lipase in the diagnosis of AP, however there is no mention about initiating oral feedings based on lipase levels (Tenner et al., 2013). The prior ACG CPG from 2007 also does not mention lipase as a guidepost to initiate feedings, in fact both mention the known longevity of lipase to stay elevated and therefore it is not a good indicator of when to initiate a diet (Banks et al., 2006; Tenner et al., 2013). Eight participants (26.67%) selected “strongly agree” or “agree,” seventeen (56.67%) selected “strongly disagree” or “disagree,” and the remaining selected “neutral.” For this question, “strongly disagree” or “disagree” responses reflected practice that did not start a diet based on lipase levels, which correctly reflects the ACG lack of recommendation to base diet initiation on this lab value trend. Thus, more than half (56.67%) of the respondents’ practice correctly reflects the CPG. The remaining half of responses may reflect variations in practice such as basing diet initiation off lipase trends independent of symptoms or in conjunction with symptoms. This is concerning as lipase levels can stay elevated for longer periods of time, patients miss out on nutrients they are ready for but are withheld even after their symptoms resolve. This reveals a potential educational

opportunity as well as demonstration that a clinical decision support (CDS) tool in the electronic health record (EHR) may have a role in helping providers practice evidenced based medicine.

Next, participants were asked if they routinely keep their patients NPO for bowel rest for 48-72 hours before starting a diet. Historical CPGs recommended keeping patients NPO until symptoms resolved, pancreatic enzymes (i.e. lipase and amylase) normalized and/or evidence of disease resolution on imaging; however, the current ACG CPGs recommend initiating oral feedings once symptoms have resolved and no bowel rest is needed (Tenner et al., 2013). Two (6.67%) participants selected “agree,” twenty-two (73.33%) selected “strongly disagree” or “disagree,” and the remaining selected “neutral.” For this question, “strongly disagree” or “disagree” responses indicated that participants did not keep their patients NPO for a period of time prior to starting a diet. Thus, the majority (73.33%) of participants practice aligns with the ACG CPG recommendation. For those who do keep their patients NPO (6.67%), this may reflect their opinion of how long it takes symptoms to resolve (an error in the design of the question) or actual practice that these providers have found to be necessary through observational practice or previous education. However, roughly two thirds of the BUMG practice does not keep their patients NPO which is consistent with evidence based practice.

The fourth practice question asked if providers initiate a diet with a low-fat diet. The current CPG recommendation is to start a diet that is a low-fat solid diet; clear liquid and soft diets have revealed longer lengths of stay in randomized controlled trials (Tenner et al., 2013). Ten (33.33%) participants selected “strongly agree” or “agree”, seventeen (56.67%) selected “disagree,” and the remaining selected “neutral.” A “strongly agree” or “agree” response correctly aligns with the ACG CPG recommendation to begin a low-fat solid diet for mild AP patients. Since 33.33% selected “strongly agree” or “agree” and 56.67% selected “disagree,”

these responses reflect practice that is not consistent with the ACG CPG recommendation. The knowledge portion of the questionnaire investigates type of diet further to assess for knowledge deficits as an etiology for this practice discrepancy.

The fifth practice question asked if providers initiate a diet with a clear liquid diet. This question was designed to investigate how providers practice by asking in two separate questions (i.e. the previous question about a low-fat solid diet versus the present question a clear liquid diet). For those who responded that they do start a solid diet, it would be expected that they would respond that they do not start a clear liquid diet and vice versa. The ACG CPG states starting a solid diet versus clear liquid diet provides more calories and has been found to shorten lengths of stay, thus starting a clear liquid diet is not necessary (Tenner et al., 2013). Twenty-seven (90%) selected “strongly agree” or “agree,” one (3.33%) selected “disagree,” and the remaining were neutral. A “strongly disagree” or “disagree” response correctly aligns with the ACG CPG recommendation to not begin a clear liquid diet for mild AP patients. This 90% “strongly agree” or “agree” response clearly indicated the providers start a clear liquid diet first, which does not reflect CPG recommendations and contradicts the 33.33% response in the previous question who responded they do initiate a diet with a low-fat solid diet. At the same time, this confirms that the previous question’s response was either confusing or unclear as a 10% response would have been expected for the fourth practice question instead of 33.33%. Both questions’ responses are concerning however, as a minority selected that they start a diet with a low-fat diet and a majority selected that they start a diet with a clear liquid diet. This may be another indication for how a CDS tool could prompt the provider to select the most evidence-based diet when they do initiate oral feedings.

