Bibliographic Cite	PMID Link	Literature Type	Level of Evidence	Purpose	Population	Intervention and Outcome Measures	Results/ Recommendations	Study Limitiations
Al-Jiffry BO, Khayat S, Abdeen E, et al. A scoring system for the prediction of choledocholithiasis: a prospective cohort study. Ann Saudi Med. 2016;36(1):57-63.	26922689	Prospective cohort	Low	The authors aimed to develop and validate a clinical scoring system for predicting choledocholithiasis.	155 consecutive patients who were admitted to the general surgery department of a military hospital with symptomatic gallstones, biliary pancreatitis, obstructive jaundice, or cholangitis, who subsequently underwent biochemical testing and ultrasonography.	Outcome measure: Predictive accuracy of the scoring system. According to hospital protocol, all patients with uncomplicated symptomatic gallstones (pure biliary colic) were offered laparoscopic cholecystectomy. On-table intraoperative cholangiography (IOC) was performed among select patients who were undergoing definitive procedures (at the attending physician's or consultant's discretion) via the trans-cystic approach. Patients with obstructive jaundice were initially evaluated using ultrasonography, as well as MRCP if the ultrasonography findings were ambiguous. If choledocholithiasis or a dilated CBD (>10 mm, in the absence of stone visualization) was identified, the patient was asked to undergo ERCP before definitive gall bladder surgery was offered.	RESULTS: The common bile duct diameter, alkaline phosphatase of > 200 IU, elevated bilirubin levels, alanine transaminase of > 220 IU, and male age of > 50 years were significantly associated with choledocholithiasis and were included in the scoring system. Ninety-six patients (35%) had scores of > 8 (high risk), 86 patients (32%) had scores of 4-7 (intermediate risk), and 27 patients (10%) had scores of 1-3 (low risk). In the validation cohort, the positive predictive value for a score of > 8 was 91.7%, and the scoring system had an area under the curve of 0.896. CONCLUSION: Scores of ≥ 8 were strongly correlated with choledocholithiasis in the developmental and validation groups, which indicates that our scoring system may be useful for predicting the need for therapeutic ERCP. However, prospective validation in a large multicenter cohort is needed to fully understand the benefits of the system.	LIMITATIONS: The retrospective validation cohort might have introduced selection and observational biases. The study may have been underpowered because of the sample size of the developmental cohort. The delay between admission and the time of ERCP theoretically may have increased the number of negative ERCP results, but our false negative rate for ERCP was consistent with the previously reported rates.
Barat M, Paisant A, Calame P, et al. Unenhanced CT for clinical triage of elderly patients presenting to the emergency department with acute abdominal pain. Diagn Interv Imaging. 2019; 100(11):709-719.	31208938	Single center retrospective	Low	To compare the diagnostic accuracy and inter-reader agreement of unenhanced computed tomography (CT) to those of contrast-enhanced CT for triage of patients older than 75 years admitted to emergency department (ED) with acute abdominal pain (AAP).	Two hundred and eight consecutive patients presenting with AAP to the ED who underwent CT with unenhanced and contrast-enhanced images. Patients were included when they had CTof the abdomen and pelvis with both pre and post-contrastacquisitions. Exclusion criteria included history of traumaand recent colorectal, hepatobiliary or pancreatic surgery. There were 90 men and 118 women with a mean age of 85.4 ± 4.9 (SD) (range: 75—101.4 years).	Three readers reviewed unenhanced CT images first, and then unenhanced and contrast-enhanced CT images as a single set. Diagnostic accuracy was compared to the standard of reference defined as the final diagnosis obtained after complete clinico-biological and radiological evaluation. Correctness of the working diagnosis proposed by the ED physician was evaluated. Intra- and inter-reader agreements were calculated using the kappa test and interclass correlation. Subgroup analyses were performed for patients requiring only conservative management and for those requiring intervention.	Diagnostic accuracy ranged from 64% (95% CI: 62—66%) to 68% (95% CI: 66—70%) forunenhanced CT, and from 68% (95% CI: 66—70%) to 71% (95% CI: 69—73%) for both unenhancedand contrast-enhanced CT. Contrast-enhanced CT did not significantly improve the diagnosticaccuracy (P = 0.973—0.979). CT corrected the working diagnosis proposed by the ED physician in59.1% (range: 58.1—60.0%) and 61.2% (range: 57.6—65.5%) of patients before and after contrastinjection (P > 0.05). Intra-observer agreement was moderate to substantial (k = 0.513—0.711).Inter-reader agreement was substantial for unenhanced (kappa = 0.745—0.789) and combinedunenhanced and contrast-enhanced CT (kappa = 0.745—0.799). Results were similar in subgroupanalyses. The authors conclude that unenhanced CT alone is accurate and associated with high degrees of inter-readeragreement for clinical triage of patients older than 75 years with AAP in the emergency setting.	One major limitation of our study was its retrospective design. In addition, readers were provided with the initialclinical and biological results, together with the suspecteddiagnosis of the emergency department physician, whichcould have led to an interpretation bias.
Delhaye M, Van Steenbergen W, Cesmeli E, et al. Belgian consensus on chronic pancreatitis in adults and children: Statements on diagnosis and nutritional, medical, and surgical treatment. Acta Gastroenterol Belg. 2014; 77(1):47-65.	24761691	Consensus paper	Low	To issue statements on diagnosis and nutritional, medical, and surgical treatment for chronic pancreatitis.	Adults and children with chronic pancreatitis.	N/A	The authors state that clinicians should attempt to classify patients into one of the six etiologic groups according to the TIGARO classification system. MRI/MRCP, if possible with secretin enhancement, is considered the imaging modality of choice for the diagnosis of early-stage disease. MRI is more sensitive than CT for detecting early CP stages, as signal changes can be picked up prior to morphological changes. MRCP allows for excellent visualization of the pancreatic ducts, with secretin enhancement providing an even better visualization of abnormalities of the pancreatic duct and its branches. Endoscopic ultrasound, which is more invasive, is the most sensitive method for detecting minimal structural changes indicative of CP, and may provide add-on value in uncertain cases.	N/A

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Forsythe RO, Sweck MR, McBride OM, et al. 18F-sodium fluoride uptake in abdominal aortic aneurysms: The SoFIA3 study. J Am Coll Cardiol. 2018; 71(5):513-523.	29406857	Single center prospective	Low	In patients with abdominal aortic aneurysm (AAA), the authors assessed whether 18F-NaF positron emission tomography (PET) and computed tomography (CT) predicts AAA growth and clinical outcomes.	A total of 145 patients with AAA were screened for inclusion: 136 were approached, and 76 patients ultimately attended for the scanning visit. Patients were predominantly elderly (mean age 72.5 6.9 years) men (84.7%) with multiple cardiovascular risk factors, including hypertension (65.3%) and hypercholesterolemia (81.9%) . More than 90% were current or ex-smokers (27.8% and 65.3%, respectively), with a mean baseline AAA diameter of 48.8 +/- 7.7 mm. Control subjects were younger (mean age 65.2 2.8 years) but also predominantly men (95.0%), and 40% were current (25%) or prior (15%) smokers.	In prospective case-control (n ¼ 20 per group) and longitudinal cohort (n ¼ 72) studies, patients with AAA (aortic diameter >40 mm) and control subjects (aortic diameter <30 mm) underwent abdominal ultrasound, 18F-NaF PET-CT, CT angiography, and calcium scoring. Clinical endpoints were aneurysm expansion and the composite of AAA repair or rupture.	Fluorine-18-NaF uptake was increased in AAA compared with nonaneurysmal regions within the same aorta (p = 0.004) and aortas of control subjects (p = 0.023). Histology and micro-PET-CT demonstrated that 18F-NaF uptake localized to areas of aneurysm disease and active calcification. In 72 patients within the longitudinal cohort study (mean age 73 +/- 7 years, 85% men, baseline aneurysm diameter 48.8 +/- 7.7 mm), there were 19 aneurysm repairs (26.4%) and 3 ruptures (4.2%) after 510 +/- 196 days. Aneurysms in the highest tertile of 18F-NaF uptake expanded 2.5x more rapidly than those in the lowest tertile (3.10 [interquartile range (IQR): 2.34 to 5.92 mm/year] vs. 1.24 [IQR: 0.52 to 2.92 mm/year]; p = 0.008) and were nearly 3x as likely to experience AAA repair or rupture (15.3% vs. 5.6%; log-rank p = 0.043). The authors conclude that fluorine-18-NaF PET-CT is a novel and promising approach to the identification of disease activity in patients with AAA and is an additive predictor of aneurysm growth and future clinical events.	This was a single-center proof of- concept study with a small number of rupture events, making adjustment for potential confounders and covariates challenging. Additionally, the authors note that widespread implementation of this technique may be challenging, especially given the relative expense and complexity of PET-CT compared with ultrasound. Finally, further validation of the tissue binding characteristics and time course of change in 18F-NaF uptake in aneurysmal and nonaneurysmal aortas are needed, and this would be interesting to explore in future studies.
