

Hawai'i Journal of Medicine & Public Health

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**THE 2012 HAWAI'I PHARMACISTS ASSOCIATION ANNUAL MEETING
ABSTRACTS**

Benjamin Chavez PharmD, BCPP

148

**ATROPHIC-APPEARING PANCREAS ON MAGNETIC RESONANCE
CHOLANGIOPANCREATOGRAPHY AS INITIAL PRESENTATION
OF CYSTIC FIBROSIS**

Amy Stratton DO; Thomas Murphy MD; and Jeffrey Laczek MD

151

CHOLECYSTOCOLONIC FISTULA

Eric Balent MD; Timothy P. Plackett DO; and Kevin Lin-Hurtubise MD

155

**CHILAUDITI SYNDROME PRECIPITATED BY COLONOSCOPY:
A CASE REPORT AND REVIEW OF THE LITERATURE**

Amy X. Yin MD; Gavin H. Park BS; Gwendolyn M. Garnett MD; and John F. Balfour MD

158

PUBLIC HEALTH HOTLINE

**Enhanced Monitoring of Hawai'i Coastal Water Quality Using Potential
New Indicators**

Yuanan Lu PhD; Hsin-I Tong MS; Christina Connell BS; and Zi Wang BS

163

MEDICAL SCHOOL HOTLINE

Interprofessional Education: Future Nurses and Physicians Learning Together

Damon H. Sakai MD; Stephanie Marshall RN, MSN; Richard T. Kasuya MD, MEd;
Lorrie Wong RN, PhD; Melodee Deutsch RN, MS; Maria Guerriero RN, MS;
Patricia Brooks RN, MS; Sheri F.T. Fong MD, PhD; and Jill Omori MD

168

THE WEATHERVANE

Russell T. Stodd MD

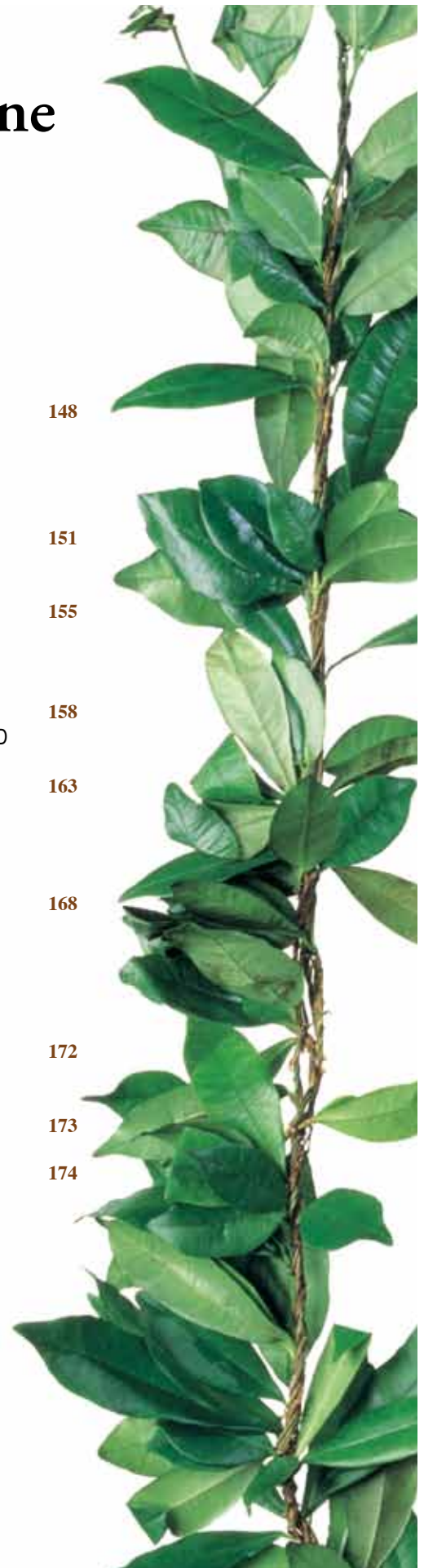
172

GUIDELINES FOR PUBLICATION OF HJMPH SUPPLEMENTS

173

CME LISTING

174



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The 2012 Hawai'i Pharmacists Association Annual Meeting Abstracts

The Hawai'i Pharmacists Association (HPhA) is the only professional pharmacy association in Hawai'i and serves a membership of approximately 350 pharmacists, technicians, and students. HPhA is dedicated to improving patient care for the people of Hawai'i and the Pacific through the advancement and support of pharmacy practice. During the 2012 HPhA Annual Meeting, the organization hosts its inaugural professional poster session highlighting research and practices conducted by local pharmacy professionals. The following is a sampling of abstracts submitted for the 2012 HPhA professional poster session within the categories of original research and practice insights.

Benjamin Chavez PharmD, BCPP; University of Hawai'i at Hilo College of Pharmacy, Hilo, HI 96720

Original Research Category Abstracts

Erroneous Documentation of Tetanus Vaccine Administration in an Emergency Department

Eric H. Gilliam PharmD, BPCS; Alexandra M. Perez PharmD(C); and Carol Lynn Goo PharmD(C)

Background: In response to increasing rates of pertussis infections, current guidelines recommend adults receive a one-time booster of a tetanus-diphtheria-pertussis vaccine in place of a routine tetanus-diphtheria vaccine. The addition of a second tetanus containing vaccine to the emergency department medication supply creates the potential for confusion among tetanus products resulting in possible medication errors. This study aims to evaluate the accuracy of documentation of tetanus vaccinations in an emergency department.

Objectives: The primary objective of this study is to determine the error rate in documenting the correct tetanus vaccine administered. Secondary objectives include determining variables associated with the medication errors.

Methods: This is a retrospective study of 384 patients who received a tetanus vaccination in an emergency department between June and November 2011. Lot number analysis compares actual tetanus product administered to original medication order and administration documentation.

Results: Lot number documentation identifies erroneous vaccine administration among 38 (9.9%) orders. Possible errors, including incorrect retrieval of vaccine from medication cabinets, are identified among 82 (21.4%) orders. Error rates are not associated with verbal orders nor associated with one particular section of the emergency department. Error rates are lower during hours when pharmacist is present in the department compared to off-duty hours (34.2% vs 65.8%). Orders for tetanus-diphtheria-pertussis vaccine are more often erroneous compared to orders for tetanus-diphtheria (25% vs 13% respectively).

Conclusions: Emergency departments stocking tetanus-diphtheria and tetanus-diphtheria-pertussis vaccines should take extra measures to reduce likelihood of medication errors.

Herbal Medicine Survey of Health Professionals in Hawai'i

Forrest Batz PharmD; Alice Hwang (Student Pharmacist); Marisa Kaluhiokalani (Student Pharmacist); and Ana Park, (Student Pharmacist)

Background: Herbal medicine use among consumers is popular and increasing. Historically, herbal medicines were not but more recently to a limited and

varying degree are, included in the education of health care professionals. Currently practicing licensed health care professionals may not be well-prepared to discuss herbal medicines with their patients.

Methods: An 18 question survey was developed to assess the attitudes about, and knowledge of, herbal medicines among health care professionals licensed in Hawai'i, as well as the types of herbal medicine resources used in daily practice. The survey was administered online via SurveyMonkey.com between March and October 2011. Hawai'i state professional organizations representing ten licensed health care professions were contacted by telephone and e-mail to elicit participation by their members. Descriptive statistics were generated by SurveyMonkey.com.

Results: A total of 180 health care professionals completed the survey. Most responses were from pharmacists, dieticians, nurses, and physicians. The majority of respondents indicated that herbal medicines may be both helpful (85.6%) and harmful (93.3%), and worry that patients take herbal medicines without telling them (75.3%). Responders (60.3%) indicated that prescribers are poorly informed, and 95.5% expressed interest in learning more about herbal medicines.

Conclusions: This survey reveals a gap between the current herbal medicine knowledge of Hawai'i health professionals, the need for such knowledge, and a willingness to acquire additional knowledge. The results of this survey can guide the development and delivery of educational programs to bridge this herbal medicines knowledge gap.

Marshallese Mobile Screening Clinic

Shanele S. Shimabuku BS; Cassie L. Kim BS; Chris Lai Hipp; Elizabeth Heffernan MA

Background: The Marshallese population has a unique culture and a political relationship with the United States that has resulted in a complex integration to Hawai'i. This has been a barrier in gaining access to culturally appropriate health care, which may add to the high rate of chronic diseases in this population.

Objectives: To increase health awareness in the underserved Marshallese population by providing wellness screenings, health education, and access to affordable health care.

Methods: Diabetes, hyperlipidemia, and hypertension screenings were held at local Marshallese churches. With the help of Marshallese interpreters, all participants were educated about their results. Participants who were noted to be at risk for diabetes, high blood pressure, or high cholesterol were identified and referred to Hilo Bay Clinic's weekly diabetes education classes for follow up treatment for any of the noted diseases. Student pharmacists collaborated with Hilo Bay Clinic to suggest pharmacological therapy and medication adherence strategies.

Results: Thirty-four participants were screened at 2 local Marshallese churches. Thirty participants had health insurance, but only 50% received regular health

care and 64% did not know if they had diabetes, high cholesterol, or high blood pressure. After attending the Marshallese Mobile Screening Clinic (MMS), 59% of participants want to be referred to Hilo Bay Clinic for follow up care.

Conclusions: The MMS will begin to help the Marshallese population overcome the barriers that prevent them from obtaining culturally appropriate health care. It will empower them to lead healthier lives and seek out medical care at the onset of illness when it is most treatable.

The Relationship Between Health Literacy and Medication Adherence in Hawai'i

Sheena S Jolson PharmD; Anita E Ciarleglio PhD, RPh; Les J Krenk RPh; William N Jones RPh; and Lorrin W. Pang MD

Background: Health literacy has been much studied in the United States the past two decades. There is strong evidence that patients with poorer health literacy have poorer health outcomes. Limited data exist, however, on its relationship to medication adherence and patients living in rural areas.

Objective: The goal of this study is to determine the relationship between health literacy and self-reported medication adherence in Hawai'i.

Methods: One hundred and three patients were recruited from three geographically different independent pharmacies on the island of Maui. Patients were identified by pharmacy residents if they were picking up a new or refill prescription. Patients completed an in-person interviewer-assisted questionnaire that included the Rapid Estimate of Adult Literacy in Medicine, Revised (REALM-R) and the Morisky 8-item Medication Adherence Scale (MMAS-8). Patients included in the study were >18 years old; picking up medications for themselves; have refilled one or more medications at a participating pharmacy; and were comfortable speaking English.

Results: Majority of the study participants were Caucasian (28.2%), male (57.3%) and over the age of 50 (53.4%). More than half the patients had adequate literacy levels (REALM-R score of >6) but poor self-reported medication adherence (MMAS-8 score >2). Bivariate analyses indicated that health literacy, age, and ethnicity were related to self-reported medication adherence ($P < 0.05$).

Conclusion: Patients with lower health literacy scores were found to have poorer rates of self-reported medication adherence. There is a great need and opportunity for pharmacist in rural areas to improve patient education and medication usage. Further investigation is needed.

Practice Insights Category Abstracts

An Innovative Exploration of Kalaupapa's Distinctive History Impacts the Cultural Perspectives of Student Pharmacists in Relationship to Patient Care

Liz Heffernan MA; Darius T. Kalvaitis PhD; Prabu Segaran PharmD (C); and Edward Fisher PhD, RPh

Background: As the population in Hawai'i is celebrated for its diversity, it is vital for pharmacists to provide culturally competent care. Cultural appreciation is highlighted in the Accreditation Council of Pharmacy Education's curricular guidelines and colleges of pharmacy are charged with employing effective strategies to help student pharmacists develop these cross cultural skills.

Description of Innovative Service: Eighteen University of Hawai'i at Hilo College of Pharmacy student pharmacists participated in an innovative initiative which explored the cultural implications of exiling patients suffering from Hansen disease to Kalaupapa. This initiative included the writing of a pre-trip

research paper, a visit and guided tour of Kalaupapa, Moloka'i, and a class presentation upon return. Following these activities, 17 participants took part in focus group interviews and discussed the impact of the initiative on their attitudes toward patient care.

Impact & Conclusions: Findings from focus group analyses suggested that this educational initiative provided a rich platform for learning which promoted cross cultural knowledge, an opportunity to contemplate one's own bias and underlying belief systems, a heightened awareness to the stigma carried by disease, and the participant's ability to self reflect. Student pharmacists came away with a better understanding of the culture of Hawai'i, as well as with a visceral appreciation of the need for sensitivity, compassion, empathy, and respect while interacting with patients. The student pharmacists were able to use their insights gained through this experience and apply them to other prevalent disease states and to the importance of cultivating culturally appropriate care.

Description and Impact of Pharmacy Services in a Family Medicine Clinic

Benjamin Chavez PharmD, BCPP and Irene Chaisri BS

Background: A clinical pharmacist employed by a college of pharmacy was placed at an outpatient clinic affiliated with a school of medicine and a family medicine residency program. The goal was to establish pharmacy services to improve the quality of care given to patients, including managing disease states and providing education.

Description of Service: Protocols were written allowing the pharmacist to adjust medications as needed for chronic disease state management, as well as ordering laboratory tests. Residents and physicians referred patients, who were given an appointment to see the pharmacist in the clinic. The pharmacist was also available during the week for "walk-ins" and consults by physicians. Disease states seen included: diabetes, hypertension, hyperlipidemia, asthma, smoking cessation, and psychiatric conditions.