The final practice question asked if providers utilize a step-wise approach when they

initiate oral feedings. The ACG CPG states a starting a diet does not need to be done in a step-wise approach, rather a low residue, low-fat solid diet is safe and shortens the hospital length of stay (Tenner et al., 2013). Twenty-four (80%) selected “strongly agree” or “agree,” two (6.67%) selected “disagree,” and the remaining selected “neutral.” A “disagree” or “strongly disagree” response would correctly reflect the ACG CPG to not initiate a diet in a step-wise approach. Thus, 80% responded they do initiate a diet in a step-wise approach, reflects practice that is not congruent with the CPG recommendation. This confirms that the previous questions’ response of 90% starting with a clear liquid diet is likely because the BUMG providers practice initiation of diet with their mild AP patients in a step-wise approach. The 33.33% of providers starting a low-fat diet response from the fourth practice question is difficult to interpret and may reflect question confusion or variation in practices that are dependent of patient presentation.

Knowledge Section

There were five knowledge questions that asked the provider directly what the ACG CPG states about nutritional treatments for mild AP patients. The possible responses were true or false. The first knowledge question asked if the ACG CPG states to begin oral feedings immediately upon resolution of symptoms (i.e. nausea, vomiting, and abdominal pain). A “true” response is correct, the CPG recommends beginning a diet once symptoms have resolved (Tenner et al., 2013). Twenty-seven (90%) selected “true” and three (10%) selected “false.” Thus, most BUMG hospitalists correctly know the CPG recommendation. This also aligns with their practice (practice question one) as 96.67% reported that they start a diet once their patients’ symptoms have resolved.

The second knowledge question asked providers if the ACG CPG states to keep mild AP patients NPO for bowel rest regardless of symptoms. The ACG CPG recommendation is to start

a diet once symptoms resolve and that bowel rest is an invalidated pathological concept, that nutrients from a low-fat diet improve patient outcomes (i.e. reduced length of hospital stay) (Tenner et al., 2013). A “false” response correctly reflects this CPG recommendation. Three (10%) selected “true,” and twenty-seven (90%) selected “false.” This reflects accurate BUMG provider CPG knowledge as well as appropriately reflects the third practice question response that 73.33% do not keep their patients NPO.

The third knowledge question asked providers if the ACG CPG states to begin oral feedings in a step-wise approach (i.e. clear liquid diet, soft diet, solid diet). The ACG CPG states not to start a diet in a step-wise approach as patients become nutrient deficient with this approach and have longer lengths of stay (Tenner et al., 2013). A “false” response correctly reflects this CPG recommendation. Twenty-three (79.31%) selected “true,” six (20%) selected “false,” and there was one no response. This represents a knowledge deficit of the CPG recommendation with a majority (76.67%) reporting the CPG states to use a step-wise diet approach to diet initiation. However, this knowledge deficit informs the practice discrepancy identified by the majority response in practice question six where 80% responded that they use a step-wise approach when initiating a diet with their mild AP patients.