Fung AK, Ahmeidat H, McAteer D, et al. Validation of a grading system for complicated diverticulitis in the prediction of need for operative or percutaneous intervention. Ann R Coll Surg Engl. 2015;97(3):208-14.	26263806	Validation study	Low	To retrospectively validate a CT grading system for acute complicated diverticulitis in the prediction of the need for operative or percutaneous intervention.	44 patients with acute complicated diverticulitis confirmed by CT. There were 22 women (50%) and the overall median age was 59 years (range: 19–92 years).	Three hundred and sixty-seven patients (34.6%) had CT performed for acute diverticulitis during the study period. Forty-four patients (12.0%) had acute complicated diverticulitis (abscess and/or free intraperitoneal air) confirmed on CT. There were 22 women (50%) and the overall median age was 59 years (range: 19-92 years). According to the CT findings, there was one case with grade 1, eighteen patients with grade 2, four with grade 3 and twenty-one with grade 4 diverticulitis. Three patients with grade 2, three patients with grade 3 and ten patients with grade 4 disease underwent acute radiological or surgical intervention.	The use of a CT grading system for acute complicated diverticulitis did not predict the need for acute radiological or operative intervention in this small study. Decision making guided by the patient's clinical condition still retains a primary role in the management of acute complicated diverticulitis.	1. This study could be criticised for its retrospective nature, lack of strict treatment protocol to streamline patients' management according to the CT staging and also because patients were treated by a group of surgeons with diverse experience, subspecialty interests and views on the man-agement of complicated acute diverticulitis. 2. The authors also acknowledge that the absolute number of patients was relatively small. 3. In addition, the authors appreciate that only one consultant radiologist with a specialist interest in gastrointestinal imaging reviewed the CT and carried out the retrospective scoring. Single reader or no inter-reader reliability was calculated.
Ginsburg D, Paroder V, Flusberg M, et al. Diagnosis of acute cholecystitis: why do patients get multiple studies? Emerg. 2016;23(1):49-55.	26521261	Research study	Low	To establish factors affecting total number of imaging studies performed for acute cholecystitis (AC) prior to surgery.	All patients with pathologically proven acute cholecystitis between 1/1/2005 and 1/1/2014 at the authors' institution who had at least one imaging study (US, CT, cholescintigraphy) within 7 days prior to surgery were included in the study. Of the 596 patients included, 219 (36.7 %), 339 (56.9 %), and 38 (6.4 %) subjects were in the CT, US, and cholescintigraphy groups, respectively. (First study US: Average age 46.7 years, 80.2% female. First study CT: Average age 55.5 years, 60.7% female. First study cholescintigraphy: Average age 51.6 years, 65.8% female.)	The subjects were separated into groups based on modality of the first study. For each subject, report of the first study was reviewed for report's confidence in diagnosis of AC (scored 1-5 on Likert scale: 5 = definitely AC, 1 = definitely no AC), recommendation of additional study, clinical history concerning for AC (history of right upper quadrant pain, cholelithiasis, and/or "rule out AC").	There were 219, 339, and 38 subjects in CT, US, and cholescintigraphy groups, respectively, with mean confidence scores of 3.7 (+/- 1.2), 3.7 (+/- 1.1), and 4.7 (+/- 0.9), respectively (p < 0.001). Prior to surgery, only one study was performed in 21.9 % (48/219) of CT group, 70.2 % (238/339) of US group, and 71.1 % (27/38) of cholescintigraphy group (p < 0.0001). Compared to the US group, the odds of undergoing additional study were 11.8 times higher (p < 0.001) in CT group and 1.7 times higher (p = 0.229) in cholescintigraphy group, adjusting for age, sex, time interval between first study and the surgery, confidence score, recommendation of follow-up study, and clinical history concerning for AC. Patients with AC and CT as the first study are more likely to undergo additional imaging studies prior to surgery as compared to US or cholescintigraphy.	Limitations of this study include extracting information from written diagnostic reports and assigning a score based on the wording of the report which introduces bias due to the considerable heterogeneity and style of reporting of imaging findings by multiple readers. Additionally, the assignment of the categories for any given phrasing of the findings was somewhat subjective. Another important limitation was that the authors were unable to account for possible point of care US performed by ED physicians prior to additional diagnostic imaging. Bedside US exams are increasingly performed by ED physicians and findings noted on bedside, US may have influenced the type of imaging test ordered. Furthermore, the authors were unable to accurately account for analgesic administration prior to US. Pain medications could potentially mask a sonographic Murphy sign and thus may have influenced confidence of the reporting radiologist in diagnosis of AC. Additionally, non-consecutive recruitment may have introduced selection bias into the study, and not all patients received the reference ("gold") standard or patients received different reference standards.