Impact on patient care / institution: A total of 100 patients were referred during the study period for a total of 254 scheduled visits; 103 of those appointments were no shows or cancelled. Seventy-two patients completed at least one visit, and 36 patients had two or more visits. Types of interventions included medication adjustments, disease state education, and device education. After pharmacist consultation, 25 out of 37 patients had a decrease in A1C; 26 out of 37 had a decrease in glucose.

Conclusion: Pharmacy services at this family medicine clinic have been valuable and provided insight on the impact on patient care. Pharmacy services are still being offered and are continuously being evaluated.

Impact of a Community Medication Take Back Event

Torrey Ikeda (Student Pharmacist); Christopher Kamei (Student Pharmacist); Marcus Kouma (Student Pharmacist); Behnam Rostami (Student Pharmacist); Jed Sana (Student Pharmacist); Matthew Sasaki (Student Pharmacist); Forrest Batz PharmD; and Deborah Juarez ScD

Background: Unwanted/unused medications in the home constitute a growing source of concern in health care, law enforcement, and waste management communities. Unwanted/unused drugs may lose their potency before being used for therapeutically appropriate purposes, be diverted for inappropriate/illegal use, serve as a source of inadvertent toxic ingestion, and be a source of environmental contamination via conventional disposal in the waste stream.

Methods: The Hawai'i State Narcotics Enforcement Division held a Medication Take Back Program in Honolulu during three days in September 2011 in conjunction with a wellness fair. This event, promoted through a media

campaign, encouraged members of the O'ahu community to turn-in unwanted medications for safe, environmentally sensitive destruction. University of Hawai'i at Hilo College of Pharmacy faculty and students catalogued the medications received during the event, including drug name, narcotic or non-narcotic classification, dosage form, strength, and quantity. Each medication was classified into a corresponding therapeutic category and the composite data was cross-checked for accuracy. Descriptive statistics were generated using Microsoft Excel.

Results: A total of 1,150 medications were taken in at the event, 7% of which were controlled substances. The most common therapeutic classes were anti-infective, antihypertensive, and respiratory medications.

Conclusions: The collection event succeeded in removing thousands of unwanted doses of medication from circulation, allowing for their disposal in a safe and environmentally sensitive manner.

Implementation and Impact of Decentralized Patient Care Pharmacy Services at a Community Hospital

Laura Ota PharmD; Terri Leong PharmD;
Eryn Kishimoto PharmD; Cheryl Sugimoto PharmD,
MBA; Steve Kawasaki PharmD; Corinne Solomon
PharmD; Joni Stewart PharmD, BCOP

Background: Implementing core clinical pharmacy services by increasing the amount of time pharmacists devote to providing services, and decentralizing pharmacists to patient care units have favorably influenced health care outcomes. In 2009, inpatient pharmacy services were centralized, with focus on medication distribution. The pharmacist monitored medication dosing from the central pharmacy with limited medication management responsibility and staff or patient interaction.

Objective: Demonstrate the one year impact of decentralized pharmacy services in improving patient safety, contributing to medication focused quality measures, and effect on medication expenditures.

Description of Practice: In 2010, the addition of a full-time decentralized patient care pharmacist supported the ability to implement collaborative practice protocols and programs that were in practice at another hospital within the health system. Implementing a warfarin anticoagulation management program decreased warfarin related adverse events (4.55% to 1.61%) and the percentage of days of therapy with a supratherapeutic INR greater than 4 (4.42% to 0.86%). Pneumococcal vaccine prescribing rates increased from 86.2% to 96.4%. Conversion to a Zosyn extended infusion program decreased Zosyn doses per 1000 patient days by 63% (459.23 to 168.07), an estimated annual cost savings of \$53,245. The antibiogram for 2011 demonstrated that 87% of Pseudomonas isolates were susceptible to Zosyn in comparison to 86% in 2010.

Conclusions: The one year impact of a decentralized pharmacist program enabled the pharmacy to expand services to support medication management and collaborative practice protocols and programs that improved warfarin anticoagulation patient safety, increased the prescribing of pneumococcal vaccine, and decreased medication expenditures of Zosyn.

Intravenous Medication Wastage Reduction at The Queen's Medical Center

RaeAnn Fuller PharmD(C); Selina Millar PharmD; Lynne Miyasato; Diane Moore; Diane Nakashima PharmD;
Beverly Sakuda BSPHarm, BCOP; Selma Yamamoto
PharmD, BCPS; Kurt Schanzenbach PharmD

Background: This project is an effort to decrease the waste of compounded intravenous (IV) admixtures and to streamline workflows to improve efficiencies in the pharmacy.

Description of Practice: Our batch is currently compounded during the day shift from 7am – 11am, a peak time for ordering and discontinuing medications. The current process creates much rework since much of the batch that is delivered is later brought back. Others have found that splitting the batch to times where there are minimal changes to the medication orders saves 30%-50% in IV waste (ASHP, 2008; Jenkins, 2010; Hintzen, 2000; Rampe, 2011).

We approached this process change in two separate implementation phases. Phase 1 would be elimination of all large volume IV medications from the batch and no manual delivery to the floors. Nurses will request new bags through the computer system as an additional dose request. Phase 2 would be splitting the batch to multiple smaller batches throughout the day to have a more "just-in-time" workflow. This phase necessitates more schedule and shift duty changes within the pharmacy department.

Conclusions: Phase 1 of the IV waste reduction initiative which targeted large volume IVs has produced a 38% reduction in wastage and 35% fewer large volume bags dispensed. Phase 2 included the splitting of the small volume IV medications batch into five separate batches, resulting in a further reduction in waste of 25% and 25% fewer small volume bags dispensed.

Pharmacist-managed Conversion of Prograf to Generic Tacrolimus in Kidney and Liver Transplant Patients with Stable Allograft Function

Charles L. Chiu PharmD, BCPS and
Shelley M. Miyashiro PharmD, BCPS

Background: The first generic tacrolimus product was approved by the FDA in August 2009. Given the potential for significant cost-savings, we elected to convert kidney and liver transplant patients on a stabilized dose of Prograf to an equivalent dose of tacrolimus.

Methods: Prior to the conversion, an algorithm detailing the management of immunosuppressant therapeutic drug concentrations was developed in collaboration with the nephrology and gastroenterology physicians. Eligible patients (kidney and liver allograft recipients >18 years old) were sent a letter or telephoned regarding the proposed conversion and necessary lab monitoring. A prescription was also profiled for eligible patients. Patients were switched from Prograf to tacrolimus (Sandoz) on a mg:mg basis. Laboratory data included pre and post-conversion tacrolimus levels, serum creatinine, and liver function tests (liver transplant patients). Dosage information and reports of adverse reactions were also collected. Patients were instructed to check follow-up labs one week (liver) or one and four weeks (kidney) after conversion. Serum creatinine and/or tacrolimus levels exceeding predetermined thresholds were referred to the on-call specialist.

Results: 62 patients were converted from Prograf to generic tacrolimus. Five patients were subsequently switched back to brand Prograf. No patients experienced rejection episodes or any adverse reactions necessitating hospitalization.

Conclusions: Kidney and liver transplant patients on a stable dose of Prograf can be safely converted to generic tacrolimus, by pharmacists, utilizing an algorithm, without compromising the level of care necessary in the use of a narrow therapeutic index medication.

Atrophic-appearing Pancreas on Magnetic Resonance Cholangiopancreatography as Initial Presentation of Cystic Fibrosis

Amy Stratton DO; Thomas Murphy MD; and Jeffrey Laczek MD

Abstract

Cystic fibrosis is an autosomal recessive disease typically diagnosed in early childhood secondary to pulmonary manifestations. We present the unusual case of a 20-year-old man being diagnosed with cystic fibrosis after he was incidentally noted to have an atrophic pancreas on magnetic resonance cholangiopancreatography. He had no sign of chronic pancreatitis or symptoms of exocrine pancreatic insufficiency. As pancreatic atrophy is rare in young adults, the patient was evaluated for cystic fibrosis by genetic testing and the patient was noted to have the deltaF508 and p.R347L mutations of the cystic fibrosis transmembrane receptor. The patient was counseled on the implications of these findings for his potential children, but no treatment was undertaken at this time.

Keywords

atrophic pancreas, pancreatic atrophy, cystic fibrosis, pancreatitis, epigastric pain, MRCP, cystic fibrosis transmembrane receptor

Introduction

Pancreatic atrophy is typically seen in elderly patients or those patients who have sequelae of chronic pancreatitis. It is rare to diagnose atrophic pancreas in young patients¹ and to date there are less than 10 published cases of initial diagnosis of cystic fibrosis secondary to pancreatic dysfunction. The majority of patients with cystic fibrosis present with respiratory symptoms in early childhood. It is not until later in life that they develop gastrointestinal manifestations of their disease. Of the gastrointestinal manifestations documented, pancreatic insufficiency is the most common and well recognized.² The following case report adds to the growing clinical experience with this atypical presentation of cystic fibrosis.

Case Presentation

A 20-year-old man presented with epigastric abdominal pain and nausea. He had multiple episodes of similar symptoms previously and was diagnosed with symptomatic cholelithiasis. He underwent an uneventful laparoscopic cholecystectomy. However, on post-operative day 10, he developed recurrent symptoms. At that time, he was afebrile, with otherwise normal vital signs. He was tolerating a regular diet without nausea or vomiting. His examination was notable for epigastric tenderness to palpation without rebound tenderness or guarding.

On laboratory examination he was found to have an elevated lipase of 1833 units/L along with an elevated alkaline phosphatase of 224 units/L (peak), alanine aminotransferase of 255 units/L (peak), and aspartate aminotransferase of 187 units/L (peak). There is no report of elevated lipase levels prior to the onset of the initial presentation. Magnetic resonance cholangiopancreatography (MRCP) was obtained, which showed

no dilation or filling defects in the common bile duct, but the pancreas was poorly visualized secondary to fatty infiltration consistent with an atrophic pancreas. No calcifications, pancreatic ductal dilation, or peripancreatic fluid collections were noted (see Figures 2-4).

Due to his atrophic-appearing pancreas, young age, and lack of findings consistent with chronic pancreatitis, genetic counseling was obtained and the patient was tested for mutations in the cystic fibrosis transmembrane receptor (CFTR). This patient was found to be heterozygous for both the deltaF508 and p.R347L mutations of the CFTR. This combination of mutations is expected to cause cystic fibrosis if they are located on different chromosomes. The patient was counseled on the reproductive implication of his CFTR mutations. Based on the patient's lack of symptoms, no treatment was initiated at that point. He has since done well without recurrent symptoms and he recovered from his pancreatitis with only supportive care.

Discussion

Pancreatic atrophy is commonly seen in elderly patients and may also be a sequela of chronic pancreatitis. However, in this young patient without other imaging evidence to suggest chronic pancreatitis (pancreatic calcifications, ductal dilation, or pseudocysts), cystic fibrosis was suspected. Shwachman-Bodian-Diamond syndrome, a syndrome characterized by exocrine pancreatic insufficiency, malabsorption, short stature, and bone marrow dysfunction, would be a consideration in children.³

Cystic fibrosis is an autosomal recessive disease that is secondary to reduced expression of CFTR.¹ Diagnosis is typically at a young age with the majority of patients suffering from pulmonary complications. However, this case illustrates that cystic fibrosis may be diagnosed in adult patients, especially when the disease is mild. In addition to the pulmonary complications of cystic fibrosis, there are multiple known gastrointestinal complications which include rectal prolapse, intussusceptions, colonic stricture, pancreatic insufficiency, and chronic cholestatic liver disease.² Approximately 85-90% of patients with cystic fibrosis develop pancreatic manifestations.¹ Pancreatic dysfunction develops secondary to mucous accumulation in ducts throughout the pancreas with exocrine gland atrophy developing from blockage of larger ducts. MRI evidence of atrophy is characterized by fatty infiltration or fibrosis of the pancreas.^{4,5}

Based on the patient's lack of symptoms, no treatment was initiated. If he developed signs of exocrine pancreatic insufficiency, treatment with pancreatic enzyme replacement would be warranted.