The fourth knowledge question asked providers if the ACG CPG states to initiate a diet with a low-fat diet once symptoms have resolved. The ACG CPG recommendation is to start a low-residue, low-fat diet once symptoms have resolved in mild AP patients (Tenner et al., 2013). A “true” response correctly reflects this CPG recommendation. Twenty (66.67%) selected “true” and ten (33.33%) selected “false.” This represents accurate knowledge of the CPG as demonstrated by the majority selecting “true” that the CPG states to start a low-fat solid diet. However, this is inconsistent with practice question four that asked if providers initiated a diet

with a low-fat solid diet and 33.33% responded “strongly agree” or “agree” and 56.67% selected “disagree.” Thus, further investigation is needed to understand that if providers know the CPG recommendation, why they choose to practice differently. However, this may also represent question confusion as the previous knowledge question revealed most (76.67%) of the BUMG providers think the ACG CPG states to start a diet in a step-wise approach starting with a clear liquid diet.

The fifth knowledge question asked providers if the ACG CPG states to initiate a diet with clear liquid diet. The ACG CPG recommendation is to start a low-residue, low-fat diet once symptoms have resolved, not a clear liquid diet as RCTs have revealed poorer outcomes when starting this diet (Tenner et al., 2013). A “false” response correctly reflects this CPG recommendation. Eighteen (60%) selected “true” and twelve (40%) selected “false.” This reflects a majority (60%) as having a knowledge deficit of the CPG recommendation with which diet to initiate oral feedings. However, this is in opposition to the prior question where most providers accurately identified the diet to begin oral feedings with 66.67% selecting a low-fat solid diet. This is concerning for question confusion or lack of CPG recommendation knowledge. If these last two questions were switched, asking about a clear liquid diet first, it would be interesting if responses resulted were more logical (i.e. higher responses for starting a clear liquid diet and lower responses for starting a low-fat diet). Without a qualitative narrative portion of the study, it cannot be known where the differences in these two questions’ responses stems from. However, the fifth practice question asked if providers initiated oral feedings with a clear liquid diet, which resulted 90% of respondents who “strongly agree” or “agree” that this is their go-to diet once symptoms have resolved. This practice question response aligns with this knowledge question response, in that if providers think the CPG recommendation is to start feedings with a

clear liquid diet, their practice accurately reflects the CPG. This suggests there is a CPG knowledge deficit surrounding which diet should be started once the patient's symptoms have resolved. This suggests provider education as well as continued benefit of a CDS tool to prompt providers to select the correct evidence based diet recommendation may be beneficial.

Clinical Practice Guideline Evaluation

The last two questions asked if the provider had read the ACG CPG and if so, if they thought it represented best practice for mild AP patients. These questions utilized yes/no responses with a "not applicable" response for the last question if the provider selected that they had not read the CPG. There were twelve (40%) who selected "yes" they had read the guideline and eighteen (60%) who selected "no" they had not read the guideline. For the last question, eleven (36.67%) selected "yes" the CPG represented best practice, zero selected "no" the CPG did not represent best practice, and nineteen (63.33%) selected the "N/A" response. Except for one respondent who said they did read the CPG and answered N/A for best practice, each provider who read the guideline stated it represented best practice for the mild AP patient population. Without a narrative section, it cannot be known why the participant who read the guideline did not select "no" but instead selected "N/A". This may be due to question confusion or an impartial opinion about the CPG representing best practice.

These results reflect that the providers who have read the CPG do in fact find the recommendations to represent best practice. Thus, the majority (60%) of the providers who stated they did not read the CPG may in fact find it pertinent to their practice as their colleagues stated. The incongruences in practice (i.e. majority starting a clear liquid diet instead of a low-fat solid diet) and knowledge (i.e. majority stating the CPG states to start a clear liquid diet) may be improved by offering the CPG for providers to read and subsequently increasing adherence to the

guideline. There may also be provider buy-in for a CDS tool in the EHR since providers feel the CPG represents best practice, having reminders and diet prompts may be useful to their practice.

Relationship of Results

The OMRU framework guided the design and implementation of the questionnaire as it aids in the translation of research into practice (Graham & Logan, 2004). This framework supported the investigation into how providers practice and their knowledge of the ACG CPGs. The questionnaire focused on the nutritional care surrounding patients with mild AP and the questions were designed to mirror questions about practice and knowledge of BUMG providers. This allowed for assessment of provider practice and whether it was congruent with CPG recommendations or not. By evaluating provider knowledge of the CPGs knowledge deficits were identified and were correlated with discrepancies in practice. Thus, informing knowledge deficits as a potential barrier to providing evidence-based practice for mild AP patients.