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Hahn B, Bonhomme K, Finnie J, et al. Does a normal screening ultrasound of the abdominal aorta reduce the likelihood of rupture in emergency department patients? Clin Imaging. 2016;40(3):398-401.	27133675	Retrospective cohort study	Low	To determine if AAA rupture can reliably be excluded in individuals with abdominal pain who have had a normal caliber aorta on CT or US after the age of 65years	Subjects were included if they met the following criteria: age >=65years; an initial CT or US as an ED patient, inpatient, or outpatient for any indication, which identified an abdominal aorta <3cm; and a second CT or US during an ED visit. N=606.	A retrospective study (approved by institutional review board) of emergency department (ED) patients in an urban academic center was performed. The incidence of ruptured AAA on the second CT or US with a history of normal aortic caliber was identified.	RESULTS: During the study period, 606 subjects were enrolled. Demographic data are listed in Table 1. Three subjects (0.5%) exhibited an abnormal-sized aorta on ED evaluation. None of these three subjects had an AAA intervention. The average size of the abnormal aorta in these three subjects was 3.3cm (S.D. 0.17).; CONCLUSION: Based on these results, it appears that AAA and rupture may reliably be excluded in ED patients with abdominal pain who have previously had a normal caliber aorta on CT or US after the age of 65years. A prospective, multicenter study would help validate these findings	This study has several limitations. The study was retrospective, and therefore, the results are subject to all biases associated with a retrospective study. This issue would have been avoided in a prospective study. This study was undertaken at a single institution; therefore, the practices identified may not be generalizable to other populations. It is conceivable that a multicenter study may have produced different results.
Harringa JB, Bracken RL, Davis JC, et al. Prospective evaluation of MR compared with CT for the etiology of abdominal pain in emergency department patients with concern for appendicitis. J Magn Reson Imaging. 2019; 50(5):1651-1658.	30892788	Single center prospective observational cohort	Low	To compare the sensitivity of MR and CT for acute abdominopelvic ED diagnoses.	Patients were eligible for inclusion if they had a CT requested to evaluate for possible appendicitis. Exclusion criteria were age <12 years old, inability to provide informed consent or assent, contraindication to intravenous gadolinium contrast, or contraindication to undergoing MR (e.g. pregnancy, ferromagnetic implants, etc.). Cohort included 198 patients: mean age was 33 years (SD 15) years and 55% were women.	Three radiologists independently interpreted each MR and CT image set separately and blindly, using a standard case report form. Assessments included likelihood of appendicitis, presence of an alternative diagnosis, and likelihood that the alternative diagnosis was causing the patient's symptoms. An expert panel utilized chart review and follow-up phone interviews to determine all final diagnoses. Times to complete image acquisition and image interpretation were also calculated. Sensitivity was calculated for each radiologist and by consensus (≥2 radiologists in agreement) and are reported as point estimates with 95% confidence intervals. Two-sided hypothesis tests comparing the sensitivities of the three image types were conducted using the Pearson's Chi-squared test with the traditional significance level of p=0.05.	There were 15 different acute diagnoses identified on the CT/MR images of 113 patients. Using individual radiologist interpretations, the sensitivities of non-contrast enhanced MR (NCE-MR), contrast-enhanced MR (CE-MR), and CT for any acute diagnosis were 77.0% (72.6%–81.4%), 84.2% (80.4%–88.0%), and 88.7% (85.5%–92.1%). Sensitivity of consensus reads was 82.0% (74.9%–88.9%), 87.1% (81.0%–93.2%), 92.2% (87.3%–97.1%), respectively. There was no difference in sensitivities between CE-MR and CT by individual (p=0.096) or consensus interpretations (p=0.281), though NCE-MR was inferior to CT in both modes of analysis (p<0.001, p=0.031, respectively). The authors conclude that the sensitivity of CE-MR was similar to CT when diagnosing acute, non-traumatic abdominopelvic pathology in our cohort.	First and foremost, the radiologists were asked about the possibility of an alternative diagnosis only after many other questions specific to the possibility of appendicitis. Second, the parent study was designed and powered to compare the test characteristics of MR versus CT imaging in the diagnosis of appendicitis. As such, to draw firm conclusions about their comparative performance in the evaluation of each alternative diagnosis, a much larger study would be required. Third, the study was conducted at a single academic center with three fellowship-trained abdominal radiologists, potentially limiting generalizability. Finally, participants were recruited as a convenience sample, potentially introducing selection bias.
Jensen MD, Kjeldsen J, Rafaelsen SR, et al. Diagnostic accuracies of MR enterography and CT enterography in symptomatic Crohn's disease. Scand J Gastroenterol. 2011;46(12):1449-57.	21905974	Comparative Study; Meta-Analysis; Research Support, Non-U.S. Gov't; Review	High	In patients, with symptomatic Crohn's disease (CD), valid information about the presence or absence of small bowel disease activity and stenosis is clinically important. Such information supports decisions about medical or surgical therapy and can be obtained with MR enterography (MRE) or CT enterography (CTE).	A total of 50 patients with symptomatic pre-existing CD and a demand for small bowel imaging to support changes in treatment strategy were included in this prospective and blinded study. 13 male and 37 female patients were included;patients' median age was 39 (18-76). Montreal classification of Crohn's Disease at inclusion: Ileal (L1) = 20, colonic (L2) = 5, Ileocolonic (L3) = 25, isolated upper small bowel (L4) = 0; Disease behavior: non-stricturing/non-penetrating (B1) = 14, stricturing (B2) = 30; penetrating (B3) = 6; perianal disease (p) = 7; Median duration of Crohn's = 10 years (0.3-36).	MRE and CTE were performed a median of 11 days before or after ileocolonoscopy (range 2–33), and the median interval between radiological procedures and surgery was 51 days (range 3–211). MRE and CTE were performed on the same day in alternating order and subsequently compared with the gold standard: pre-defined lesions at ileoscopy (n = 30) or surgery with (n = 12) or without (n = 3) intra-operative enteroscopy. A total of 35 patients had active small bowel CD (jejunum 0, ileum 1, (neo)-terminal ileum 34) and 20 had small bowel stenosis. The sensitivity and specificity of MRE for detection of small bowelCD was 74% and 80% compared to 83% and 70% with CTE (p ‡ 0.5). MRE and CTE detected small bowel stenosis with 55% and 70% sensitivities, respectively (p = 0.3) and 92% specificities.	The sensitivity and specificity of MRE for detection of small bowelCD was 74% and 80% compared to 83% and 70% with CTE (p >/= 0.5). MRE and CTE have comparable diagnostic accuracies for detection of small bowel CD and stenosis. In symptomatic patients with CD and high disease prevalence, positive predictive values are favorable but negative predictive values are low. Consequently, MRE and CTE can be relied upon, if a positive result is obtained whereas a negative enterography should be interpreted with caution.	Per the authors: "The prevalence of CD proximal to the terminal ileum was low, and we were unable to determine the sensitivity and specificity of MRE and CTE for detection of proximal disease." "We did not include objective measures of CD activity at MRE and CTE because no such indices were validated at the time this study was initiated. Furthermore, we did not attempt to distinguish inflammatory from fibrostenotic CD. Some studies have suggested that MRE and CTE can distinguish between fibrosis and inflammation." "Radiologists were randomly assigned to MRE or CTE in a blinded fashion and variations in obtained sensitivities and specificities compared to other studies cannot be explained by investigator-dependency alone. The fact that CTE was a new modality in the Department of Radiology might have favored MRE over CTE. Additional contrast was not given between radiological procedures and it cannot be ruled out that the sensitivities for detection of stenosis would have been better if procedures had been performed on separate days with optimal bowel filling.