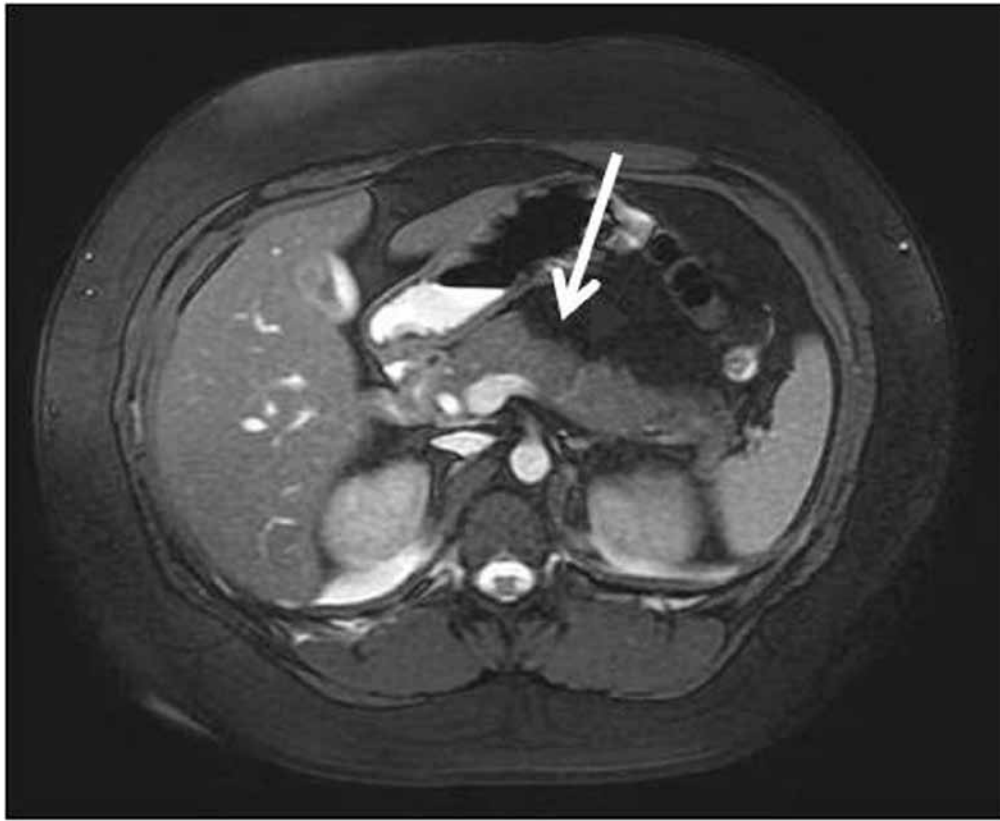


Figure 1. Normal appearing pancreas (white arrow) on axial T2 MRI image



Figure 2. Axial 2D Fiesta fat-sat MRCP sequence image demonstrating poor visualization of the pancreas indicative of fatty infiltration (white arrow)

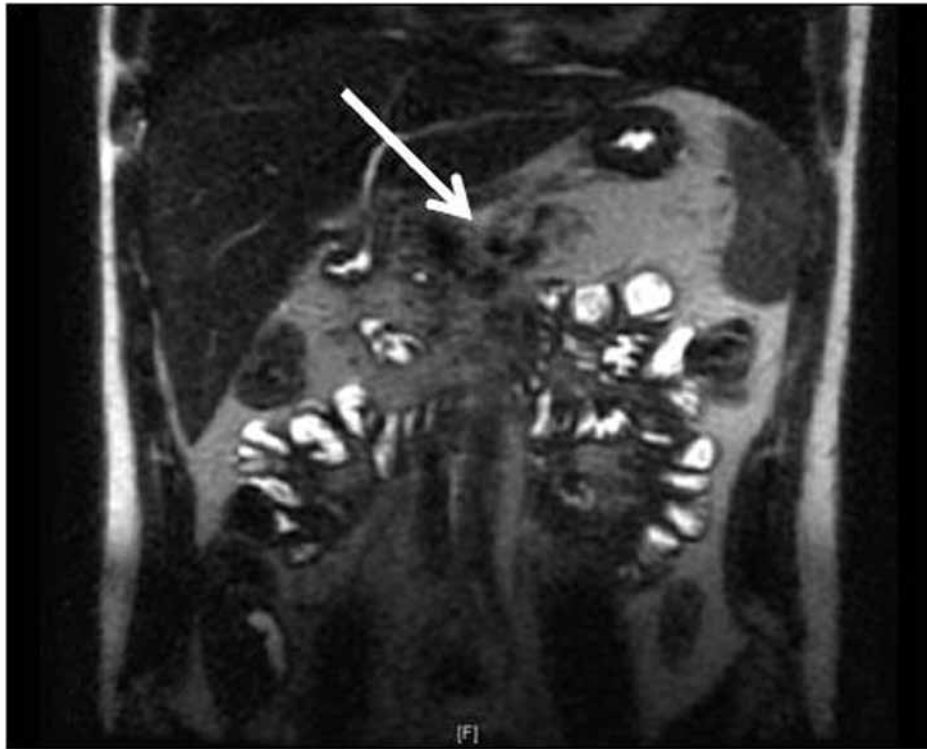


Figure 3. Pancreatic body and tail atrophy (white arrow) as seen on coronal thin slab MRCP asset sequence image showing

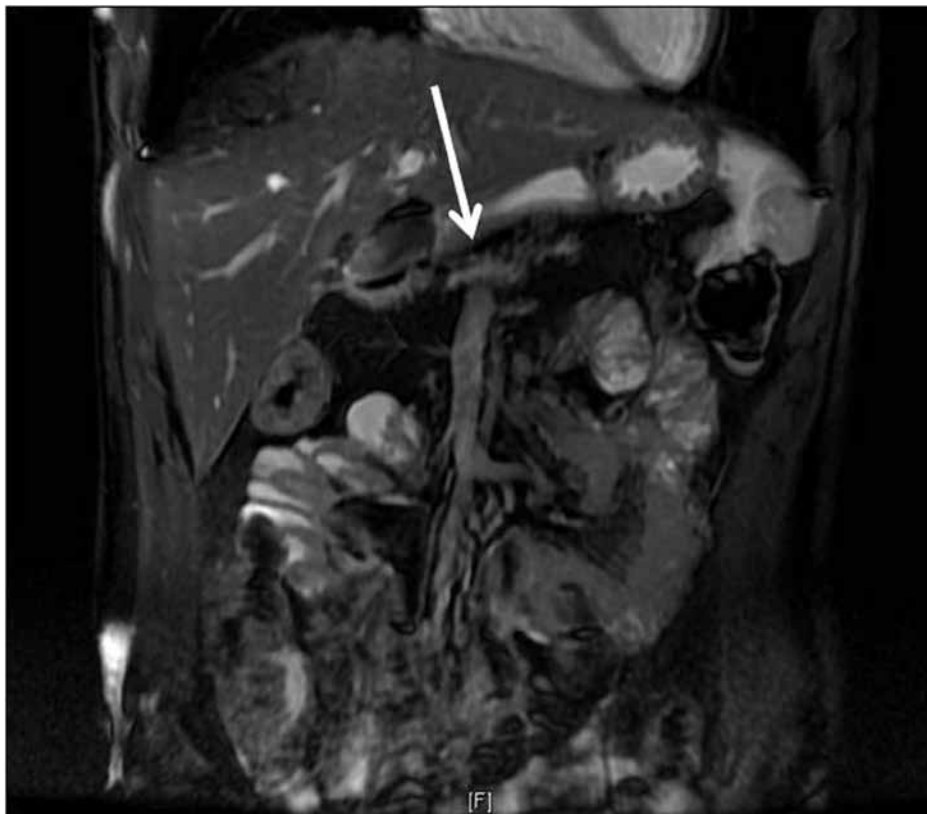


Figure 4. Coronal 2D Fiesta fat-sat MRCP sequence image significant for atrophic-appearing pancreatic body and tail (white arrow)

The views expressed in this manuscript are those of the authors and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the US Government.

Conflict of Interest

The authors report no conflict of interest.

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Cholecystocolonic Fistula

Eric Balent MD; Timothy P. Plackett DO; and Kevin Lin-Hurtubise MD

Abstract

The cholecystocolonic fistula is an atypical variant of biliary disease. When presenting with symptomatic disease, surgical treatment with cholecystectomy, fistula takedown and possible colonic resection are indicated, however the role of surgery in asymptomatic patients, especially those deemed higher risk is less clear. Herein we present a case of an incidentally discovered asymptomatic cholecystocolonic fistula in a higher risk surgical patient managed nonoperatively. The presentation and treatment options for this disease are discussed in relation to their application to this patient.

Introduction

The cholecystocolonic fistula is an uncommon but pertinent complication of gallbladder disease, occurring in 0.06%-0.14% of patients with biliary disease.^{1,2} Among the different types of cholecystoenteric fistulas the cholecystoduodenal is the most common with cholecystocolonic fistulas being the second most common.³ Cholecystocolonic fistulas are most commonly discovered incidentally during cholecystectomy, being diagnosed in 0.5% of these procedures.⁴ Failure to identify these fistulas during operation can have catastrophic complications, resulting in division of the fistula, perforation of the colon, and resultant fecal peritonitis. In the most severe of cases it can progress to sepsis and death.

Case Presentation

A 55-year-old man presented to the emergency department complaining of chronic abdominal pain from a large ventral hernia. The patient's past medical history was significant for an exploratory celiotomy for a thoracoabdominal gunshot wound 34 years ago. He was uncertain what intra-abdominal injuries he had sustained or what procedures had been performed in conjunction with the exploration. His history was also significant for hypertension, venous stasis, obesity, smoking, chronic obstructive pulmonary disease, and obstructive sleep apnea. On physical exam, the patient was found to have two large, reducible ventral hernias in the left lower quadrant of the abdomen. Laboratory analysis was remarkable for the following normal laboratory values: white blood cell count of 9.7×10^9 cells/L, aspartate transaminase of 18 units/L, alanine transaminase of 25 units/L, alkaline phosphatase of 121 units/L, total bilirubin of 0.3 mg/dL, international normalized ratio of 1.1, and lipase of 25 units/L. A computed tomography examination of the abdomen confirmed the presence of the ventral hernias, but also identified irregular thickening of the gallbladder and chronic fistulous connection to the hepatic flexure of the colon with pneumobilia. A subsequent barium enema confirmed the presence of a cholecystocolonic fistula (Figure 1). The patient also underwent a rigid proctoscopy for hematochezia, which did not reveal the fistula, masses, or other concerning findings.

On further questioning the patient denied having any right upper quadrant abdominal pain, nausea, vomiting, diarrhea,

or constipation. He also denied having any prior episodes of cholecystitis, choledocholithiasis, or other biliary disease. He was offered surgical correction of his cholecystocolonic fistula, followed by a subsequent procedure to treat his hernia, however he was adamant that he would only consent to treatment of his hernia and that he was willing to accept the risk of biliary sepsis in the future. He ultimately underwent an open repair of the hernia with synthetic mesh. His postoperative course was complicated by respiratory failure requiring tracheostomy and several months of pulmonary rehabilitation due to his pulmonary comorbidities. It has been over 4 years since his initial diagnosis of a cholecystocolonic fistula and he has been without an episode of biliary sepsis or associated symptoms.

Discussion

The cholecystoenteric fistula was first described by Courvoisier in 1890. It is believed that these fistulas occur chiefly as a result of inflammation in the gallbladder due to cholecystitis.⁵ However, other origins of these anomalies have been reported as consequences of cancer, trauma, amebic infections, peptic ulcers, and diverticulitis.⁶⁻⁹ The origin of this patient's fistula remains elusive. Current speculation is that it may have been the result of his traumatic injury, however as it occurred in a combat environment almost 35 years earlier no records are available to support this assertion.

Cholecystocolonic fistulae typically form between the gallbladder and the hepatic flexure of the colon due to their proximity in relation to each other (as occurred in this patient).¹ When symptomatic, patients generally present with vague abdominal symptoms. These include diarrhea, abdominal pain, jaundice, fever, nausea, vomiting, steatorrhea, and weight loss.³ In contrast, fistulae to the small bowel classically present with a gallstone ileus. The combination of pneumobilia, chronic diarrhea, and vitamin K malabsorption has been proposed as a pathognomonic triad for cholecystocolonic fistula by Savvidou et al.⁷ However, this triad is not present in all patients and no studies have been performed to calculate the sensitivity and/or specificity of this triad. A history of gallstones, cholecystitis, ascending cholangitis, gallstone ileus, obstructive jaundice, diverticulitis, or gastrointestinal cancer in the presence of the aforementioned symptoms should raise the clinician's concern for a possible fistula. No one mode of imaging has proven itself to be highly sensitive for the detection of a cholecystocolonic fistula and the diagnosis typically occurs intraoperatively, hence the need for the surgeon to have an appropriate level of concern.³ When suspected intraoperatively, the diagnosis can be confirmed with a cholangiogram.

Classically, this problem, regardless of the presence or absence of symptoms, has been treated with fistula resection, cholecystectomy, and, if necessary, common bile duct