The theoretical underpinnings of the OMRU are diffusion of innovation and planned action theory, which communicate innovation through time in a social system and promote change through planned action based on prediction of how people react to change, respectively (Manojlovich et al., 2015; Straus et al., 2013). The results reveal most BUMG providers start a diet after symptoms have resolved with a step-wise approach beginning with a clear liquid diet. Thus, the questionnaire revealed a common practice among BUMG providers (i.e. their social system). The next step is to discover how best to implement change (i.e. innovation) to eliminate this practice and have providers start a diet with a low-fat solid diet, which represent evidence-based practice from the ACG CPG. The questionnaire was a placeholder for planning change as it acted to establish if a practice change was indicated. If the questionnaire had revealed no practice discrepancies and knowledge deficits of the CPG, no future planning of change would

be needed. Since it did reveal areas of deficits, future planning to implement a change where the ACG CPGs recommendations are incorporated into practice has been launched in an organized manner.

The CPG evaluation portion of the questionnaire included the last two questions where providers were asked if they had read the ACG CPG for management of AP and if so, if they believed the CPG represented best practice. This first question was modeled after the Sekimoto et al. (2010) study that evaluated management of AP before and after the publication of Japanese CPGs. The study asked participants if they had read the guidelines and 21.5% responded that they had not read the guidelines (Sekimoto et al., 2010). At nearly a quarter of participants having not read the guidelines, this warranted local investigation as well. Also, one barrier to CPG implementation is lack of guideline awareness, thus it was pertinent to assess if the CPG had been read (Stamp & Davis, 2013). The results of the BUMG questionnaire revealed 60% had not read the ACG CPGs; this may have contributed to the knowledge deficits about type of diet to initiate. The Japanese study compared practice before and after implementation of national CPGs, it did not investigate specific knowledge of the CPG. Thus, the identified knowledge deficits about type of diet to initiate after symptom resolution may be a barrier to providing evidence-based practice; since there were practice discrepancies identified about type of diet providers initiate for their mild AP patients. The implementation of a mild AP order set with CDS tools may improve provider knowledge deficits and correct practice discrepancies.

Impact of Results on Practice

The questionnaire provided results that require further investigation, potential for revision of the questionnaire if used again, and suggestion that a mild AP order set with CDS tools built in would be beneficial to the care received by this population of patients. From majority and

minority responses it became clear there are ACG CPG practice and knowledge deficits from the BUMG participants. Further investigation of responses such as neutral responses in the practice questions may provide more information about the providers' practices. Revision of the questionnaire should take the limitations into account. It was identified that a Likert scale was at times difficult to interpret responses for the practice questions, such as the neutral response. As this questionnaire was developed by the principal investigator, wording and order of questions may have played a role. Future iterations of the questionnaire may move order of the questions to reduce question confusion. Also, a narrative at the end of either each question or section may be useful to further identify true gaps in practice or knowledge. Some providers may take multiple factors into account in starting a diet other than symptoms, and a narrative section could allow for this to be explained by participants. Lastly, the questionnaire results identified gaps in practice and knowledge. Per the questionnaire results, most BUMG providers start a diet in a step-wise approach (80%) with a clear liquid diet (90%) first, which is not the ACG CPG recommendation. Most BUMG providers agreed the ACG CPG states to feed patients in a step-wise approach (79.31%) beginning with a clear liquid diet (60%). Thus, if knowledge is a barrier to practice, the BUMG providers have demonstrated their knowledge is reflected in their practice. These results suggest an order set may inform providers about current CPGs recommendations and subsequently guide their practice to be more evidence based.