Jensen MD, Nathan T, Kjeldsen J, et al. Incidental findings at MRI-enterography in patients with suspected or known Crohn's disease. World journal of gastroenterology. 2010;16(1):76-82.	20039452	Comparative Study; Meta-Analysis; Research Support, Non-U.S. Gov't; Review	Low	To determine the frequency and clinical impact of incidental findings detected with magnetic resonance imaging (MRI)-enterography in patients with suspected or known Crohn's disease (CD)	A total of 283 patients were included in the analysis. MRI-enterographies performed in patients with suspected or known CD having symptoms consistent with disease activity or complications were included. 193 patient (68%) were female; mean age = 38.7 years (range 9.9-84.9 years); The indication for MRI was suspected CD in 156, and newly diagnosed or known CD in 127.	Extra-intestinal findings were recorded in 72 patients, of which 58 patients (20%) had 74 previously unknown findings. Important or incompletely characterized findings were detected in 17 patients (6.0%). MRI revealed incidental findings located in the colon and not related to inflammatory bowel disease in 16 patients (5.7%), of whom 5 also had an extra-intestinal finding. In 12 patients, colonic findings were of minor or no clinical relevance. Four patients underwent additional examinations and revealed no pathological conditions, Two patients (0.7%) benefitted from the additional examinations, whereas incidental findings led to unnecessary examinations in 9 (3.2%).	In a minority of patients with suspected or known CD, important incidental findings are diagnosed at MRI-enterography. However, a substantial number of patients experience unnecessary morbidity because of additional examinations of benign or normal conditions.	The study was limited by its retrospective desing. Radiological reports were not performed with the focus on incidental findings, and underestimation of clinically unimportant findings are likely. Readers were not blinded or no comment was made about the blinding of the readers. No reference standard used in this study; preponderance of woman in the experimental group, but CD is also more common in women.

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Jin DX, Lacson R, Cochon LR, et al. A clinical model for the early diagnosis of acute pancreatitis in the emergecy department. Pancreas. 2018; 47(7):871-879.	29975351	Single center retrospective	Low	To develop a diagnostic model that predicts acute pancreatitis (AP) risk before imaging.	Emergency department patientswith serum lipase elevated to 3 times the upper limit of normal or greater were included. Patients with any of the following characteristics which impart a lower clinical threshold for immediate imaging at presentation were excluded: (1) transferred from outside hospitals, (2) previously established intra-abdominal metastatic disease, (3) acute traumatic injury, or (4) altered mentation at presentation precluding accurate history taking.	An AP diagnosis was established by expert review of full hospitalization records. Candidate predictors included demographic and clinical characteristics at presentation. Using a derivation set, a multivariable logistic regression model and corresponding point-based scoring system was developed to predict AP. Discrimination accuracy and calibration were assessed in a separate validation set.	In 319 eligible patients, 182 (57%) hadAP. The final model (area under curve, 0.92) included 8 predictors: number of prior AP episodes; history of cholelithiasis; no abdominal surgery (prior 2 months); time elapsed from symptom onset; pain localized to epigastrium, of progressively worsening severity, and severity level at presentation; and extent of lipase elevation. At a diagnostic risk threshold of 8 points or higher (≥99%), the model identified AP with a sensitivity of 45%, and a specificity and a positive predictive value of 100%. The authors conclude that in emergency department patients with lipase elevated to 3 times the upper limit of normal or greater, this model helps identify AP risk before imaging. Prospective validation studies are needed to confirm diagnostic accuracy.	First, data from each admission, hospitalization, and postdischarge course were reviewed in great detail, allowing for extraction of medical comorbidity and symptom parameters not available in most large population data sets, yet critical to the diagnosis of AP. Second, patients meeting inclusion criteria were captured through a daily laboratory query of all serum lipase evaluations, allowing for complete identification of the targeted study population. Third, results were internally validated using a separate cohort of patients, minimizing the risk of overfitting the model on the derivation set. Fourth, the diagnostic model lends itself to future research applications, as the implementation of similar risk prediction models into ED clinical decision support tools has been associated with decreased imaging utilization for a variety of disorders.
Juvonen P, Lehtimaki T, Eskelinen M, et al. The need for surgery in acute abdominal pain: a randomized study of abdominal computed tomography. In Vivo. 2014;28(3):305-9.	24815831	Clinical Trial; Randomized Controlled Trial; Research Support, Non-U.S. Gov't	Moderate	To assess the need for surgical treatment in patients with acute abdominal pain in a prospective randomized study	93 patients with acute abdominal pain	Patients were randomized to the routine abdominal computed tomography CT (rCT, n=118), or selective abdominal CT group (sCT, n=85) over a period of 16 months. Ninety-three of the randomized patients (45.8%) underwent the study design and were reached for follow-up at three months.	RESULTS: Diagnostic accuracy improved significantly in the rCT group (p<0.001). The surgeon's assessment of the need for surgery changed more often in the rCT group than in the sCT group (78.7% vs. 46.9%, p=0.002). The confidence to treat operatively increased significantly in the rCT vs. the sCT group (65.6% vs. 40.6%, p=0.028). The rCT was the only independent parameter for the change of the assessment of surgery.; CONCLUSION: Routine CT allows for more confidence in decision making for the surgical treatment of patients with acute abdominal pain.	Sparse data, poor follow up, incomplete reporting, limitation on generalizability of findings.
Karkkainen, JM, Acosta, S. Acute mesenteric ischemia (part I) - Incidence, etiologies, and how to improve early diagnosis. Baillieres Best Pract Res Clin Gastroenterol. 2017;31(1):15-25	28395784	Review; Best Practice	N/A	To identify how to improve diagnostic performance, so that more patients get proper treatment for acute mesenteric ischemia (AMI).	N/A	N/A	The etiological categorization of AMI should be practical and guide the therapy. Furthermore, the limitations of the diagnostic examinations need to be understood with special emphasis on computed tomography findings on patients with slowly progressing "acute-on-chronic" mesenteric ischemia	N/A
Lahaye MJ, Lambregts DM, Mutsaers E, et al. Mandatory imaging cuts costs and reduces the rate of unnecessary surgeries in the diagnostic work-up of patients suspected of having appendicitis. Eur Radiol. 2015;25(5):1464-70.	25591748	Retrospective study	Low	To evaluate whether mandatory imaging is an effective strategy in suspected appendicitis for reducing unnecessary surgery and costs.	1,556 consecutive patients with clinically suspected appendicitis in 2008-2009 (756 patients/group I) and 2011-2012 (800 patients/group II). Men Before guideline (BG) 307 (40.6 %) After guideline (AG) 317 (39.6 %) Women BG 449 (59.4 %) AG 483 (60.4 %) Age, y BG 31.6 (2–89 years) AG 31.6 (0–98 years) Mean age, y BG 31.6 (2–89 years) AG 31.6 (0–98 years). After clinical examination by a surgeon, 509 (67.3 %) patients in group I and 540 (67.5 %) patients in group II were still suspected of having appendicitis.	Retrospective study of imaging use (none/US/CT and/or MRI) was recorded. Additional parameters were: complications, medical costs, surgical and histopathological findings. The primary study endpoint was the number of unnecessary surgeries before and after guideline implementation.	RESULTS: After clinical examination by a surgeon, 509/756 patients in group I and 540/800 patients in group II were still suspected of having appendicitis. In group I, 58.5% received preoperative imaging (42% US/12.8% CT/3.7% both), compared with 98.7% after the guidelines (61.6% US/4.4% CT/ 32.6% both). The percentage of unnecessary surgeries before the guidelines was 22.9%. After implementation, it dropped significantly to 6.2% (p<0.001). The surgical complication rate dropped from 19.9% to 14.2%. The average cost-per-patient decreased by 594 <euro> from 2,482 to 1,888 <euro> (CL:-1081; -143).; CONCLUSION: Increased use of imaging in the diagnostic work-up of patients with clinically suspected appendicitis reduced the rate of negative appendectomies, surgical complications and costs.; KEY POINTS: * The 2010 Dutch guidelines recommend mandatory imaging in the work-up of appendicitis. * This led to a considerable increase in the use of preoperative imaging. * Mandatory imaging led to reduction in unnecessary surgeries and surgical complications. * Use of mandatory imaging seems to reduce health care costs.	The suboptimal implementation means that the exact impact of the guidelines could not precisely be defined in this study. Furthermore, the present study was limited due to its retrospective nature. Patients with indeterminate results from the diagnostic test were excluded or no comment was made about how indeterminate results were handled. Single reader or no inter-reader reliability was calculated. Generalization is limited, incomplete reporting of test statistics.