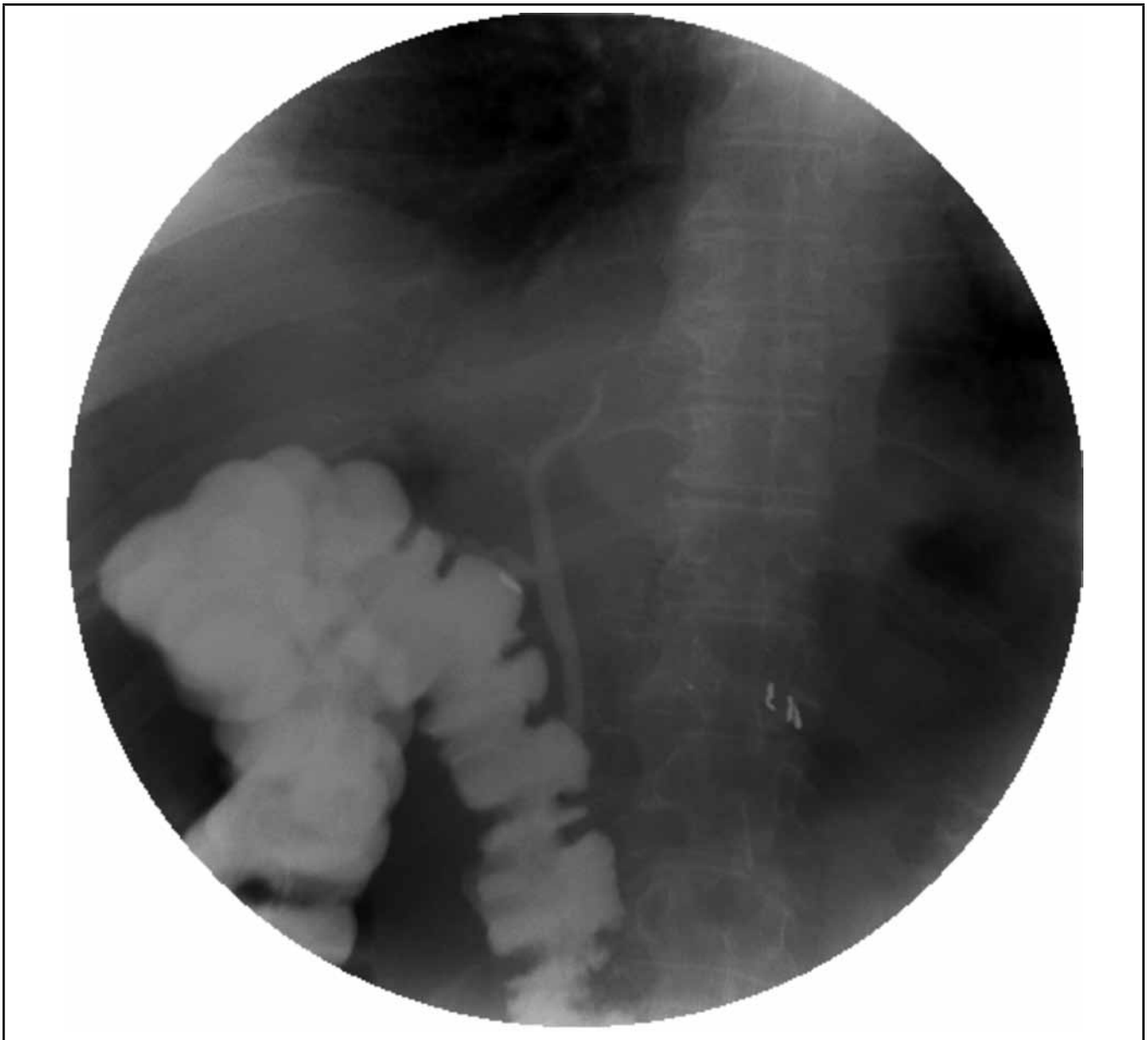


Figure 1

exploration.¹ When colonic inflammation is severe or there is concern for a malignancy, segmental resection of the colon with reanastomosis is also performed. While this was traditionally performed through an open approach, several case series have demonstrated equivalent or better results with a laparoscopic approach.^{4,10} Operation has been favored as it corrects the fistula and removes the theoretic risk of cholangitis from colonic bacterial translocation through the fistula into the biliary tree. This risk has been reported to be as high as 5% in experimental animal models and the presenting complaint in up to 60% of patients.^{11,12} Furthermore, biliary sepsis in these patients is associated with a 13% mortality.¹²

This surgical dictum has been questioned over the past several years. Several groups have advocated for observation of the asymptomatic patient, reserving surgery for those that present with biliary sepsis. These authors have argued that given the life expectancy and medical comorbidities of some patients, surgery as a preventative measure would be of limited benefit. Instead these authors have advocated for clinical observation and symptomatic treatment. Symptomatic treatment has consisted of vitamin supplementation to address the decreased absorption of fat soluble vitamins due to diversion of bile into the colon, prophylactic antibiotics, and endoscopic retrograde cholangiography and sphincterotomy to treat episodes of biliary

obstruction and infection.^{13,14} While this policy is only espoused in a limited number of case reports and small case series, it does seem a valid approach.

While we initially advocated for a definitive surgical procedure, we ultimately agreed with these authors and supported the patient's decision to undergo observation alone. This was based, in part, upon concerns about his overall life expectancy and ability to tolerate a surgical procedure. Several factors contributed to the concern about his life expectancy including morbid obesity, severe chronic obstructive pulmonary disease, and tobacco dependence. Given the decrease in his life expectancy, the potential time to benefit from a surgery seemed limited. The severity of his chronic obstructive pulmonary disease would have precluded a laparoscopic repair and an open repair would have required a larger incision than was used for his hernia repair. Thus, given his significant pulmonary complications with the hernia repair, we believe that a more involved procedure (ie, open cholecystectomy, fistula takedown, and possible colon resection) would have been potentially catastrophic for the patient. Taken together this constellation of factors support the decision to proceed with observation in this patient and highlight the need to reconsider routine surgical intervention in asymptomatic patients.

In conclusion, while the presence of a cholecystocolonic fistula is a rare entity, it is one that health care providers should be aware of. We advocate that non-operative management and clinical observation is an appropriate treatment option to consider.

The views expressed in this manuscript are those of the authors and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the US Government.

Conflict of Interest

The authors report no conflict of interest.

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Chilaiditi Syndrome Precipitated by Colonoscopy: A Case Report and Review of the Literature

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Abstract

Chilaiditi syndrome is a rare condition defined by the presence of gastrointestinal symptoms associated with the radiological finding of segmental interposition of the bowel between the liver and the diaphragm. While it is infrequently identified as a source of abdominal pain, Chilaiditi syndrome carries clinical significance as it can lead to a number of serious complications including intestinal obstruction, perforation, and ischemia. A 58-year-old woman presented with Chilaiditi syndrome immediately following colonoscopic evaluation. Conservative measures failed to alleviate the patient's symptoms, and the patient ultimately elected to have operative management. Pexy of the cecum and ascending colon led to full resolution of her symptoms. To our knowledge, this is the first documented case of Chilaiditi syndrome iatrogenically induced by colonoscopy. Identification of this syndrome as a complication of colonoscopy and a source of post-procedural pain bears significance for providers involved in the peri-operative care of patients with factors predisposing them to the development of this condition.

Introduction

Chilaiditi's sign, or the incidental radiographic finding of bowel positioned between the liver and the right diaphragm, was first documented in 1865.¹ This sign attained its namesake in 1910 when Demetrius Chilaiditi reported three cases of asymptomatic patients who had the appearance of intra-abdominal free air on routine abdominal or chest x-ray caused by this interposition of the bowel between the liver and the right hemidiaphragm.^{1,2} While Chilaiditi's sign does not mandate the accompaniment of symptoms, Chilaiditi syndrome is defined by the presence of symptoms caused by this abnormal anatomic positioning of the bowel. Symptoms associated with Chilaiditi syndrome include abdominal pain, distention, bloating, nausea, vomiting, flatulence, changes in intestinal habits as well as more unusual manifestations such as substernal pain, cardiac arrhythmias, dyspnea, and respiratory distress.³⁻⁷

Chilaiditi sign is found incidentally in 0.025%-0.28% of chest and abdominal plain films^{1,4} and 1.18%-2.4% of abdominal computed tomography (CT) scans.¹ Males are affected four times more often than females.^{1,5} This finding has been documented in a wide age range with patients from 5 months⁵ up to 81 years of age being afflicted.⁴ It is more commonly seen in the elderly population, where the incidence is approximately 1%.¹ This report describes the first known case of Chilaiditi syndrome precipitated by colonoscopy.

Case Presentation

A 58-year-old woman presented to the emergency department with a two day history of right upper quadrant abdominal pain and nausea following colonoscopic examination. The colonoscopy was performed to evaluate nine months of intermittent abdominal pain originating in the right lower quadrant with occasional migration to the left lower quadrant, right upper quadrant and right flank. Pain was accompanied by abnormal

bowel movements with frequent diarrhea and occasional constipation. The patient had undergone extensive work-up for these symptoms including abdominal and pelvic CT scans, pelvic magnetic resonance imaging, upper gastrointestinal with small bowel follow-through, and gynecologic examination. All exam findings were unremarkable. She was managed symptomatically by her physician for presumed irritable bowel syndrome and referred to gastroenterology for a colonoscopy. Colonoscopy revealed only mild sigmoid diverticulosis and a small tubular adenoma. After the procedure, the patient developed severe, sharp, right upper quadrant abdominal pain accompanied by nausea without vomiting. Over the next 2 days, her pain became intolerable despite increased dosages of oral analgesics. At the time of presentation to the emergency department, the patient was still passing flatus and having bowel movements. She had no fever, chills, abdominal distention, or blood per rectum.

The patient's past medical history was significant for Prinzmetal's angina, hyperlipidemia, hypertension, PTSD, depression, migraines, fibromyalgia, lumbar stenosis with chronic low back pain, urethral stricture and diverticula, and osteoporosis. The patient had undergone multiple abdominal procedures: abdominal stab wound repair, right inguinal hernia repair, two Cesarean sections, tubal ligation, and urethral diverticulotomy. Her family history was negative for any gastrointestinal conditions including irritable bowel disease or cancer. Social history was only remarkable for remote tobacco use.

On initial evaluation, the patient was afebrile with stable vital signs. Physical exam was notable for right upper quadrant tenderness without any findings suggestive of peritonitis such as rigidity, guarding, rebound tenderness, or Murphy's sign. Laboratory work-up including complete blood count, basic metabolic panel, liver function tests, amylase and lipase levels, coagulation studies, and urinalysis were all unremarkable. CT scan of the abdomen and pelvis with contrast showed new interposition of the cecum and ascending colon in between the liver and diaphragm with slight mass effect on the liver but no volvulus, twisting or wall thickening of the intestines (Figures 1 & 2). In light of the patient's symptoms and the radiographic findings, the diagnosis of Chilaiditi syndrome was made.

Since the patient was clinically stable and without evidence of obstruction or perforation, she was managed conservatively with a stool softeners and analgesics. However, the patient's symptoms persisted upon re-evaluation after 1 week so she elected to undergo pexy of the cecum and ascending colon and appendectomy. Intra-operative findings included a viable, yet highly redundant and hypermobile bowel with an elongated mesentery (Figure 3). Her post-operative course was complicated by urinary retention that resolved after the administration of bethanechol. At 3 week follow-up, the patient reported complete

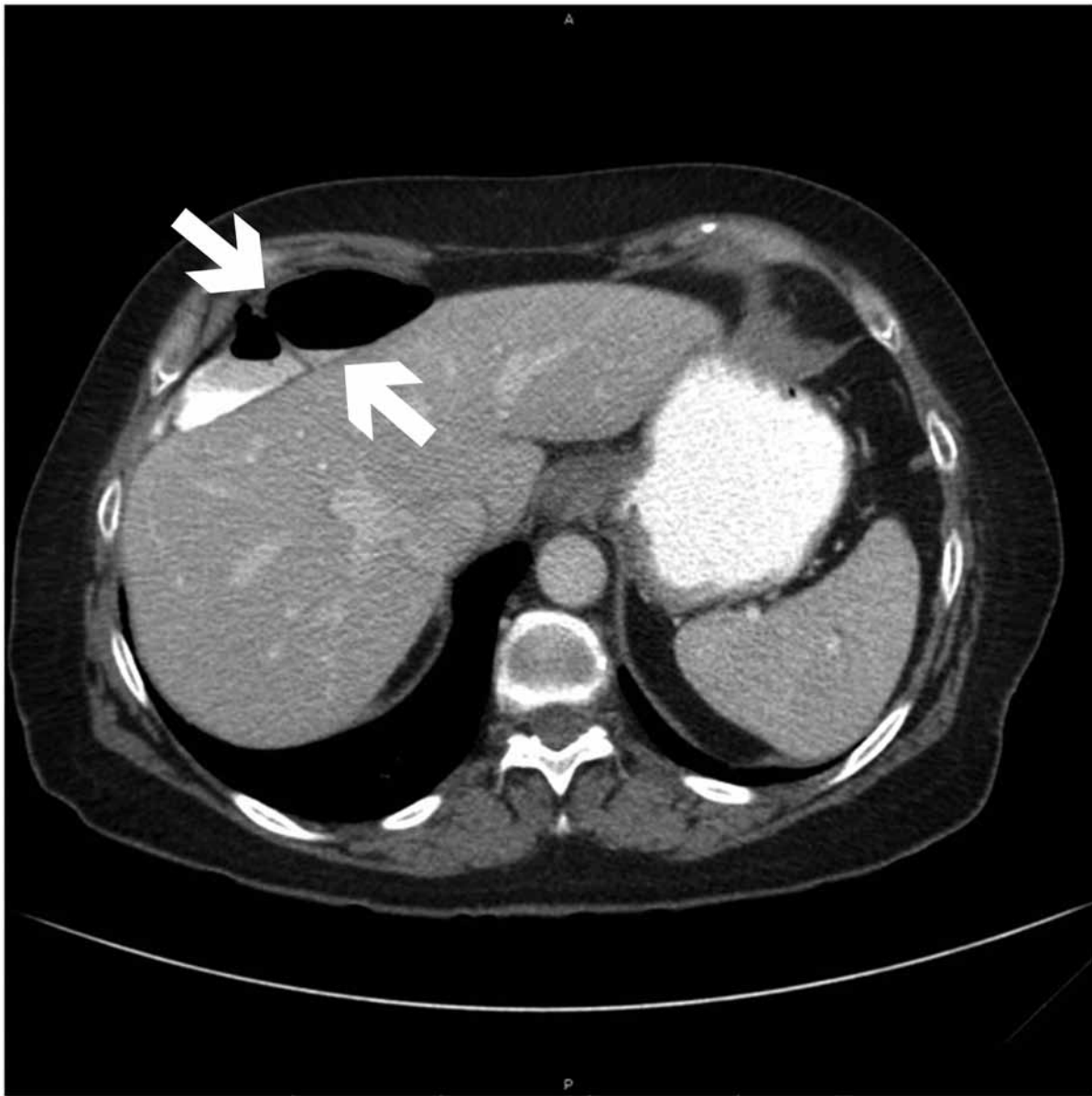


Figure 1

resolution of abdominal pain with improved regularity of bowel movements. She remained symptom free at 2 month follow up.

Discussion

Chilaiditi syndrome associated with unusual clinical scenarios is well documented. However, only two other case reports describe iatrogenically induced Chilaiditi syndrome; one in the setting of bariatric surgery⁸ and the other in the setting of enteral feeding tube insertion.⁴ This case illustrates a rare but clinically important syndrome that has not been previously reported as a complication of colonoscopy.