One of the identified barriers to CPG implementation is lack of CPG awareness (Stamp & Davis, 2013). There were 60% of respondents who had not read the guideline; this requires further investigation. This may be due to lack of awareness of the existence of the ACG CPG, however, other etiologies may be present and revising the questionnaire to include a narrative portion may capture more information about this high response.

The practice questions that asked about initiating oral feedings based on lipase level and holding oral feedings for 48-72 hours for bowel rest are improper indications for when to start a diet. Although, these responses were a minority of the group, 26% stated they start a diet once lipase levels normalize and 6.67% keep patients NPO for 48-72 hours before starting a diet. Although, these practices may have been common 10-20 years ago, current knowledge about lipase levels and withholding a diet for bowel rest reveal lipase levels stay elevated for a prolonged period and withholding nutrients prevents patients from recovering from their mild AP faster, respectively (Tenner et al., 2013). RCTs have revealed shorter lengths of stay for patients who are fed sooner and patients who receive a solid diet versus a step-wise approach with clear liquids (Horibe et al., 2015; Lariño-Noia et al., 2014). Therefore, a mild AP order set with a CDS tool in the EHR could help circumvent practice gaps even in the minority of BUMG participants with outdated practices by providing reminders to start a diet based off nursing responses about absent symptoms that get built into their nursing assessment when the order set is used.

Strengths and Limitations

The known practice gap in treating mild AP has been well documented with multiple studies from CPG implementation barriers to variations in practice between type of providers (i.e. nurse, dietician, provider, etc.) to variations depending on location (i.e. academic setting versus private practice) (Cahill et al., 2011; Stamp & Davis, 2013; Sun et al., 2013; Westfal et al., 2011). There was no research on CPG adherence locally and the principal investigator had observed practice discrepancies suggesting inquiry into provider practice was warranted. Known barriers to CPG implementation was lack of awareness of the guideline, limited resources, unclear responsibilities in the various disciplines, and lack of agreement with the CPG recommendations (Stamp & Davis, 2013). Therefore, a questionnaire was utilized to investigate

BUMG providers' practice and knowledge of the ACG CPG nutrition recommendations. This was intended to identify if any practice gaps and/or any knowledge deficits were present.

Strengths

The questionnaire was designed to mirror itself in the practice and knowledge questions. This was meant to reveal if practice gaps were present and if knowledge gaps could be an etiology. Responses in both sections accurately mirrored one another. For example, 96.67% responded they routinely order a diet once symptoms resolve and 90% responded the ACG CPG states to initiate oral feedings once symptoms have resolved. These correct practice and knowledge responses indicated BUMG providers know when to start a diet for mild AP patients and likely due to knowing the ACG CPG recommendation. Alternatively, 90% responded they initiate a diet with a clear liquid diet and 60% responded the ACG CPG states to initiate a diet with a clear liquid diet. The incorrect practice and knowledge responses indicated BUMG providers do not know which type of diet to start and this may be due to not knowing the CPG recommendation.

For the practice questions, there was investigation of when providers initiate a diet and then the type of diet they select to begin oral feedings. The last three practice questions asked if providers initiated a diet with a low-fat solid diet, clear liquid diet, and/or a step-wise approach. This was meant to assess the type of diet they selected and if there was a majority who started with a clear liquid diet (90%) (as was revealed by the participants' responses) was there also a majority that utilized the step-wise approach (80%). The step-wise approach gave a potential reason for why a provider would select a clear liquid diet to initiate oral feedings, even though this practice is outdated and not evidence-based.

Limitations

There were many lessons learned about the questionnaire once the results were reviewed, which could be used to improve a revised version. The first was the use of Likert style responses for the practice questions. In creating these questions, Likert responses seemed appropriate to evaluate how providers practice. However, in analyzing the data a different scale such as “yes,” “sometimes,” and “no” would have provided more direct information about how providers practice. Practice is not an evaluation of attitudes and beliefs, which is what the Likert scale is best at assessing (Polit & Beck, 2013). One of the expert panelists suggested changing the knowledge question responses from Likert style to true/false. This improved the analysis and interpretation of these responses. Next iteration of this questionnaire should have the practice question responses changed to further improve interpretation of the responses.