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Lietzen E, Ilves I, Salminen P, et al. Clinical and laboratory findings in the diagnosis of right lower quadrant abdominal pain: outcome analysis of the APPAC trial. Clin Chem Lab Med. 2016;54(10):1691-7.	27010776	Multicenter Study	Low	[To study]...current research on acute appendicitis [that] aims to improve the diagnostics and to clarify to whom antibiotic treatment might be the treatment of choice. The mean age of the patients with gynecological disorders was 32 years, with NSAP 30 years and with acute appendicitis 37 years. Patients with acute diverticulitis were, however, significantly older with a mean age of 47 years.	1321 patients with a clinical suspicion of acute appendicitis, who underwent computed tomography (CT).	Retrospective analysis of a prospectively collected data in our randomized multicenter trial comparing surgery and antibiotic treatment for acute uncomplicated appendicitis (APPAC trial).	toms, white blood cell count (WBC) and C-reactive protein (CRP) were recorded on admission.; RESULTS: CT confirmed the diagnosis of acute appendicitis in 73% (n=970) and in 27% (n=351) it revealed no or other diagnosis. Acute appendicitis patients had significantly higher WBC levels than patients without appendicitis (median 12.2 and 10.0, respectively, p<0.0001), whereas CRP levels did not differ between the two groups. Ideal cut-off points were assessed with receiver operating characteristic (ROC) curves, but neither these markers or neither their combination nor any clinical characteristic could accurately differentiate between patients with acute appendicitis and those without. The proportion of patients with normal WBC count and CRP was significantly (p=0.0007) lower in patients with acute appendicitis than in patients without appendicitis.; CONCLUSIONS: Both clinical findings and laboratory tests are unable to reliably distinguish between patients with acute appendicitis and those without. If both WBC count and CRP are normal, acute appendicitis is very unlikely. The current results emphasize the role of CT imaging in patients with suspected acute appendicitis.	The limitations of the present study include the retrospective study design. Patients with indeterminate results from the diagnostic test were excluded or no comment was made about how indeterminate results were handled. Non-consecutive recruitment. Readers were not blinded or no comment was made about the blinding of the readers. Single reader or no inter-reader reliability was calculated. Generalization is limited, inclusion of people outside original APPAC trial.
Lietzen E, Mallinen J, Gronroos JM, et al. Is preoperative distinction between complicated and uncomplicated acute appendicitis feasible without imaging? Surgery. 2016;160(3):789-95.	27267549	Multicenter Study; Randomized Controlled Trial	Moderate	To compare antibiotic treatment for uncomplicated acute appendicitis trial (APPAC) to surgery and antibiotic treatment for uncomplicated acute appendicitis	705 (444 men and 261 women) patients who had complicated or uncomplicated acute appendicitis on CT as well as patients >60 years old and those who declined to participate in the APPAC trial. 368 patients had uncomplicated acute appendicitis (group UA), and 337 patients had complicated acute appendicitis on abdominal CT (group CA). Of the 337 CA patients, 256 had appendicolith appendicitis (group CA1); 78 had perforation and/or periappendicular abscess (group CA2); and 3 patients had appendiceal tumor on CT. Mean age UA 36.8 (12.4), CA 37.6 (13.0), CA1 36.4 (13.0) CA2 41.7 (12.5).	Data in the present study were collected prospectively in our randomized antibiotic treatment for uncomplicated acute appendicitis trial (APPAC) comparing surgery and antibiotic treatment for uncomplicated acute appendicitis. Patients with uncomplicated acute appendicitis (n = 368) were compared with all complicated acute appendicitis patients (n = 337), and subgroup analyses were performed between uncomplicated acute appendicitis and an appendicolith appendicitis (CA1; n = 256) and uncomplicated acute appendicitis and perforation and/or abscess (CA2; n = 78). Age, sex, body temperature (degreeC), duration of symptoms, white blood cell count (E9/L), and C-reactive protein (mg/L) were recorded on admission. Receiver operating characteristic curves were calculated for white blood cell count, C-reactive protein, and temperature.	RESULTS: CA2 patients had significantly greater C-reactive protein levels (mean 122 and 47, respectively, P < .001) and longer duration of symptoms than uncomplicated acute appendicitis patients; 81% of CA2 patients and 38% of uncomplicated acute appendicitis patients had symptoms >24 hours before admission (P < .001). In receiver operating characteristic analysis, C-reactive protein and temperature had clinically significant results only in comparison with uncomplicated acute appendicitis and CA2 (area under the curve >0.7), but no optimum cutoff points could be identified.; CONCLUSION: In clinical decision making, neither clinical findings nor laboratory markers are reliable enough to estimate the severity of the acute appendicitis accurately or to determine the presence of an appendicolith. The current results emphasize the role of computed tomography in the differential diagnosis of complicated and uncomplicated acute appendicitis.	Patients with indeterminate results from the diagnostic test were excluded or no comment was made about how indeterminate results were handled. Readers were not blinded or no comment was made about the blinding of the readers. Single reader or no inter-reader reliability was calculated.