Anatomically, Chilaiditi's sign may be divided into anterior and posterior types according to the position of the interposed bowel

relative to the liver.⁷ The interposed bowel is most commonly the hepatic flexure, ascending colon, or transverse colon but involvement of the small bowel, either alone or in combination with the colon, has been reported.^{3,9} The patient in this case was somewhat unusual in that the cecum, along with the ascending colon, was highly mobile and abnormally positioned.

Any condition leading to an enlarged right subdiaphragmatic space or hypermobility of the intestines can predispose patients to Chilaiditi syndrome. Predisposing factors can be categorized into diaphragmatic, intestinal, hepatic, and other miscellaneous causes (Table 1). It is unclear how factors such as ascites and pregnancy contribute to Chilaiditi syndrome. Ascites and pregnancy both increase intra-abdominal pressure which

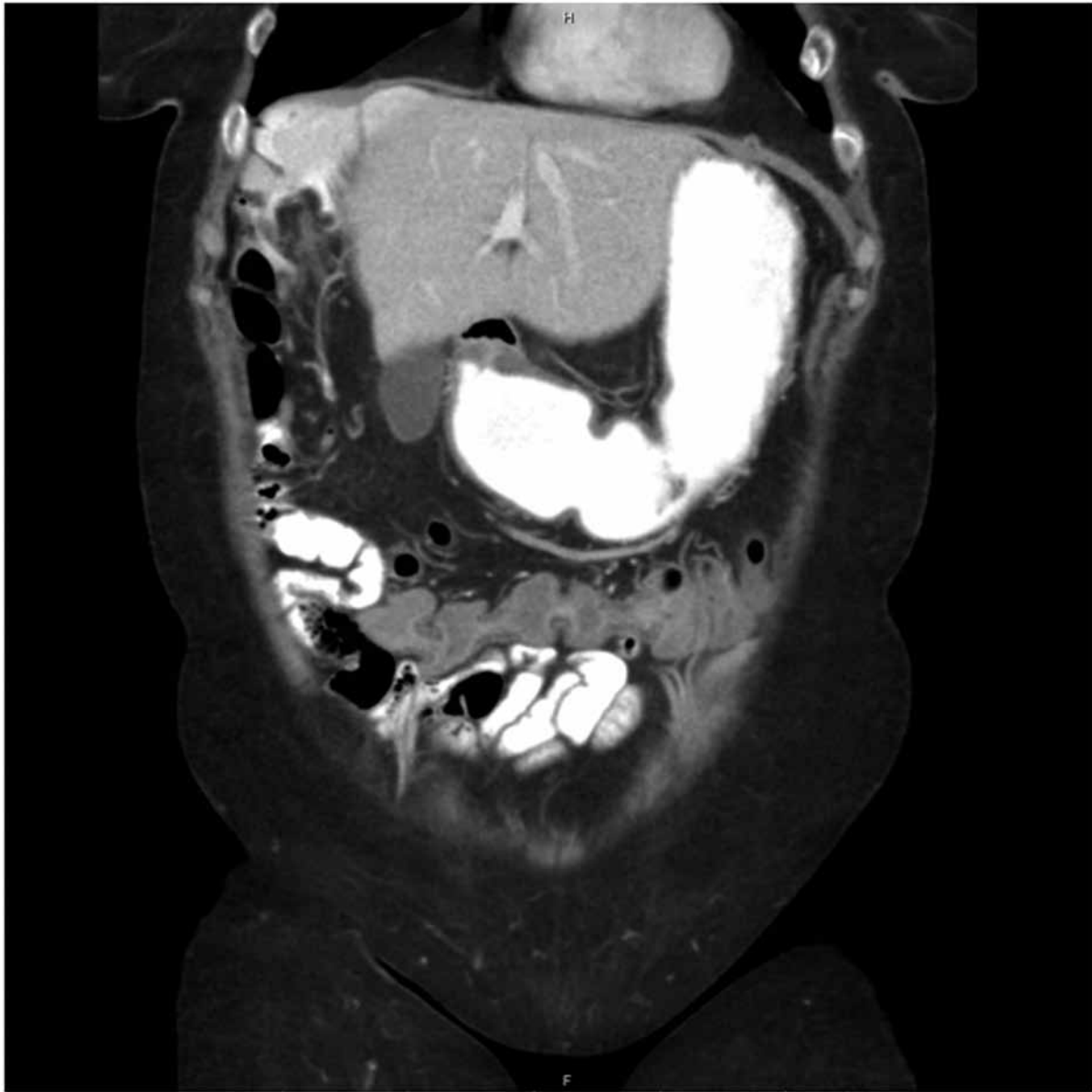


Figure 2

may facilitate the movement of bowel past the liver into the subdiaphragmatic space. In the case reported here, the patient had a hypermobile and elongated bowel, which was likely the etiology of her long history of right lower quadrant pain and predisposed her to the development of Chilaiditi syndrome following intestinal instrumentation. While the patient did have symptoms prior to colonoscopy, interposition of the bowel into the right subdiaphragmatic space was not seen on imaging prior to colonoscopy and symptoms acutely worsened following the procedure.

Of note, this patient had a history of psychiatric drug use for treatment of depression and post traumatic stress disorder, which

has been reported in association with Chilaiditi syndrome.^{1,7} Other conditions associated with Chilaiditi syndrome in the literature include chronic obstructive pulmonary disease,⁹ scleroderma,^{3,7} congenital hypothyroidism, paralytic ileus,³ pneumatosis cystoides intestinalis,⁴ melanosis coli,^{3,7} and mental retardation.^{3,7,9,10} There are also documented reports of Chilaiditi syndrome associated with sigmoid or rectal masses.^{11,12}

Traditionally, Chilaiditi's sign is an important clinical finding as it had been mistaken for free air under the diaphragm on a plain x-ray, and has thus lead to unnecessary exploratory laparotomies.^{10,13} Chilaiditi's sign, or pseudopneumoperitoneum, may be differentiated from true pneumoperitoneum by close



Figure 3

Table 1. Predisposing Factors for the Development of Chilaiditi's Sign

<p>a) Diaphragmatic causes</p> <ul style="list-style-type: none"> a. Abnormally high diaphragm due to: <ul style="list-style-type: none"> i. Muscular degeneration ii. Phrenic nerve injury
<p>b) Hepatic causes</p> <ul style="list-style-type: none"> a. Reduced liver volume due to: <ul style="list-style-type: none"> i. Cirrhosis ii. Right lobe segmental agenesis iii. Ptotic liver b. Relaxation or laxity of the suspensory ligaments
<p>c) Intestinal causes</p> <ul style="list-style-type: none"> a. Abnormal or increased colonic mobility b. Elongated or redundant colon with long mesentery c. Absence of peritoneal attachments d. Malrotation or congenital malpositioning of the bowel
<p>d) Other miscellaneous causes</p> <ul style="list-style-type: none"> a. Ascites b. High abdominal fat content/obesity c. Pregnancy d. Aerophagia

inspection of x-ray imaging for colonic haustra under the right hemidiaphragm.^{1,10,13,14} CT scan of the abdomen and pelvis has been increasingly used to confirm the diagnosis, potentially limiting the likelihood of unnecessary surgeries.

Knowledge of Chilaiditi's sign or Chilaiditi syndrome carries current clinical importance in the procedural setting. As seen in the bariatric surgery case,⁸ the feeding tube insertion case,⁴ and this colonoscopy case, procedures may cause Chilaiditi syndrome, especially in patients with predisposing factors such as bowel hypermobility. Moreover, while no cases of Chilaiditi syndrome induced by colonoscopy have been reported, there have been reported cases of Chilaiditi syndrome complicating or preventing completion of colonoscopic evaluation.^{7,9,14} Colonoscopy in the setting of Chilaiditi syndrome may also lead to perforation due to progressive trapping of administered air in an acutely angulated segment of bowel.⁹ Additionally, it is important to note Chilaiditi's sign or Chilaiditi syndrome in patients undergoing liver biopsies as the abnormally positioned bowel is at risk for perforation, particularly during percutaneous transhepatic procedures.^{4,9}

Management for Chilaiditi syndrome is usually conservative with nasogastric decompression, stool softeners and/or enemas, and intravenous hydration. Conservative management is preferred and usually sufficient, but surgical treatment may be indicated for intestinal obstruction, ischemia, or perforation. Documented rare complications of Chilaiditi syndrome requiring emergent surgery include cecal and colonic volvulus,^{1,3,6,8,15,16} subphrenic appendicitis,^{1,3} internal herniation,³ and cecal perforation⁴. Chilaiditi syndrome may also be the initial presentation of malignancies which require rapid medical or surgical management.^{11,12} Otherwise, elective surgery may be considered for unresolved symptoms as was done in our case. There is no clear consensus on the best surgical approach to correct the bowel interposition. A variety of procedures described in the literature including colon resection, hepatopexy, colopexy, right hemicolectomy, sigmoidectomy, and subtotal colectomy^{3,6,7,8,13,17} have been performed with success. Minimally invasive procedures, such as laparoscopic colopexy¹⁸, have been used and may also be considered. The woman described in this case suffered from continued right upper and lower abdominal symptoms refractory to conservative management. Elective pexy of the ascending colon and cecum led to complete resolution of her symptoms.

Conclusion

In sum, this case report is the first to present Chilaiditi syndrome as an acute complication of a colonoscopy. Awareness of this syndrome as well as Chilaiditi's sign is essential for all care providers as it should be considered during pre-procedural workup, as well as in the evaluation of post-procedural abdominal pain. Attention should be paid to factors predisposing patients to the development of Chilaiditi syndrome and treatment altered accordingly.

Conflict of Interest

None of the authors identify any conflict of interest.

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Enhanced Monitoring of Hawai'i Coastal Water Quality Using Potential New Indicators

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Summary

Coastal water is subject to contamination with a wide range of pathogenic microorganisms, which represents a major health risk to recreational water users. The current use of fecal indicator bacteria (FIB) as a bioindicator to monitor water quality has its limitations for swimmer protection. Enteric viruses are currently tested as a potential indicator because they are the main cause of water-borne gastroenteritis. Because these viruses naturally have low copy numbers in water, effective methods for viral concentration from environmental water, and sensitive detection methods are essential. This study was designed to research and develop highly effective laboratory conditions for enhanced concentration and subsequent detection of enteric viruses from recreational water, and to test the possibility of using shellfish as a natural filter to concentrate enteroviruses from Hawaiian coastal waters. Findings from our study support the possible use of enteric viral pathogens for environmental water monitoring and warrant the importance and essentiality of more in-depth testing for human enteric viruses as alternative bio-indicators of recreational water quality.

Introduction

Fecal indicator bacteria (FIB) *E. coli* and enterococci have been used as bio-indicators to evaluate sewage contamination and assess health risk of recreational water since the establishment of ambient water quality criteria (AWQC) in 1986. However, this monitoring system has its limitations in protecting the public from recreational waterborne illness. Fecal bacteria are known to persist and grow in the environment. This biases assessment, especially in tropical regions like Hawai'i.¹⁻⁵ In addition, there is a lack of direct association between FIB and human diseases since they are not human pathogens. Human enteric viruses may be an alternative, potentially more sensitive indicators to monitor fecal contamination in aquatic environments.⁶⁻⁹

Enteric viruses are known to survive in aquatic environment for a long period of time and can tolerate changing environmental conditions.^{7,10,11} These viral pathogens are unable to multiply in environmental water due to the lack of permissive host organisms. Most notably, enteric viruses are human pathogens and they can directly cause human diseases. In addition, enteric viruses are detectable using various methods including Polymerase Chain Reaction (PCR) and Real-Time PCR (RT-PCR). A major challenge for the use of enteric viruses to monitor recreational

water safety is the occurrence of extremely low numbers of viral particles in environmental waters. To facilitate the potential use of enteric viruses as bioindicators for day-to-day screening and monitoring of sewage contamination in Hawaiian coastal and recreational waters, effective method for viral concentration from water samples and highly sensitive methods for viral detection need to be established.

Materials and Methods

Water Sample Collection

2-liter surface water samples were collected from each of 16 selected recreational water bodies around the island of O'ahu, including 13 seawaters sites and 3 freshwater sites. These samples were collected between June 2010 and February 2011 using a 4-liter sterile polypropylene container, transported on ice to the environmental health research laboratory (a BSL-2 certified facility), and processed for viral concentration and nucleic acid extraction within 8 hours.

Virus Concentration

Two methods were tested side-by-side to compare their efficiency in concentrating human enteric viruses from environmental waters. (A) Membrane filtration: water samples were concentrated according to a filtration-based method described by Katayama, et al,¹² with modifications [Note 1], and (B) Polyethylene glycol (PEG) precipitation: A previously described protocol by Shieh, et al,¹³ was used with a minor modification [Note 2].

Nucleic Acid Isolation

Sample DNA and RNA from concentrated water were isolated using two different protocols. (A) Nucleic acid extraction from the recovered membranes was conducted using the PowerWater RNA isolation kit (MoBio laboratories, CA) with modification [Note 3]. (B) To extract nucleic acid from PEG precipitated samples, QIAamp Viral RNA Mini Kit (Qiagen, CA) was employed, and the manufacturer's instructions were followed. Recovered RNA samples were stored at -80°C until RT-PCR was performed.