One of the difficulties in using the Likert responses was interpreting the “neutral” response. The “neutral” response option proved to be difficult to decipher and draw meaning about a provider’s practice after the results were populated. It was unclear if there was no opinion, uncertainty about one’s routine practice, or the provider sometimes agreed and sometimes disagreed and their practice was dependent on various factors. In the future omitting the “neutral” response option and/or providing a narrative section for comments when this was selected would provide more information about all participants practice.

Order of questions also played a role in responses. For the practice questions, the type of diet initiated revealed most providers start a diet with a step-wise approach with a clear liquid diet. The first of the “type of diet” questions began by asking if the provider selected a low-fat solid diet, then asked if they start a diet with a clear liquid diet, and then if they use a step-wise approach. If this line of questions had been rearranged in the exact opposite order with the step-wise approach, clear liquid diet, and then low-fat solid diet, the responses to the low-fat diet may

have been clearer. There were 33.33% who answered they start a diet with a low-fat diet, this was followed by 90% who answered they start a diet with a clear liquid diet, and 80% who stated they use a step-wise approach. The 33.33% is inconsistent with the following two questions' results and it is unclear why this was selected when most start a diet with clear liquid (90%). This may have been confusion about what the question was asking or variations in practice dependent on patient presentation.

For the knowledge questions, order of questions was reversed from the practice questions. This was not an intention of the principal investigator. However, the results of the practice questions compared to the knowledge questions revealed that the order of questions may yield different results. The knowledge question responses revealed most providers thought the ACG CPGs state to start a diet with a step-wise approach (79.31%) beginning with a clear liquid diet (60%). This is further evidence that there may have been question confusion in the practice questions when 33.33% of providers stated they would start a low-fat diet, but also answered they use a step-wise approach (80%) with a clear liquid diet first (90%).

There was no narrative opportunity provided to participants in the questionnaire. A space for participants to provide an explanation at the end of each question or section may have been useful. This would have given providers an opportunity to describe their practice and report confusion with the design of any of the questions. Additionally, this would also provide another means of gathering information about other barriers not previously identified.

Dissemination and Future Implications for Practice

The questionnaire provided an initial inquiry into the practice and CPG knowledge of BUMG providers in Phoenix, Arizona regarding mild AP patients. There was no previous investigation of nutritional practice of providers locally in Arizona. The results of the

questionnaire have successfully provided information about BUMG practice discrepancies and knowledge deficits as guided by the ACG CPG. This DNP project and the results discussed here will be made public in University of Arizona's repository of theses available online. The results will also be shared with the Director of Professional Practice at BUMCP as part of the agreement in obtaining a letter of support for IRB approval. These are preliminary results and require further investigation prior to initiating a practice change.

The next step for this preliminary research should be either resubmission of the revised questionnaire with narrative sections or follow-up interviews to confirm results about BUMG practice and knowledge deficits. Future iterations of the questionnaire should include the discussed proposed revisions in the limitations section. Once confirmed that the BUMG provider mild AP nutritional practices do vary from the ACG CPG, the next step would be to identify potential stakeholders and form a committee to discuss educational opportunities as well as development of an order set with CDS tools built in.