Lietzen E, Salminen P, Rinta-Kiikka I, et al. The Accuracy of the Computed Tomography Diagnosis of Acute Appendicitis: Does the Experience of the Radiologist Matter? Scandinavian Journal of Surgery: SJS. 2018;107(1):43-7.	28929862	Comparative Study Multicenter Study Randomized Controlled Trial	Moderate	To assess the accuracy of computed tomography in diagnosing acute appendicitis with a special reference to radiologist experience.	1065 patients who underwent computed tomography for suspected appendicitis. Out of the 1065 patients, 714 had acute appendicitis and 351 had other or no diagnosis on computed tomography.	Data were collected prospectively in a randomized controlled trial comparing surgery and antibiotic treatment for uncomplicated acute appendicitis. The on-call radiologist preoperatively analyzed these computed tomography images. In this study, the radiologists were divided into experienced (consultants) and inexperienced (residents) ones, and the comparison of interpretations was made between these two radiologist groups.	There were 700 true-positive, 327 true-negative, 14 false-positive, and 24 false-negative cases. The sensitivity and the specificity of computed tomography were 96.7% (95% confidence interval, 95.1-97.8) and 95.9% (95% confidence interval, 93.2-97.5), respectively. The rate of false computed tomography diagnosis was 4.2% for experienced consultant radiologists and 2.2% for inexperienced resident radiologists (p = 0.071). Thus, the experience of the radiologist had no effect on the accuracy of computed tomography diagnosis. The accuracy of computed tomography in diagnosing acute appendicitis was high. The experience of the radiologist did not improve the diagnostic accuracy. The results emphasize the role of computed tomography as an accurate modality in daily routine diagnostics for acute appendicitis in all clinical emergency settings.	Single reader or no inter-reader reliability was calculated

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Millet I, Sebbane M, Molinari N, et al. Systematic unenhanced CT for acute abdominal symptoms in the elderly patients improves both emergency department diagnosis and prompt clinical management. Eur Radiol. 2017;27(2):868-77.	27271919	Research study	Moderate	To assess the added-value of systematic unenhanced abdominal computed tomography (CT) on emergency department (ED) diagnosis and management accuracy compared to current practice, in elderly patients with non-traumatic acute abdominal symptoms.	401 consecutive patients 75 years of age or older, admitted to the ED with acute abdominal symptoms, and investigated by early systematic unenhanced abdominal CT scan. Median age: 85 years (IQR=81–90 y), 152 (38 %) males and 249 (62 %) females).	ED diagnosis and intended management before CT, after unenhanced CT, and after contrast CT if requested, were recorded. Diagnosis and management accuracies were evaluated and compared before CT (clinical strategy) and for two conditional strategies (current practice and systematic unenhanced CT). An expert clinical panel assigned a final diagnosis and management after a 3-month follow-up.	; RESULTS: Systematic unenhanced CT significantly improved the accurate diagnosis (76.8% to 85%, p=1.1x10⁻⁶) and management (88.5% to 95.8%, p=2.6x10⁻⁶) rates compared to current practice. It allowed diagnosing 30.3% of acute unsuspected pathologies, 3.4% of which were unexpected surgical procedure requirement.; CONCLUSIONS: Systematic unenhanced abdominal CT improves ED diagnosis accuracy and appropriate management in elderly patients presenting with acute abdominal symptoms compared to current practice.; KEY POINTS: * Systematic unenhanced CT improves significantly diagnosis accuracy compared to current practice. * Systematic unenhanced CT optimizes appropriate hospitalization by increasing the number of discharged patients. * Systematic unenhanced CT allows detection of about one-third of acute unsuspected abdominal conditions. * It should allow boosting emergency department management decision-making confidence in old patients.	First, it was conducted in a single centre with a high rate of CT requested in the standard management (78 %). Secondly, there was a high number of physicians with varying levels of experience answering questionnaires, which could have led to variations in their CT prescription practices.Thirdly, the intended treatment prior to CT was not defined by a senior surgeon, which may have led to overestimation of intended admission for surgery before CT. Lastly, we did not investigate US as a potential routine test that could also affect the diagnosis and management accuracy. Patients with indeterminate results from the diagnostic test were excluded or no comment was made about how indeterminate results were handled. Narrow included population; generalization is limited.
Othman AE, Bongers MN, Zinsser D, et al. Evaluation of reduced-dose CT for acute non-traumatic abdominal pain: Evaluation of diagnostic accuracy in comparison to standard-dose CT. Acta Radiol. 2018; 59(1):4-12.	28406049	Single center retrospective	Low	To evaluate diagnostic performance of a reduced-dose 100 kVp CT protocol with advanced modeled iterative reconstruction as compared to a linearly blended 120 kVp protocol for assessment of acute, non-traumatic abdominal pain.	112 consecutive patients (51.8% women; mean age = 59.1 17 years, body mass index = 27.5 +/- 4.8 kg/m2) with acute non-traumatic pain (onset<48 h). Patients were included if: (i) age>18 years; and (ii) acute abdominal pain (onset<48 h). Exclusion criteria were: (i) undocumented final clinical diagnosis; and (ii) lack of a clinical follow-up in patients with negative CT findings.	Two radiologists assessed 100 kVp and linearly blended 120 kVp series of 112 consecutive patients with acute non-traumatic pain (onset<48 h) regarding image quality, noise, and artifacts on a five-point Likert scale. Both radiologists assessed both series for abdominal pathologies and for diagnostic confidence. Both 100 kVp and linearly blended 120 kVp series were quantitatively evaluated regarding radiation dose and image noise. Comparative statistics and diagnostic accuracy was calculated using receiver operating curve (ROC) statistics, with final clinical diagnosis/clinical follow-up as reference standard.	Image quality was high for both series without detectable significant differences (P=0.157). Image noise and artifacts were rated low for both series but significantly higher for 100 kVp (P ≤ 0.021). Diagnostic accuracy was high for both series (120 kVp: area under the curve [AUC]=0.950, sensitivity=0.958, specificity=0.941; 100 kVp: AUC ≥ 0.910, sensitivity ≥ 0.937, specificity=0.882; P ≥ 0.516) with almost perfect inter-rater agreement (Kappa=0.939). Diagnostic confidence was high for both dose levels without significant differences (100 kVp 5, range 4–5; 120 kVp 5, range 3–5; P=0.134). The 100 kVp series yielded 26.1% lower radiation dose compared with the 120 kVp series (5.72 2.23 mSv versus 7.75 3.02 mSv, P<0.001). Image noise was significantly higher in reduced dose CT (13.3 2.4 HU versus 10.6 2.1 HU; P<0.001). The authors conclude that reduced-dose abdominal CTusing 100 kVp yields excellent image quality and high diagnostic accuracy for the assessment of acute non-traumatic abdominal pain.	The small sample size is the major limitation of this study, since it might not be sufficient in order to cover all possible causes of acute abdominal pain. Furthermore, authors included only contrast enhanced CTs in this study and did not assess the low-dose CT protocol for unenhanced CT studies. Another limitation of this study is its retrospective design, which may be associated with selection bias.