PCR and RT-PCR Protocols and Sensitivities

To facilitate the application of enteric viruses as a potential indicator to monitor recreational water quality, highly sensitive and specific molecular biology protocols are essential. In

this study, different primer sets published in the literature for PCR detection of human adenoviruses and for RT-PCR detection of human noroviruses and enteroviruses were selected for a comparative analysis in a side-by-side fashion along with newly designed primer sets. All these primer sets based protocols were tested initially and then optimized individually. Then, their detection sensitivity limit to respective viruses was quantified through using a single preparation of nucleic acid isolated from these viruses.

DNA Sequencing and Analysis

To ensure that the PCR amplification was specific for target viruses, the amplicons from randomly selected positive samples were subjected to DNA sequencing at the Genomics, Proteomics and Bioinformatics of University of Hawai'i at Manoa. Resulting sequences were evaluated against a DNA library of all known viruses using the BLAST program of the National Center for Biotechnology Information (NCBI).

Results

Efficiency of Sample Processing Procedures

Comparative analysis of two methods for water sample processing revealed that both these methods work equally well in concentrating enteric viruses from wastewater samples using an end-point PCR assay (data not shown).

To facilitate the establishment of the most sensitive molecular biology based protocols for detecting enteric viruses from environmental waters, a total of 17 sets of primer pairs for human noroviruses (NoV), 18 sets of primer pairs for human enteroviruses (EtV), and 16 sets of primer pairs for adenovirus (AdV) were tested using a single source of nucleic acids prepared from each of these viruses. Under the published conditions, positive viral detection was achieved from 15 of the 16 primer sets for NoV, but only 8 of 16 primer sets for AdV, and 7 of 18 primer sets for EtV. All the primer sets with a positive detection were then optimized individually for their amplification conditions by adjusting salt concentration, primer concentration, annealing temperature, and the amount of Bovine Serum Albumin (BSA) enhancer addition (Table 1). These optimized detection protocols were then analyzed through a semi-quantitative amplification test using 10-fold dilution of a single source of nucleic acid prepared for each of enteric viruses. It showed that these primer sets share a different pattern of viral detection sensitivity although they all were able to detect their target viruses. Among all primers tested, sets GNIF2d/COG2R and COG2F/COG2R were identified to be the most sensitive primers for NoV genogroup II (NoV GII) detection, and sets QNIF4/NV1LCR and CapA/CapB2 for NoV genogroup I (NoV GI) detection (Table 1). Under the optimized amplification conditions, these methods required only 0.1 to 10 pg of viral cDNA for positive detection of NoV GII and GI, respectively. As shown in Table 1, Primer sets nehex3deg/nehex4deg, ADV-F/ADV-R, and nested PCR primer sets hex1deg/hex2deg and nehex3deg/nehex4deg appeared to be the most sensitive for AdV detection (up to 1,000 fold higher detection sensitivity compared to oth-

ers) while EQ-1/EQ-2 appeared to be the most sensitive primer set for EtV (up to 1000-fold more sensitive than others). These most sensitive primer sets were then employed for detecting respective enteric viruses in environmental waters.

To validate these protocols for field application, the methods developed were used to detect their respective viruses from urban sewage samples. As shown in Figure 1, NoV GI and GII, AdV and EtV were all detected in sewage sample at three different processing stages. The specificity of these detections of NoV, AdV and EtV were confirmed through DNA sequencing. In addition, primer set QNIF4/NV1LCR and set COG2F/COG2R showed stronger detection signals and cleaner products compared to sets CapA/CapB2 and GNIF2d/COG2R; these two primer sets were therefore recommended for NoV GI and GII detection for sewage and environmental water samples.

Once laboratory protocols were established for water concentration, nucleic acid extraction, and enteric virus detection, a surveillance study was conducted to examine 18 different water sites around O'ahu for sewage contamination. As summarized in Table 2, all these sites were subjected to human enteric virus contamination except for Bellows Air Field Beach Park and West Loch Community Shoreline Park. Among the contaminated sites, Manoa Stream/Palolo Stream and Wahiawa Freshwater represented the most seriously contaminated sites since they were positive for all selected viruses, NoV, AdV and enterovirus. While only 6 sites were positive for AdV and 7 sites were positive for enteroviruses, 14 of 16 sites were positive for NoV (including 5 sites for NoV GI and 10 for NoV GII). Water samples were also tested for *E. coli* DNA using *E. coli* specific primers as an internal control. All the coastal water sites were positive for *E. coli* (Table 2), validating our test results and confirming that negative detection of human enteric viruses in several samples was not due to an unsuccessful preparation of sample nucleic acids or the presence of PCR inhibitors from the environmental waters.

Sequencing the amplicons from randomly selected positive samples and sequence analysis confirmed that the amplification and detection were specific for all tested enteric viruses. Detected viral sequences from these protocols show high sequence homology with respective strains/variants of NoV, AdV and EtV (data not shown). In addition, sequencing multiple clones from wastewater sample showed the detection of different variants/isolates of respective enteric viruses reported in literature.

Discussion

Fecal indicator bacteria *E. coli* and enterococci are presently used to monitor recreational water quality. However, the use of FIB is limited as an effective indicator because these bacteria are not human pathogens and do not affect human health directly. Furthermore pathogenic viruses and not bacteria are the main cause of waterborne recreational illnesses. Therefore, there is an increasing interest in the use of human viral pathogens as an alternative indicator for monitoring recreational water quality. This notion is simply based on the understanding that human enteric viruses are directly associated with human diseases and

Table 1. Oligonucleotide primer sets tested in this study and their detection limits under optimized conditions								
Virus	Primer set	Optimized PCR condition					Detection limit	Reference
		[Taq rxn bfr]	[MgCl ₂]	[Primer]	BSA	T _A (°C)		
NoV GI	MON432/Mon434	1X	1.5 mM	400 nM	-	50-54	10 ⁻¹ X	15
	QNIF4/NV1LCR	1X	2.0 mM	800 nM	+	54-60	10 ⁻⁴ -10 ⁻⁵ X	16
	COG1F/COG1R	1X	2.0 mM	400 nM	-	50-52	10 ⁻³ X	17
	CapA/CapB2	1X	1.5 mM	400 nM	-	50	10 ⁻⁴ -10 ⁻⁵ X	18
	NV65a/NV120	1.6X	2.0 mM	400 nM	-	52-56	10 ⁻³ X	19
	NV1LCF/NV1LCR	1X	2.0 mM	400 nM	+	50-52	10 ⁻⁴ X	20
NoV GII	MON431/MON433	1X	1.5 mM	400 nM	-	52-54	10 ⁻³ X	15
	GNIF2d/COG2R	1X	2.0 mM	600 nM	+	56-58	10 ⁻⁶ -10 ⁻⁷ X	21
	COG2F/COG2R	1X	2.0 mM	800 nM	+	52-60	10 ⁻⁶ -10 ⁻⁷ X	17
	NV107a/NV117	1.6X	2.0 mM	400 nM	+	50-54	10 ⁻⁴ -10 ⁻⁵ X	19
	NV2LCF/NV2LCR	1.6X	2.0 mM	1000 nM	+	50-54	10 ⁻⁴ X	20
	E3/Ni	1X	2.0 mM	1000 nM	-	50	10 ⁻¹ -10 ⁻² X	22
	MJV12/RegA	1X	1.5 mM	400 nM	-	50-52	10 ⁻¹ X	15
	ORF JA	1X	2.0 mM	1000 nM	-	50	10 ⁻¹ X	9
AdV	ORF JB	1X	2.0 mM	1000 nM	-	50	10 ⁻¹ -10 ⁻² X	9
	ADV-F/ADV-R	1X	1.5 mM	800 nM	+	52-55	10 ⁻⁷ X	23
	nehex3deg/nehex4deg	1X	2.0 mM	700 nM	+	58-60	10 ⁻⁶⁻⁷ X	24
	hex1deg/hex2deg	1X	1.5 mM	700 nM	+	54-60	10 ⁻⁵ X	24
	XuHex1/XuHex2	1X	1.5 mM	1000 nM	-	54-60	10 ⁻⁵ X	25
	hexDEGF/hexDEGR	1X	3.0 mM	800 nM	+	59	10 ⁻⁵ X	26
	AdV3ne/AdV4ne	1X	1.5 mM	600 nM	+	55	10 ⁻⁴ X	27
ETV	AdV1/AdV2	1X	2.0 mM	700 nM	+	52-55	10 ⁻⁴ X	27
	EQ-1/EQ-2	1X	1.5 mM	600 nM	-	58-60	10 ⁻⁷ X	28
	Primer 1/Primer 3	1X	3.0 mM	800 nM	-	48	10 ⁻⁴ X	29
	Primer 2/Primer 3	1X	1.5 mM	400 nM	-	48	10 ⁻⁴ X	29
	EV-L/EV-R	1X	3.0 mM	400 nM	-	55-58	10 ⁻⁶ X	30
	EVZ1/EVZ2	1X	2.0 mM	1000 nM	-	56	10 ⁻⁴ X	31
	EVF/EVR	1X	3.0 mM	1000 nM	-	58-60	10 ⁻⁵ X	32
Ev1qia/ev2qia	1X	1.5 mM	800 nM	-	58-60	10 ⁻⁶⁻⁷ X	33	

can be detected using a variety of laboratory methods; these viruses are able to survive in the environment for a relatively long period of time despite changing environmental conditions;^{7,10,11} and they are free of viral multiplication in environmental waters due to the lack of permissive hosts. However, monitoring for the presence of enteric viruses could be challenging due to the comparatively low number of viral particles existing in aquatic environments.¹⁴ Therefore, in order to detect human enteric viruses in water samples, it is essential to establish improved methods for water sample concentration, viral nucleic acids extraction, and more sensitive viral detection techniques.

The ultimate goal of this study was to develop a PCR-based array for simultaneous detection of multiple waterborne pathogens and pathogen indicators, including human enteric viruses. Such a PCR array would work as a simple and easy-to-use platform for a quick and highly sensitive screening tool for detecting contamination of different water bodies by human sewage.

Although a number of PCR and RT-PCR protocols are currently available for human enteric virus detection in literature, little is known regarding their efficiency and sensitivity for detecting these viruses. Therefore, one major objective of this study was to test and identify the most sensitive methods for the PCR array based detection of human enteric viruses in environmental waters. Through a side-by-side comparison of 16-18 primer sets for each test virus using a single source of viral nucleic acid, we were able to identify and establish the most sensitive primer sets for all four tested viruses. These primer sets-based viral detection methods proved up to 500,000 times more sensitive than all the other methods tested, suggesting they should be strongly considered for monitoring sewage contamination of environmental waters in the future. Their wide application for viral detection in environmental water will be substantiated and fully established through testing for more enteric virus strains.

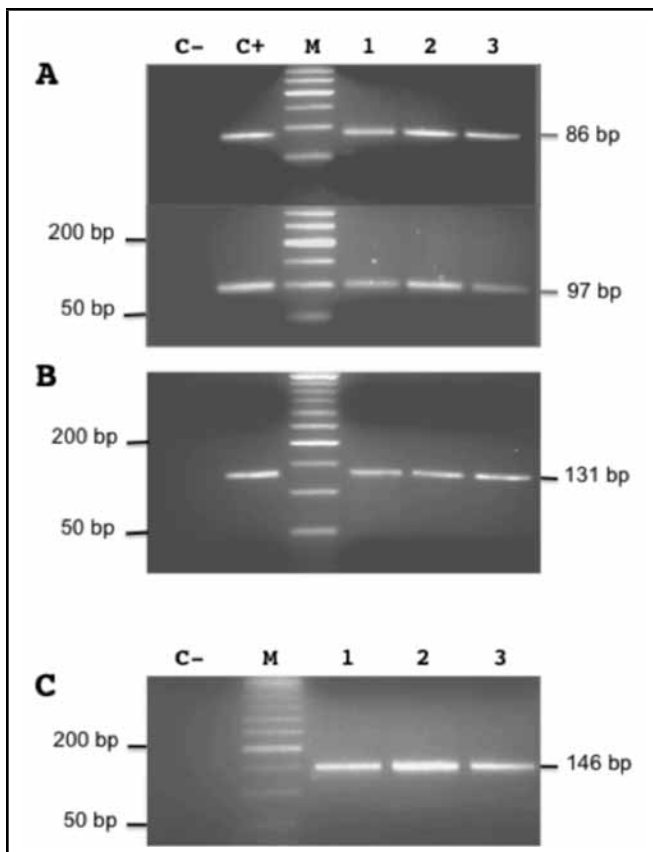


Figure 1. Detection of human enteric viruses from urban wastewaters. Agarose gel electrophoresis of RT-PCR products for human noroviruses (A) (upper panel = NoV GI and lower panel = NoV GII); PCR product for human adenoviruses (B); and RT-PCR product for human enteroviruses (C). Lane 1 = untreated raw influents, lane 2 = pre-disinfection/post-clarification treatment, and lane 3 = post-disinfection/Effluents. Lane M = 50 bp DNA marker, lane C+ = positive control using isolated virus, and Lane C- = negative control with no template.

A validation study confirmed that the detection methods developed in this study were effective in detecting all four enteric viruses from the untreated urban wastewater sample. Through an end-point PCR assay we demonstrated that two sample concentration methods - PEG precipitation and membrane filtration were equally sufficient in concentrating NoV from wastewater samples. However, for more turbid samples such as sludge or sewage, PEG precipitation was the method of choice due to its relatively easy-to-perform protocol and suitability to smaller sample volumes. On the other hand, the membrane filtration-based method adapted in this study represents a good protocol for concentrating viruses from large volume water samples, such as recreational water samples, since it is a relatively more rapid and practical technique.