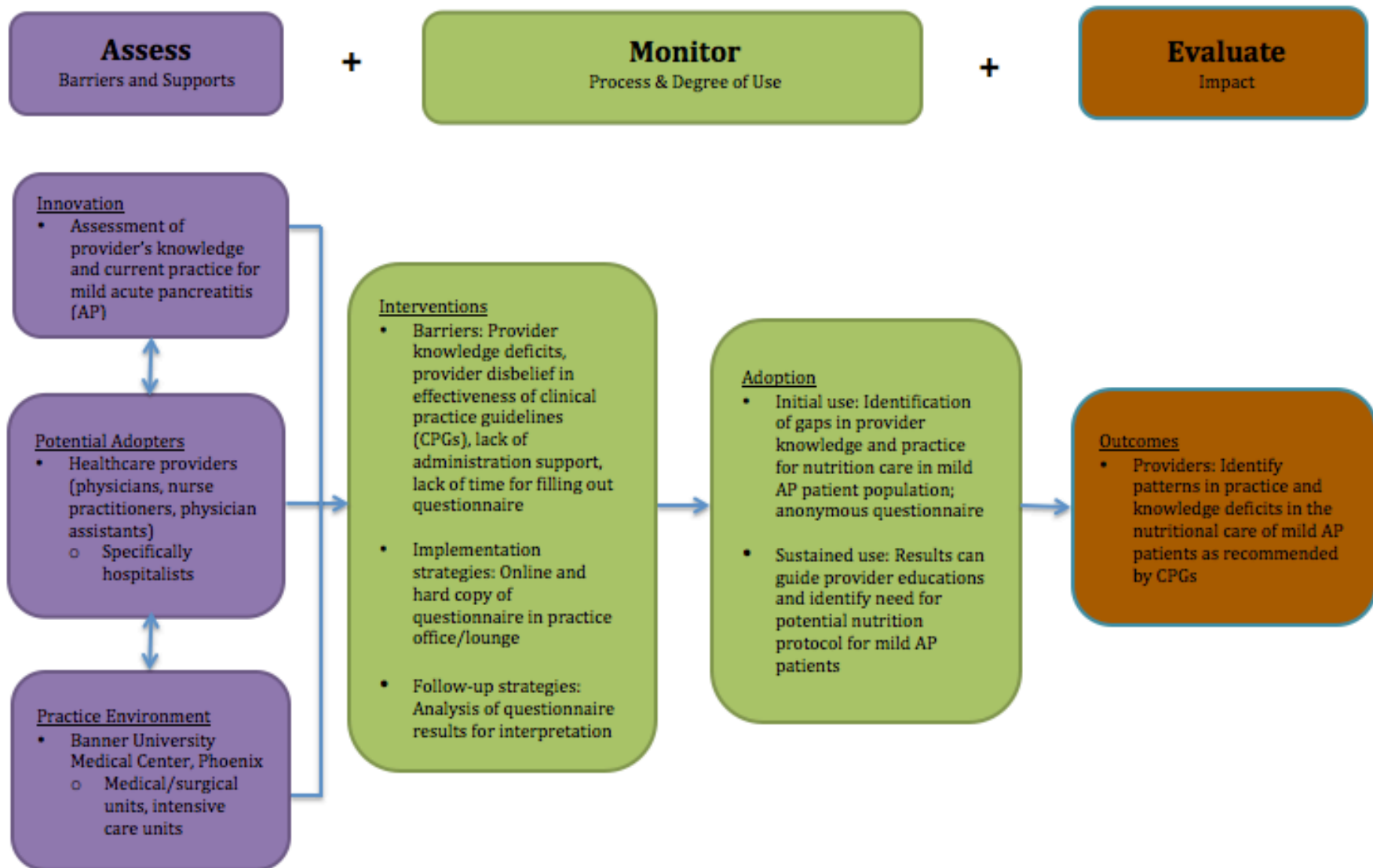
Conclusion

The process of the DNP project illuminated the course of planning for change in healthcare. The nutritional practices and knowledge of BUMG hospitalist providers was investigated as defined by the ACG CPG for the management of AP with the use of a questionnaire. Results were separated into practice and knowledge sections of the questionnaire. The practice section revealed most BUMG providers utilize a step-wise approach (80%) to initiating oral feedings with a clear liquid diet (90%) once symptoms resolve. This was matched with the knowledge section that revealed most BUMG providers believe the ACG CPG states to initiate a diet in a step-wise approach (79.31%) with a clear liquid diet (60%) first. The ACG CPG states to start oral feedings with a low residue, low-fat diet once symptoms resolve and a

step-wise approach with a clear liquid diet is not necessary (Tenner et al., 2013). Thus, both BUMG providers' practice and knowledge of the CPG were deficient. The knowledge deficits may be a barrier to properly implementing the CPG recommendations in practice. There were 40% of the participants who had read the CPG, which may partially explain the identified knowledge deficit. Limitations of this first iteration of the questionnaire were discussed in detail. Further research is indicated to confirm these preliminary results prior to implementing future changes at BUMCP.