Priola AM, Priola SM, Volpicelli G, et al. Accuracy of 64-row multidetector CT in the diagnosis of surgically treated acute abdomen. Clin Imaging. 2013;37(5):902-7.	23764231	Prospective Cohort	Moderate	To assess the accuracy of 64-row computed tomography (CT) in the differential diagnosis of acute abdomen in the emergency department.	181 patients with surgically treated acute abdomen	Prospective analysis.	RESULTS: In 158/181 cases, CT was totally concordant with surgical repertoire. Partial concordance was found in 15 cases. Overall sensitivity was 87.3% when only cases of complete concordance were considered, 95.6% if also partial concordance cases were included.; CONCLUSION: CT showed high reliability in the differential diagnosis of acute abdomen surgically treated, although associated conditions can sometimes be missed.	Small number of patients; readers were not blinded or no comment was made about the blinding of the readers
Repplinger MD, Pickhardt PJ, Robbins JB, et al. Prospective comparison of the diagnostic accuracy of MR imaging versus CT for acute appendicitis. Radiology. 2018; 288(2):467-475.	29688158	Single center prospective	Moderate	To compare the accuracy of magnetic resonance (MR) imaging with that of computed tomography (CT) for the diagnosis of acute appendicitis in emergency department (ED) patients.	The study included 198 patients (114 women [58%]; mean age, 31.6 years 6 14.2 [range, 12–81 years]; prevalence of appendicitis, 32.3%). Eligible patients were nonpregnant and 12- year-old or older patients in whom a CT study had been ordered for evaluation for appendicitis.	After informed consent was obtained, CT and MR imaging (with non–contrast material–enhanced, diffusion-weighted, and intravenous contrast-enhanced sequences) were performed in tandem, and the images were subsequently retrospectively interpreted in random order by three abdominal radiologists who were blinded to the patients' clinical outcomes. Likelihood of appendicitis was rated on a five-point scale for both CT and MR imaging. A composite reference standard of surgical and histopathologic results and clinical follow-up was used, arbitrated by an expert panel of three investigators. Test characteristics were calculated and reported as point estimates with 95% confidence intervals (CIs).	The sensitivity and specificity were 96.9% (95% CI: 88.2%, 99.5%) and 81.3% (95% CI: 73.5%, 87.3%) for MR imaging and 98.4% (95% CI: 90.5%, 99.9%) and 89.6% (95% CI: 82.8%, 94.0%) for CT, respectively, when a cutoff point of 3 or higher was used. The positive and negative likelihood ratios were 5.2 (95% CI: 3.7, 7.7) and 0.04 (95% CI: 0, 0.11) for MR imaging and 9.4 (95% CI: 5.9, 16.4) and 0.02 (95% CI: 0.00, 0.06) for CT, respectively. Receiver operating characteristic curve analysis demonstrated that the optimal cutoff point to maximize accuracy was 4 or higher, at which point there was no difference between MR imaging and CT. The authors conclude that the diagnostic accuracy of MR imaging was similar to that of CT for the diagnosis of acute appendicitis.	First, the study enrolled a relatively small number of patients (given the prevalence of appendicitis) by using convenience sampling, which led to a study population that was younger and had a higher prevalence of appendicitis than those patients who were eligible but who were not enrolled or not imaged. Another limitation was the fact that the study was performed at a single academic medical center with a strong MR imaging presence, which may limit generalizability. Only CT was used for clinical purposes (not MR imaging) yields the potential for incorporation bias. Finally, all patients underwent CT before MR imaging per the study design. For most, that mandated that oral contrast material be ingested. The effect of this oral contrast material on the diagnostic accuracy observed for the MR imaging protocol was not evaluated in study

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Saade C, Nasr L, Sharara A, et al. Crohn's disease: A retrospective analysis between computed tomography enterography, colonoscopy, and histopathology. Radiography (Lond). 2019; 25(4):349-358.	31582244	Single center retrospective	Low	To investigate the spectrum of computed tomography enterography (CTE) findings of active Crohn's disease (CD) in comparison to endoscopic, histopathologic and inflammatory markers.	197 patients with known or suspected CD who underwent CTE over a period of 5 years were reviewed. Eighty-nine patients fulfilled inclusion criteria. Patients' age ranged from 18 to 74 years (mean ¾ 40.8 years). There was equal distribution between males (n = 44) and females (n = 45) (p > 0.05).	Three-point severity scores for endoscopy, pathology, and haematologic inflammatory markers were recorded. The findings on CTE were identified by three readers and correlated with endoscopic, pathologic, and haematologic severity scores. Statistical analysis was carried out employing a Pearson Chi square test and Fisher exact test. Receiver operating characteristic (ROC), visual grading characteristic (VGC) and Cohens' kappa analyses were performed.	The CTE findings which were significantly correlated with the severity of active disease on endoscopy include bowel wall thickening, mucosal hyperenhancement, bilaminar stratified wall enhancement, transmural wall enhancement, and mesenteric fluid adjacent to diseased bowel (p < 0.05). Only bowel wall thickening and bilaminar stratified wall enhancement correlated with the pathological severity of active CD. ROC and VGC analysis demonstrated significantly higher areas under the curve (p < 0.0001) together with excellent inter-reader agreement (k ¾ 0.86). The authors conclude that CTE is a reliable tool for evaluating the severity of active disease and helps in the clinical decision pathway.	Laboratory values of CRP and ESR were not present in all patients (n = 13). Also, some of these patients had been referred to the authors' institution for imaging and endoscopy/biopsy only. Therefore, in these cases it was difficult to reliably correlate clinical presentation to imaging findings. Endoscopy procedures were performed by three different gastroenterologists that could result in reporting variations.
Signoretti MB, F. Piciucchi, M. Iannicelli, E. Valente, R. Zerboni, G. Capurso, G. Delle Fave, G. Repeated transabdominal ultrasonography is a simple and accurate strategy to diagnose a biliary etiology of acute pancreatitis. Pancreas. 2014;43(7):1106-10.	25003222	Evaluation Studies	Low	This study aims at evaluating the diagnostic accuracy of repeated US for biliary AP.	The accuracy of each test for diagnosis of biliary AP was evaluated according to the final diagnosis. Among 155 patients, the etiology was biliary in 52% and alcoholic in 20%. Patients with a previous history or radiological signs of chronic pancreatitis were excluded.	Among 155 patients, the etiology was biliary in 52% and alcoholic in 20%. The accuracy of the first US alone and of the 2 combined examinations for a biliary etiology were 66% and 83%, respectively. Comparison of receiver operating characteristic curves showed a better performance of repeated US (difference between areas under the curve, 0.135; 95% confidence interval, 0.02-0.24; P = 0.021). Magnetic resonance cholangiopancreatography had high specificity (93%) but low sensitivity (62%), with 76% accuracy. The accuracy of the combination of the 2 US examinations and of elevated alanine transferase was 87%.	Repeated US is effective for biliary AP diagnosis. The combination of repeated US examinations and biochemical tests seems an effective approach, whereas MR cholangiopancreatography might be restricted to selected cases.	
Thorisson A, Smedh K, Torkzad MR, et al. CT imaging for prediction of complications and recurrence in acute uncomplicated diverticulitis. Int J Colorectal Dis. 2016;31(2):451-7.	26490053	Multicenter Study; Randomized Controlled Trial	Moderate	To re-evaluate the computed tomography (CT) scans of the patients in the antibiotics in uncomplicated diverticulitis (AVOD) study to find out whether there were CT findings that were missed and to study whether CT signs in uncomplicated diverticulitis could predict complications or recurrence.	623 patients included in the AVOD study	CT scan images were re-evaluated and graded by two independent reviewers for different signs of diverticulitis, including complications, such as extraluminal gas or the presence of an abscess.	RESULTS: Of the 623 patients included in the study, 602 CT scans were obtained and re-evaluated. Forty-four (7 %) patients were found to have complications on the admitting CT scan that had been overlooked. Twenty-seven had extraluminal gas and 17 had an abscess. Four of these patients deteriorated and required surgery, but the remaining patients improved without complications. Of the 18 patients in the no-antibiotic group, in whom signs of complications on CT were overlooked, 15 recovered without antibiotics. No CT findings in patients with uncomplicated diverticulitis could predict complications or recurrence.; CONCLUSION: No CT findings that could predict complications or recurrence were found. A weakness in the initial assessment of the CT scans to detect extraluminal gas and abscess was found but, despite this, the majority of patients recovered without antibiotics. This further supports the non-antibiotic strategy in uncomplicated diverticulitis.	Limitations include inconsistent imaging protocol, no report of patient demographics, and a small total number of complications.