With the establishment of sensitive detection protocols, we carried out a microbiological water quality surveillance project

to examine the prevalence of three human enteric viruses in recreational surface waters around the island of O'ahu. Among the 18 sites tested, 14 sites were positive for NoV, 6 sites for AdV, and 7 sites for enteroviruses. These findings represent the first report of detecting human enteric viruses in Hawaiian environmental waters and raise warning signs of possible fecal and sewage-borne pathogen contamination of these recreational waters. While it is necessary to determine if any of these positive sites are associated with infectious enteric viruses, it is equally important to investigate these sites to determine the possible source of the contamination for future prevention purpose, and also to monitor these sites regularly to ensure the safe use of these water bodies.

Findings from this study reveal that it is not impossible to detect enteric viruses from environmental waters despite the highly diluted nature of these human pathogens in waters, which supports the notion of using enteric viruses as a possible alternative indicator of water contamination. The highly sensitive and specific viral detection protocols established from this study will be extremely useful for all researchers interested in coastal water monitoring and management in future. Findings from this study also suggest that enteric virus contamination is more serious than previously known in Hawaiian recreational waters. Since the source of enteric viruses is inclusively from human fecal contamination, all positive sites for these viruses may also contain other human fecal borne pathogens, which raises concerns related to swimmer safety. Further monitoring of those sites positive for human fecal contamination in this study is highly recommended.

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Notes

1. Negatively charged type HA filter membranes from Millipore Corporation (MA) were used. Prior to filtration, MgCl₂ was added into sewage and water samples at a final concentration of 25 mM, and the filtration process was facilitated with a vacuum pump system.
2. The pH values of sewage samples were adjusted to 7.2 before mixed with 10 ml of 50% (w/v) polyethylene glycol solution (Sigma-Aldrich, MO). The mixture was stirred slowly at 4 °C, and then centrifuged at 1,500 g for 1.5 h at 4 °C. The recovered pellet was suspended in 1 mL of double-distilled H₂O and then subjected to nucleic acid extraction.
3. The on-column DNase I digestion step was skipped, and a final volume of 60 µL eluents containing mixtures of sample DNA and RNA was obtained. Fifteen microliter eluent was stored at -80°C as the DNA template for later PCR amplification while the remaining 45 µL eluent was treated with DNase I (MoBio laboratories, CA) at room temperature for 20 min, and then stored at -80°C as RNA sample for RT-PCR test.

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Table 2. Detection of human enteric viruses in selected water sites around O'ahu Island						
Sample Site	Condition	NoVGI	NoVGII	AdV	EtV	E coli
SIWWTP influent tank	Sewage	+	+	+	+	+
SIWWTP clarifying tank	Sewage	+	+	+	+	+
SIWWTP effluent tank	Sewage	+	+	+	+	+
Manoa stream/Palolo stream	Freshwater	+	+	+	+	+
Wahiawa freshwater	Freshwater	-	+	+	+	+
Ala Wai Canal	Freshwater	-	+	+	-	+
Waikiki Beach	Seawater	+	-	+	+	+
Mali Beach Park	Seawater	+	+	-	-	+
Sand Island Park Area	Seawater	+	-	+	-	+
Waianae/Pokai Bay	Seawater	-	+	-	+	+
Diamond Head Beach Park	Seawater	-	+	-	+	+
Kalaka Bay Beach Park	Seawater	-	+	-	+	+
Kailua Bay	Seawater	-	-	+	+	+
Maunaloa Bay Beach Park	Seawater	+	-	-	-	+
Ala Moana Park/Magic Island	Seawater	-	+	-	-	+
Waialae Beach Park	Seawater	-	+	-	-	+
Kaelepulu stream (by Kailua Bay)	Seawater	-	+	-	-	+
Bellows Field Beach Park	Seawater	-	-	-	-	+
West Loch Community Shoreline Park	Seawater	-	-	-	-	+
Control	dH ₂ O	-	-	-	-	-
Spike control	S+S ^a	+	+	+	+	+

^aS+S: sewage + sea water as a positive control.

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Interprofessional Education: Future Nurses and Physicians Learning Together

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Interprofessional education (IPE) brings students from various healthcare professions together for shared learning experiences. The goal of IPE is to prepare the healthcare force to work together collaboratively towards a more safe, patient-centered, and community-oriented health care system.¹ While new to medical and nursing school education, there is evidence that student attitudes toward interprofessional collaboration and communication may be enhanced through IPE.² Participating in interdisciplinary teams also gives students a better understanding of the role each discipline has in the health care system and its delivery.³ These factors would result in efficient and effective patient care through improved clinical decision-making.

In 2003, the Institute of Medicine urged educators as well as accrediting, licensing, and certifying organizations to insure that students develop and maintain proficiency in working as part of interdisciplinary teams.⁴ A recent report by the Interprofessional Education Collaborative (IPEC) Expert Panel recommended four interprofessional competencies:¹

Values/Ethics for Interprofessional Practice

Work with individuals of other professions to maintain a climate of mutual respect and shared values. Encompassed in this competency are issues such as maintaining confidentiality, embracing cultural diversity, respecting unique cultures, managing ethical dilemmas specific to interprofessional care situations, and acting with honesty and integrity in relationship with other team members.

Roles/Responsibilities

Use knowledge of one's role and those of other professions to assess and address appropriately the healthcare needs of the patients and populations served. It involves recognizing one's limitations and engaging diverse healthcare professionals to complement one's professional expertise.

Interprofessional Communication

Communicate with patients, families, communities, and other health professionals in a responsive and responsible manner that supports a team approach to the maintenance of health and the treatment of disease. It also includes giving feedback, responding respectfully, resolving conflict, and encouraging input from others.

Teams and Teamwork

Application of relationship-building values and the principles of team dynamics to perform effectively in different team roles including the planning and delivery of patient care that is safe, timely, effective, and equitable.

In response to these national recommendations and with the encouragement of the leadership of each school, the John A. Burns School of Medicine and the School of Nursing and Dental Hygiene at the University of Hawai'i at Manoa implemented three collaborative learning experiences for first-year medical and nursing students. Several principles were essential in the creation of these experiences. First, the sessions were designed and delivered by faculty members from both schools. Second, the learning objectives were chosen to be reflective of core competencies from both programs. Finally, active learning methods that required and illustrated the value of interprofessional interaction were utilized, since educational planners believe that physicians and nurses should understand the role each plays and value the unique contribution made by both professions to the care of patients and their families.

The following describes the objectives, instructional methods, and student feedback from the first year. The series consisted of three four-hour sessions on Interprofessional Communication, Patient Safety, and Clinical Ethics. A preliminary look at future interprofessional learning experiences planned through this partnership is also provided.

First Session: Interprofessional Communication

The first session was held early in the Fall semester of the first-year of training for both the medical and nursing students. To provide patient-centered care through teamwork, students were introduced to basic skills essential for communication with other healthcare providers, patients, and their families.

Learning Objectives

1. With a patient or patient's family, use understandable language, avoiding unnecessary terminology when possible.
2. With other members involved in patient care, share knowledge and opinions with confidence, clarity, and respect to ensure a common understanding of the information, treatment, and health care decisions.

3. With other members involved in patient care, listen actively and encourage the ideas and opinions of other team members.
4. Communicate regularly the importance of teamwork in patient-centered care.

Table 1. Interprofessional Communication Session Content and Instructional Methods	
Activity	Instructional Method
Welcome and Introduction	
"Getting to know you" ice-breaker	Small group activity
Collaborative Communication Part 1 • Sharing our knowledge with respect • Using understandable language • Listening actively • Encouraging ideas from others	Large group interactive lecture and videos
Communication activity 1	Small group role-play and discussion
Collaborative communication skills Part 2 • Cultural and social issues • Non-verbal communication • Pitfalls to avoid	Large group interactive lecture and demonstrations
Communication activity 2	Small group role-play and discussion
Closing, Evaluation, and Lunch	

The most important outcome of the first session was that the students from both schools recognize and respect each other's professional roles. The day began with an opportunity for the students to meet and introduce themselves in groups of 10-12 students. They spent the day in the same groups to deepen this working relationship through shared tasks and scenarios. Students also enjoyed lunch together at the conclusion of the session.

The small group communication activities emphasized inter-professional communication. Students were given scenarios and communication tasks to role-play as doctors and nurses. Topics for discussion were provided which allowed for reflection on the importance of culture and social issues in communication. Student feedback (Table 2) was very positive.

Table 2. Selected Results from the Interprofessional Session on Communication					
Statement		Number of Respondents and (Percent)			
		Strongly Agree	Agree	Disagree	Strongly Disagree
1	This session improved my understanding of interprofessional education.	71 (74%)	24 (25%)	1 (1%)	-
2	I believe there is value in medical students and nursing students training together on selected topics.	109 (96%)	5 (4%)	-	-

Student comments from the session included the following:

"It was amazing working together! I feel like it broke a lot of our pre-conceived notions about our fields... We all just came together as students and worked together as a team, and that was awesome!"

"We should do this again... building a bond with our future colleagues is valuable and will be helpful when time comes for working."

"I learned that we are all knowledgeable about different things and we will be able to work together to provide the best care possible."

Second Session: Patient Safety

The second joint session occurred in the latter part of the Fall semester. This session introduced basic concepts and emphasized the importance of working as interprofessional teams to minimize medical error and maximize patient safety. (See Table 3 for content and instructional methods)

Learning Objectives

1. Define patient safety.
2. Discuss the scope of patient safety issues in healthcare.
3. Identify basic factors contributing to errors.
4. Describe Reason's Swiss Cheese Error Model.
5. List common contributing causes of errors and recommended safety practices for prevention.
6. Explain strategies used by high performing teams to improve patient safety in healthcare.

Special features of the patient safety session included a ball toss activity during which small groups of medical and nursing students tossed a ball back and forth to each other. The toss of the ball represented a "hand-off" of a patient to another team member. A drop of a ball represented an error. The number of balls students needed to keep in constant motion was gradually increased. Students were removed from the group and added to the group to simulate an emergency, a sick member, a holiday, or other events that can disrupt the number and integration of the members of a team. Students appreciated the sometimes chaotic nature of the clinical environment and the potential for errors.

In addition, students had the opportunity to discuss in interdisciplinary groups, a variety of scenarios, some on video and others written on paper, which challenged them to identify errors, determine contributing causes, and strategies to avoid these errors in the future. Community experts were recruited to act as content matter facilitators for group activities. Student feedback (Table 4) was very positive.

Student comments from the session included the following:

"The materials and methods were great today –realistic, effective, engaging. Fantastic facilitators!"

"By fostering a 'culture of safety' and simply being aware, honest, and always approaching every situation with good intentions, the world of healthcare would be a lot safer and effective for all."

Activity	Instructional Method
Welcome and Introduction	
Ball Toss Activity	Small group activity
Patient Safety: The Reality <ul style="list-style-type: none"> • Why it's important • What it means • How we're doing Scenario illustrating errors that occur during the care of a pregnant woman	Large group interactive lecture and video
Patient Safety activity 1: Review of video scenario	Small group discussion with faculty facilitators
Patient Safety: Error Causation and Contributing Factors <ul style="list-style-type: none"> • Dangers inherent in health care • Factors contributing to errors • Organizational systems and processes • Complicated technology • The clinical environment • Complex human behavior 	Large group interactive lecture
Swiss cheese error model (Slices of swiss cheese are successive layers of defense, with holes being opportunities for a process to fail)	
Introduction to case scenarios	
Patient Safety activity 2: Review of multiple case scenarios, including contributing factors and prevention strategies	Small group discussion with faculty facilitators
Patient Safety: A Team Sport <ul style="list-style-type: none"> • Characteristics of High Performing Teams • Team Strategies to Prevent Errors <ul style="list-style-type: none"> • Leadership • Communication • Practice Together Create Situational Awareness	Large group interactive lecture
Closing, Evaluation, and Lunch	

Third Session: Clinical Ethics

The third interprofessional session was held in the latter part of the Spring semester. This session introduced concepts in clinical ethics, important ethical considerations in serving as healthcare professionals, and emphasized the importance of working as interprofessional teams to honor patients' wishes in end-of-life care.

Learning Objectives

1. Recognize individual values that impact personal thoughts and actions.
2. Describe the basic concepts and principles of clinical ethics.
3. Utilize the 4 Box Framework for ethical analysis of a case study.
4. Develop a collaborative recommendation guided by ethical principles and concepts.

Statement	Number of Respondents and (percent)				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1 The objectives for this program were met.	77 (66%)	36 (31%)	3 (3%)	1 (1%)	-
2 The teaching methods used in this simulation were effective.	68 (58%)	41 (35%)	7 (6%)	1 (1%)	-
3 The facilitators supported the group in the learning process.	85 (73%)	28 (24%)	3 (3%)	-	-
4 I am confident this simulation covered critical content areas necessary for the development of my professional roles and responsibilities.	73 (62%)	40 (34%)	4 (4%)	-	-

Activity	Instructional Method
Welcome and Introduction	
Who lives? Who dies? Activity	Small group activity
Concepts in Clinical Ethics <ul style="list-style-type: none"> • Autonomy • Beneficence • Nonmaleficence • Justice • Confidentiality • Informed consent • Competence • Capacity Treatment options/alternatives Decision makers and decision-making The law and ethics Dilemmas Common issues in clinical ethics After the decision – next steps	Large group interactive lecture and videos
Clinical ethics case analysis framework: The "Four Boxes" (A method that takes into account medical indications, patient preferences, quality of life, and other contextual features that aid in decision-making when faced with an ethical dilemma)	Large group interactive lecture
Case study	Small group activity
Case study debriefing	Large group discussion
Closing, Evaluation, and Lunch	

The session began with students discussing a scenario about people on an island about to be hit by an approaching tsunami. They were asked to determine who would and would not be saved by a rescue helicopter with limited seating. This served as an opportunity for all participants to examine their values. Students then watched an episode of a medical television show that highlighted various ethical issues. This was followed by interactive lectures and videos that covered major concepts in clinical ethics. Finally, after learning the “Four Boxes” model for analyzing ethics cases, students applied this method in small groups to a new scenario, developing recommendations for the case that they shared in a large group debriefing session. Community experts were recruited to act as content matter facilitators for group activities.

