

PART 1 | IMAGING IN CLINICAL PRACTICE

Ashraf Abdul-Jabbar Abdul-Abbass

DMRD, Radiologist. E mail: ashraf_jabbar@yahoo.com

A 66 year-old male, Known on to have diabetes mellitus. Presented with a history of fever, anorexia and upper abdominal pain of 2 weeks duration. Two days after hospital admission he developed paraplegia with retention of urine. Abdominal US was normal. Complete blood count shows a leukocytosis (neutrophilia) with elevation of erythrocyte sedimentation rate and C reactive protein. Chest X ray showed only mild bilateral pleural effusion. MRI of spine is below:

Q1: What are the findings involving the dorsal spine?

Q2: What are the differential diagnosis?

Q3: How can you reach to the diagnosis?



Figure 1: MRI of the dorsal spine, the left is T1 weighted without contrast, the middle is T1 weighted with contrast, and the right is T2 weighted.

ANSWER OF Q1:

A pre-vertebral hypointense mass lying anterior to D5-D6 vertebrae, It shows a marginal rim enhancement with contrast with irregular edges. The vertebral body of D5 and D6 show low intensity signal on T1 image and high intensity signal on T2 image. After contrast the abnormal vertebral bodies are showing high intensity signal (enhancement). These features are suggestive of acute spondylitis without much destruction. The disc in-between D5 and D6 is showing a low signal on T1 images and high signal on T2 images confirming involvement by an inflammatory process.

ANSWER OF Q3:

Diagnosis can be done through histological and microbiological examination of a tissue biopsy taken from the lesion of the vertebrae or the abscess. The biopsy can be taken under CT guide or during surgical intervention. For the diagnosis of tuberculosis, acid fast Bacillus (it was negative in our case) and culture (results are not obtained yet) have low sensitivity and specificity. Histopathologic examination confirms the diagnosis of spinal tuberculosis in approximately 60% of patients by finding epithelioid cell granulomas with necrosis. Polymerase chain reaction (PCR) remains the best option for the diagnosis of pyogenic and tuberculous spondylitis due to its sensitivity and rapidity.

ANSWER OF Q2:

1. Infections are of two groups; the first is **pyogenic spondylitis** secondary to *Staphylococcus aureus*, *Streptococci*, and *enterococci*, the second is **granulomatous spondylitis** secondary to *tuberculosis*, *brucellosis*, *nocardiosis*, *actinomycosis*, and *fungal infections*. Pyogenic infection is affecting relatively elderly patients and involving lumbar vertebrae more than thoracic, while tuberculous infection affecting relatively younger patients and involving thoracic spine more than lumbar. Involvement of intervertebral disc is a clue to infection rather than tumours.
2. Noninfectious inflammation like Sarcoidosis.
3. Tumours; primary like lymphoma (non-Hodgkin's) and multiple myeloma or secondary metastasis from known or unknown primary site. In tumours, intervertebral disc is usually spared.

The message: The commonest types of spondylitis are pyogenic and tuberculous. Involvement of Intervertebral disc is a clue for inflammatory process rather than neoplastic.

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PART 2 | WHAT DO YOU KNOW ABOUT?

Acute Infectious Diarrhoea in Adults Diagnosis, Treatment and prevention

Shakir Mahmood Muhammed¹

Acute infectious diarrhoea is one of the most important health problem worldwide; it is a leading cause of morbidity and mortality in the developing countries and of morbidity in developed countries. Health care professionals in Iraq are facing many challenges in the diagnosis, treatment and prevention of acute infectious diarrhoea. The challenges are ranging from under-diagnosis with subsequent under-treatment of patients render them to variety of acute and chronic sequelae to over investigation and over-use of antibiotics adding much economic burden and risk on the patients themselves and on the budget of the health on the nation level. Following the recommendations of international societies is going to halt or at least hinder these challenges.



Choose the best appropriate answer for each statement:

1. Acute diarrhoea is:

- (a) The leading cause of hospital admission in only developing countries.
- (b) Passing of more than 10 motion a day.
- (c) Diarrhoea of more than 30 days.
- (d) Diarrhoea of less than 2 weeks .
- (e) Diarrhoea due to infectious causes.

2. The following chronic health sequelae are linked to acute infectious diarrhoea except:

- (a) Functional gastrointestinal disorders.
- (b) Reactive arthritis.
- (c) Haemolytic uremic syndrome.
- (d) Guilliane Barré syndrome.
- (e) Chronic liver disease.

3. Regarding the causes of acute infectious diarrhoea all are wrong except:

- (a) Viral causes are the commonest causes in patients over age of 65 years.
- (b) Shigellosis is the typical example of acute watery diarrhoea.
- (c) Escherichia coli is more common in developing than in developed countries.
- (d) Entamoeba histolytica is a classic example of acute diarrhoea in developing countries.
- (e) Clostridium difficile is usually the cause of community acquired acute diarrhoea in elderly.

4. Regarding the epidemiology of acute infectious diarrhoea:

- (a) The annual rate of acute infectious diarrhoea is more common in young adult below age of 25 than in those over age of 25 years.
- (b) The causative pathogen is identified in

¹Editor-in-Chief, Consultant Pulmonologist, Human Resource Training and Development Centre/ Ministry of Health. E mail: shakshamcar@yahoo.com

over 75 % of cases of acute infectious diarrhoea admitted to hospitals.