Weinrich JM, Bannas P, Avanesov M, et al. MDCT in the setting of suspected colonic diverticulitis: Prevalence and diagnostic yield for diverticulitis and alternative diagnoses. AJR Am J Roentgenol. 2020; 215(1):39-49.	32319796	Single center retrospective	Low	To determine the prevalence and demographic distribution of colonic diverticulitis (CD) and alternative diagnoses (AD), as well as the diagnostic accuracy of MDCT in patients with suspected CD.	1069 patients (560 women) undergoing MDCT for the evaluation of suspected CD.	The prevalence of CD and AD was determined and the diagnostic accuracy of MDCT calculated. The final clinical diagnosis derived from the discharge report served as the standard of reference. Prevalence of diagnoses by age, sex, and admission status were compared using Cochran–Armitage, chisquare, and Fisher exact tests.	Prevalence of CD was 52.5% (561/1069) and of AD was 39.9% (427/1069). In the remaining 7.6% (81/1069) no final clinical diagnosis was established. The most frequent AD were appendicitis (12.6%, 54/427), infectious colitis (10.5%, 45/427), infectious gastroenteritis (8.2%, 35/427), urolithiasis (6.1%, 26/427), and pyelonephritis (4.9%, 21/427). The prevalence of diverticulitis and AD varied statistically significantly according to both age (p < 0.001) and admission status (p < 0.001). Also, the prevalence of the 10 most frequent specific AD varied statistically significantly according to sex (p = 0.022). CT had a sensitivity and specificity of 99.1% and 99.8% for diagnosing CD and 92.7% and 98.8% for AD, respectively. The authors conclude that in about 40% of patients with suspected diverticulitis a broad spectrum of AD is causative for symptoms. MDCT provides high diagnostic accuracy in the diagnosis of diverticulitis and AD. The prevalence of diagnoses is related to admission status and demographic data; in particular age-related AD have to be considered in patients with clinically suspected diverticulitis.	The authors note that they did not assess the impact of the CT diagnosis on further patient triage. However, because of the retrospective design of this study they were not able to further clarify this issue. Second, there might be concerns about multiple testing within the study population, but because this is mostly a descriptive work, the authors believe the comparisons made are appropriate. Third, not all patients underwent surgery or colonoscopy. Especially in patients with the diagnosis of acute diverticulitis, followup colonoscopy is recommended to rule out colonic carcinoma. Another potential limitation is the rather short follow-up period of 6 months or more.

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Yu H, Wang Y, Wang Z, et al. Prospective comparison of diffusion-weighted magnetic resonance enterography and contrast enhanced computed tomography enterography for the detection of ileocolonic Crohn's disease. J Gastroenterol Hepatol. 2020; 35(7):1136-1142.	31785602	Single center prospective	Low	To assess the performances of diffusion-weighted MR enterography (DW-MRE) and contrast enhanced CT enterography (CTE) for detecting different grade lesions in ileocolonic CD.	A total of 41 patients (median age: 31 years; range: 14–62 years; 30 male patients and 11 female patients) finally diagnosed with ileocolonic CD were included in this study.	All the patients prospectively underwent DW-MRE, contrast enhanced CTE, and ileocolonoscopy within 2 weeks. DW-MRE and CTE images were interpreted for the presence or absence of active CD segments by two experienced radiologists independently. Ileocolonic segments (terminal ileum, right colon, transverse colon, left colon, and rectum) were graded as inactive (0–2), mild (3–6), or moderate–severe (≥ 7) by the simplified endoscopic score for CD (SES-CD). Diagnostic efficiencies of DW-MRE and CTE for mild and/or moderate–severe CD segments were calculated and compared, using ileocolonoscopy as reference standard.	According to SES-CD, 190 ileocolonic segments from 41 CD patients were scored as 91 inactive, 68 mild, and 31 moderate–severe CD lesions. The sensitivity of DW-MRE for detecting active from inactive segments was higher than that of CTE, and the specificities of them had no significant differences. As for the subgroup analysis, DW-MRE was more sensitive for mild CD lesions than CTE (76.5% vs 60.3%; P = 0.019), while the sensitivities for moderate–severe CD were similar between these two modalities (96.8% for DW-MRE and 93.5% for CTE; P = 1.00). The authors conclude that both DW-MRE and CTE had comparably excellent performances for moderate–severe CD detection; DW-MRE demonstrated better sensitivity in mild lesions compared with CTE and could be more suitable for the diagnosis of mild CD.	First, the sample size of moderate–severe lesions was relatively small comparing with other two groups. Secondly, the quantitative analysis and comprehensive scores calculation were not included, as the aim of the study was to compare the detection of different grade inflammations between CTE and DW-MRE. Thirdly, small bowel besides the terminal ileum was not evaluated in the cross-sectional imaging because of the lack of endoscopic reference standard for these segments in ileocolonoscopy examinations.
Zhang J, Li NP, Huang BC, et al. The Value of Performing Early Non-enhanced CT in Developing Strategies for Treating Acute Gallstone Pancreatitis. J Gastrointest Surg. 2016;20(3):604-10.	26743886	Randomized Controlled Trial; Research Support, Non-U.S. Gov't	Moderate	To assess the value of early abdominal non-enhanced computed tomography (NECT) in developing strategies for treating acute gallstone pancreatitis (AGP).	102 patients who met the following criteria: (1) age ≥18 years, (2) mild acute gallstone pancreatitis (AGP) with no evidence of organ failure by clinical data and no peripancreatic fluid collection on NECT scans, (3) patient is experiencing their first episode of AGP, and (4) patient has provided a signed written informed consent. 41 males and 61 females with mild cases of AGP were included; mean age was 62.8± 9.5 years, range 18–82 years; the early and late operative intervention groups were matched for age and gender (P>0.05).	NECT was compared to B-ultrasound and MRCP for accuracy of detecting stones; Early laparoscopic cholecystectomy was compared to late laparoscopic cholecystectomy.	Non enhanced CT (NECT) was 89.2% and 87.8% accurate in detecting gallbladder stones and CBD stones, respectively; sensitivities were 88.4% and 85.3% respectively; Specificities were 100% and 100%, respectively. B-ultraound accuracies for detecting gallbladder and CBD stones were 91.% and 48.8%, respectively; MRCP accuracies for detecting gallbladder and CBD stones were 90% and 90%, respectively. In the early and late laparoscopic cholecystectomy groups, all patients in both groups were cured, no LC-related complications occurred, and no case of AGP increased in severity following LC. The mean lengths of hospital stay and LC operation time were significantly shorter in the ELC group than the LLC group (P<0.05).	Authors did not include a control group of patients who were not examined by NECTand were stratified for treatment based only on clinical indicators of pancreatitis severity.We decided not to include such a group due to the risks of misdiagnosing a CBD stone or a patient's worsening condition following LC." "...the main limitation of this study is that it was not multi-centered and enrolled a relatively small number of patients. Moreover, all of the enrolled patients lived in the same city (Shanghai). In this study, CT demonstrated very high sensitivity and specificity in diagnosing choledocholithiasis, suggesting therewere high levels of calcium in the gallstones of our patients. It is not known whether CT would have displayed such high sensitivity and specificity if it were used for diagnosing choledocholithiasis in other regions of China or other countries."

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