Student feedback (Table 6) was generally positive.

Statement	Number of Respondents and (percent)				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1 The objectives for this program were met.	29 (45%)	27 (42%)	8 (12%)	-	1 (1%)
2 The teaching methods used in this simulation were effective.	26 (39%)	28 (42%)	9 (14%)	3 (5%)	-
3 I understand the foundational principles of ethics.	37 (56%)	25 (38%)	4 (6%)	-	-
4 I have a better awareness of the common ethical issues in patient care.	31 (47%)	30 (45%)	3 (5%)	2 (3%)	-

Student comments from the session included the following:

“I enjoyed this session and look forward to the next one.”

“I would like to learn more! But I did learn a great deal today.”

“Not enough time working together,” and “More small group activities.” was a common comment that will be addressed for future sessions.

Student comments about the interprofessional sessions in general included the following:

“Enjoy these seminars – great opportunity.”

“I love interacting with people I may be working with in the future.”

“Workshops are very helpful in guiding and building communication between nurses and physicians.”

“It’s nice to interact with med students. To see how they are developing as health providers is interesting as compared to developing nurses. I like to see the similarities and differences. It creates a sense of “team” which is important and will benefit patients later on when we are all working in the health care field.”

The current first-year classes from both schools will have additional sessions together in future years. The three sessions described here will be repeated for incoming first-year students at both institutions. Faculty are also considering expanding participation in these sessions to students in other healthcare fields, such as social work and pharmacy. Also in consideration is the use of hi-fidelity manikin simulations as a collaborative learning model.⁵ Both schools are also considering IPE that takes place in the hospital and clinics, where many healthcare fields work together. Finally, these simulations and/or standardized patient experiences may be used to directly measure and evaluate interprofessional competence to insure that future healthcare providers learn that a collaborative approach will enhance patient care.

The theoretical underpinnings of IPE emphasizes that we learn through interactions with others. Learners engaging with other professionals gain a better understanding of their roles, beliefs, values, and culture. Interdisciplinary problem-solving and active, collaborative tasks deepen this understanding and lead to shared patient care goals.⁶ Students in such activities have increased their perceived interprofessional competence and developed a better understanding of the role of communication, teamwork, and collaboration in patient care.⁷ The John A. Burns School of Medicine and the School of Nursing and Dental Hygiene at the University of Hawai‘i believe that shared learning experiences between their students will encourage them to work collaboratively and deliberately together in their future roles.

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HE IS A BRILLIANT MEDICAL SCIENTIST WITH A MINOR PROBLEM OF VERACITY.

Peter J. Francis MD, was a rising star from the United Kingdom at the Casey Eye Institute, Oregon Health Science University (OHSU). He co-authored a paper for the New England Journal of Medicine and the Journal of the American Medical Association (JAMA). Dr. Francis claimed to have used monkey embryonic stem cells to achieve enhanced photoreceptor preservation, with no adverse effects, in the eyes of rats that develop retinal degeneration. Just when it appears that research is finally making a breakthrough in macular degeneration, the report turns out to be phony. After investigators confirmed his misconduct, Dr. Francis admitted he fabricated results of stem cell experiments he never performed. OHSU terminated his employment, and he is certain to find severe limitations and restrictions at any future possible medical research. Did he really believe he would not be found out?!

WE'RE FROM THE GOVERNMENT AND WE ARE HERE TO HELP.

It is a record day when Congressmen on both side of the aisle join forces to focus on someone else. The House oversight committee grilled the former head and other officials from the General Services Administration (GSA) about their \$823,000 party in Las Vegas. It was almost like a parody of taxpayers' worst nightmare of tax dollars at work. Three hundred people were flown to the M Resort and Spa and Casino for four days of parties, glad-handing and drinking, for no apparent goals. Inspector General Brian Miller who revealed the wild GSA orgy in October 2010 has already recommended criminal charges to the Justice Department for possible bribery and kickbacks. The ongoing investigation resulted in the resignation of the head of the GSA, Martha Johnson and Robert Peck, her chief assistant. Jeffrey Neely, a regional commissioner for the GSA who planned the high-flying event, wrote, "I know I'm bad, but why not enjoy it while we can? It ain't gonna last forever." He had been given a bonus!! And now the President also has a Secret Service that appears to have lost its charter.

SOME JOY FOR POTHEADS.

Dr. Donald Tashkin, pulmonologist at UCLA, reporting in JAMA, studied 5,115 young adults recruited in 1985 for two decades until 2006. Subjects were given standard lung measurements to determine the effects of marijuana. The volunteers revealed whether and how often they smoked tobacco, marijuana or both. Most pot users in the study reported lighting up two to a few times a month on average over the past two decades. Light marijuana users had above average scores for their ages on lung function tests. People admitting somewhat higher use fared no better or worse than peers their age. Those who used cannabis at least 20 times a month for years showed slightly reduced lung capacity. In summary, the data suggest that marijuana is not a significant risk factor for chronic obstructive pulmonary disease, including emphysema. Before getting too excited remember that the study covered only 20 years and involved young adults.

MEDICAL SCIENCE CAN CONTROL MANY DISEASES, BUT STUPIDITY IS MORE CHALLENGING.

In 1865 Professor Louis Pasteur saved the French wine industry when he found that heating wine for a short period destroyed the harmful bacteria that caused wine to sour. In 1920 American dairymen began using a similar process to kill disease-carrying bacteria in raw cow's milk. Pasteurization rapidly became the standard process for keeping milk drinkers from some rather serious infectious diseases, such as brucellosis, bovine Tbc, and *E. coli*. Raw milk advocates argue that pasteurization kills beneficial bacteria and diminishes vitamin content. The Centers for Disease Control and Prevention (CDC) stated that raw milk sickens thousands of people each year. Oregon has had six

outbreaks since 1993, the most recent this spring with 18 cases of *E. coli* traced to a single dairy farm. State epidemiologist, Dr. Katrina Hedberg, said four cases including a 1-year-old, have been hospitalized with hemolytic uremic syndrome. "These kids are very ill."

WHAT A GREAT IDEA! LET'S TAKE IT TO CHINA.

More American creativity and jobs are heading overseas. A study conducted by the Institute for Health Technology Studies (InHealth) found that more than 75% of device manufacturers seek regulatory approval overseas for new medical devices. The reasons are (1) unpredictability of the review and approval process of the US Food and Drug Administration (FDA), (2) high cost of FDA review, and (3) length and complexity of the FDA review process. The medical device development process for small companies — which are involved with new products twice as often as large companies — is 50% longer than for large companies.

EMPTY YOUR POCKETS. SPREAD YOUR LEGS. HANDS OVER YOUR HEAD. TURN YOUR HEAD AND COUGH. OH, SORRY. FORGET THAT LAST PART.

Representative John Mica, chair of the House Transportation Committee, recorded multiple complaints about the Transportation Security Administration (TSA) such as the 95-year-old woman who had to remove a soiled adult diaper for a full pat down. The TSA also has become a wasteful bureaucracy. It installed 100 "puffer" machines at \$150,000 each to detect explosives. You will never see one because they didn't work. TSA paid the Department of Defense \$600 apiece to destroy them. Rep. Mica added a provision to the TSA law that allows airports to "opt out" of federalized security. San Francisco Airport took advantage and hired Covenant Aviation Security. A TSA study found that SFO's private screeners were twice as good as TSA at detecting fake bombs. Another TSA study found that in the time it takes TSA screeners at Los Angeles airport to process 100 passengers, SFO screeners process 165. In San Francisco lines were shorter and screeners worked quickly and were more friendly and helpful. Other cities are applying for exemption from TSA.

YOU WANT PEPPERONI, MUSHROOM VEGAN OR COMBINATION?

Hey, what is more good clean entertainment than watching basketball March madness and enjoying a pizza? In Barnstable, Massachusetts, a group of urologists offered a free pizza with a vasectomy during the NCAA basketball play-offs. "It's a lighthearted way to raise awareness about the procedure and drum up business." Dr. Evangelos Geraniotis calls a vasectomy an "easy and less stressful" form of birth control. "It's a perfect time to spend a day or two of recovery following the operation to lie on the couch and watch hoops." You can also hold a hot pizza over your aching groin to relieve some of the pain.

ADDENDA

- Life expectancy was 61.7 years in 1935 when Social Security decided retirement age was 65. In 2009 life expectancy in USA was found to be 78.1 years.
- Norwegian law prohibits the death penalty. Anders Behring Breivik, the mass murderer of 77 innocents, could get the harshest sentence — 21 years behind bars. One of Breivik's judges wrote that the death penalty is the only just thing to do. He was disqualified.
- Starbucks says they are going to start putting religious quotes on cups. The very first one will say, "Jesus! This cup is expensive!"
- Health warning: Do not moon a pit bull after sitting in A-1 sauce.

ALOHA AND KEEP THE FAITH rts

(Editorial comment is strictly that of the writer.)

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The following are general guidelines for publication of supplements:

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2. Supplements must have educational value, be useful to HJMPH readership, and contain data not previously published to be considered for publication.
3. Supplements must have a sponsoring editor who will be involved in every step of the development, editing, and marketing of the publication since HJMPH staff will only be reviewing final proofs.
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UPCOMING CME EVENTS

Interested in having your upcoming CME Conference listed? Please contact Brenda Wong at (808) 536-7702 x103 for information.

Date	Specialty	Sponsor	Location	Meeting Topic	Contact
June 2012					
6/13-6/16	OPH	UC Davis Health System	Hilton Waikoloa Village, Kohala, Hawai'i	35th Annual Ophthalmology Symposium, Big Topics on the Big Island: An Update of Comprehensive Ophthalmology	www.ucdmc.ucdavis.edu/cme
July 2012					
7/1-7/6	OBG, REN	University of California San Francisco School of Medicine	Hapuna Beach Prince Hotel, Big Island, Hawai'i	Essentials of Women's Health: An Integrated Approach to Primary Care and Office Gynecology	www.cme.ucsf.edu/cme
7/7-7/13	PD	Childrens Hospital Los Angeles Medical Group	Hyatt Regency Maui Resort & Spa	Pediatrics in the Islands... Clinical Pearls	www.childrenshospitalamedicalgroup.org
7/9-7/12	R	Postgraduate Institute for Medicine	Hyatt Regency Maui	Summer Imaging in Hawai'i	www.imaginginhawaii.com
7/17-7/20	EM	UC Davis Health System	Fairmont Kea Lani, Maui	Emergency Medicine Update: Hot Topics 2012	www.ucdmc.ucdavis.edu/cme/conferences
7/29-8/2	ORS, OSM, OTR	Kaiser Permanente	Grand Hyatt Kauai, Kaua'i	20th Annual Update in Orthopaedic Surgery Conference	Email: kpos@sbcglobal.net
August 2012					
8/9-8/11	IM, FM	MCE Conferences	Disney Hawai'i Aulani Resort, O'ahu	Internal Medicine Update for Primary Care	www.mceconferences.com
September 2012					
9/10-9/13	R	Postgraduate Institute for Medicine	Ritz-Carlton Kapalua, Maui	Imaging in Hawaii: Practical & Clinical Education	www.imaginginhawaii.com
October 2012					
10/22-10/26	GM, IM, FP	Continuing Education Company	Sheraton Maui Resort & Spa	2nd Annual Primary Care Fall CME Conference: Maui	www.cmemeeting.org
10/27-11/2	PD	Childrens Hospital Los Angeles Medical Group	Grand Hyatt Kaua'i Resort & Spa	Aloha Update: Pediatrics 2012	www.childrenshospitalmedicalgroup.org
10/3-10/6	CD	UC Davis Health System	Hilton Waikoloa Village, Kohala, Big Island, Hawai'i	32nd Annual Current Concepts in Primary Care Cardiology	www.ucdmc.ucdavis.edu/cme/conferences
January 2013					
1/13-1/16	ORS, OSM, OTR	Orthopedicstoday	Fairmont Orchid, Big Island, Hawai'i	Orthopedicstoday Hawai'i 2013	www.othawaii.com
1/20-1/24	VIR, VM, VS	UC Davis Health System	Sheraton Maui	D. Eugene Strandness Jr. Symposium: Diagnostic & Therapeutic Approaches to Vascular Disease	www.strandness-symposium.com
February 2013					
2/8-2/9	US	University of Hawai'i, JABSOM Dept of Surgery	Ala Moana Hotel, O'ahu	pdf	cchc-conference.com
2/9-2/15	PD	Childrens Hospital Los Angeles Medical Group	Hyatt Regency Maui Resort & Spa	Pediatric Potpourri: State of the Art 2013	www.childrenshospitalmedicalgroup.org
2/10-2/15	D	Global Academy for Medical Education	Grand Wailea Hotel, Maui	37th Hawai'i Dermatology Seminar	www.globalacademycme.com
2/13-2/17	EM	University of California San Francisco School of Medicine	JW Marriott Ihilani Resort, O'ahu	High Risk Emergency Medicine Hawai'i 2013	www.cme.ucsf.edu/cme