APPENDIX A
OTTAWA MODEL OF RESEARCH USE (OMRU)

Ottawa Model of Research Use (OMRU) Framework for Questionnaire Implementation



APPENIDX B
QUESTIONNAIRE

Questionnaire

The diagnosis of acute pancreatitis (AP) is made when two or more of the following are present: characteristic upper abdominal pain, amylase and/or lipase elevated three times the upper limit of normal, and imaging findings consistent with AP. The Atlanta classification system defines *mild* AP when no organ failure is present.

1. Gender

MALE FEMALE PREFER NOT TO SAY

2. Years in practice

0-1 2-5 6-10 11-15 16-20 20+

3. I routinely order a diet for my mild AP patients once their abdominal pain, nausea and vomiting have resolved.

Strongly Disagree Disagree Neutral Agree Strongly Agree

4. I routinely order a diet for my mild AP patients once their lipase levels have normalized.

Strongly Disagree Disagree Neutral Agree Strongly Agree

5. I routinely keep my mild AP patients NPO for 48-72 hours prior to starting a diet.

Strongly Disagree Disagree Neutral Agree Strongly Agree

6. When I initiate a diet for my mild AP patients, I start with a low-fat solid diet.

Strongly Disagree Disagree Neutral Agree Strongly Agree

7. When I initiate a diet for my mild AP patients, I start with a clear liquid diet.

Strongly Disagree Disagree Neutral Agree Strongly Agree

8. When I initiate a diet for my mild AP patients, I use a step-wise approach (i.e. clear liquid diet is advanced if no nausea, vomiting, or abdominal pain and solid-diet reduced if nausea, vomiting, or abdominal pain present).

Strongly Disagree Disagree Neutral Agree Strongly Agree

9. The American College of Gastroenterology's clinical practice guidelines for mild AP state to initiate oral feedings immediately once abdominal pain, nausea, and vomiting have resolved.

True False

10. The American College of Gastroenterology's clinical practice guidelines state to keep mild AP patients NPO for bowel rest regardless of symptoms (i.e. lack of nausea, vomiting, or abdominal pain).

True False

11. The American College of Gastroenterology's clinical practice guidelines state to begin oral feedings in mild AP patients in a step-wise approach (i.e. clear liquid, soft diet, solid diet).

True False

12. The American College of Gastroenterology's clinical practice guidelines state to feed patients with mild AP a low-fat diet once nausea and vomiting have resolved.

True False

13. The American College of Gastroenterology's clinical practice guidelines state to feed patients with mild AP a clear liquid once nausea and vomiting have resolved.

True False

14. Have you read the American College of Gastroenterology's clinical practice guidelines for management of acute pancreatitis (AP)?

YES NO

15. The American College of Gastroenterology's clinical practice guidelines represent best practice for mild AP patients. (Skip if answered “no” to question 14)

YES NO N/A

APPENDIX C

BUDGET

Budget

Expense Item	Budget
Written questionnaire (40 copies) with instructions <ul style="list-style-type: none"> • Printed from researcher's home 	Negligible
Envelope for completed written questionnaires	\$3
Qualtrics (online questionnaire) <ul style="list-style-type: none"> • Free to University of Arizona students 	\$0.00
Postage <ul style="list-style-type: none"> • Mailing questionnaire supplies to Arizona • Mailing completed questionnaires to North Carolina 	\$19.90
Starbucks cards (\$5/each x 38 potential participants)	\$190
Microsoft Excel <ul style="list-style-type: none"> • Researcher owns software 	\$0.00
Total	\$182.90

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