- (c) At least each person living in the USA suffers from 2 attacks of acute infectious diarrhoea in a year.
- (d) Traveller's diarrhoea is rare for American citizens who travel to developing countries.
- (e) The major mechanism of transmission is faecal-oral route.

5. The followings can give a clue for the cause of acute infectious diarrhea except:

- (a) Presence of blood in stool (dysentery).
- (b) Presence of abdominal pain.
- (c) Type of food or drink suspected.
- (d) Duration of the appearance of the symptoms.
- (e) Associated symptoms like fever and vomiting.

6. Microbiological diagnosis of acute infectious diarrhoea is essential in:

- (a) Every case.
- (b) A pregnant woman.
- (c) A patient working in a restaurant.
- (d) Patients over age of 50 years.
- (e) Children.

7. Which one is true regarding the laboratory tests used in the diagnosis of acute infectious diarrhoea:

- (a) Culture-independent molecular techniques are sensitive and specific for the diagnosis.
- (b) Microscopical examination (general stool examination) is very important tool for the diagnosis of bacterial causes.
- (c) Microscopical examination is accurate for the diagnosis of parasites.
- (d) Presence of faecal leukocytes by microscopical examination may guide further diagnostic studies.
- (e) Stool culture is highly sensitive for finding the cause of acute diarrhoea.

8. Regarding the non-pharmaceutical treatment of acute infectious diarrhoea:

- (a) Withholding food for > 4 hours is appropriate in acute setting to decrease severity of diarrhoea.
- (b) Oral rehydration solution (ORS) has little effect on infant mortality in developing countries in comparison to developed countries
- (c) Use of ORS can reduce the severity of diarrhoea.
- (d) Dehydration is the major problem is traveller's diarrhoea among adults.
- (e) Consumption of water, juices, sports drinks, soups, and saltine crackers can replace loss of fluid and salt.

9. Non-antimicrobial drug treatment for acute infectious diarrhoea, all are true except:

- (a) Probiotics or prebiotics for treatment of acute diarrhea in adults is recommended only in cases of postantibiotic-associated illness.
- (b) Diphenoxylate is better antimotility drug than loperamide.
- (c) Antidiarrhoeal drugs are required only in patients with severe, cholera-like diarrhoea.
- (d) Bismuth subsalicylates (BSSs) can control symptoms in mild to moderate illness.
- (e) Toxic megacolon is rare if antidiarrhoeal drugs used with antibiotics.

10. The following acute infectious diarrhoea need antimicrobials for treatment except:

- (a) Traveller's diarrhoea.
- (b) Acute dysentery.
- (c) Diarrhoea caused by parasites.
- (d) Watery diarrhoea.
- (e) Symptoms and signs of severe intestinal infections.

11. The followings are true for the use of antimicrobials in treatment of acute diarrhoea except:

- (a) Fluoroquinolones such as ciprofloxacin or levofloxacin are the primary antibiotics of choice for traveller's diarrhoea.
- (b) Ampicillin or trimethoprim/ sulfamethoxazole are very effective for shigella .

- (c) Metronidazole or tinidazole are treatment of choice for giardia and Entamoeba histolytica.
 - (d) Single dose antimicrobial is as effective as three days course in treatment of traveller's diarrhoea.
 - (e) Azithromycin is the treatment of choice for Campylobacter.
 - (b) Regular use of alcohol-based hand sanitizer is better than washing hands with water and soap.
 - (c) Washing hands is effective in preventing acute diarrhoea needed low inoculum.
 - (d) Antibiotic chemoprophylaxis has moderate to good effectiveness in high-risk groups for short term use.
 - (e) Rotavirus can be prevented by a vaccine.
- 12. For prevention of acute infectious diarrhoea, all are true except:**
- (a) Counselling about prevention of acute diarrhoea is needed for traveller's diarrhoea.

Answers are on the next page

Acute Infectious Diarrhoea in adults

Diagnosis, Treatment and prevention

Answers of the Questions

1. Answer is (d) : Acute diarrheal infection is a leading cause of outpatient visits, hospitalization, and lost quality of life in both developed and developing countries. It occurs in both domestic settings and among those travelling abroad. Acute diarrhoea is defined as the passage of three or more loose or liquid stools (unformed) per 24 hours or a greater number of stools of decreased form from the normal for the individual and lasting ≤ 14 days. Persistent diarrhoea is typically defined as diarrhoea lasting between 14 and 30 days, with chronic diarrhoea generally considered as diarrheal symptoms lasting for greater than one-month **Table 1**. Although acute diarrhoea refers usually to infections, it may occur due to other noninfectious diseases like bowel ischemia, radiation injury, or inflammatory bowel disease. Also it has been reported as an adverse event of many drugs like antibiotics, nonsteroidal anti-inflammatory drugs, antineoplastic drugs and overuse of anti constipation medications.

Message: (Acute diarrhoea is the passage of an increased frequency of unformed stool of less than 2 weeks, mostly due to infectious agents but other causes can be blamed.)

2. Answer is (e): Acute infectious diarrhoea can lead to some chronic health problems like functional gastrointestinal disorders; reactive arthritis formerly known as Reiter's syndrome which has been seen in *Shigella*, *Salmonella*, *Campylobacter*, and *Yersinia* infections; Haemolytic uremic syndrome which is haemolysis and acute renal failure complicating diarrhoea cause by enterohaemorrhagic *E coli* and, less commonly, *Shigella*; and acute peripheral polyneuropathy "Guilliane Barré syndrome" that may complicate acute infectious diarrhoea due to *Campylobacter colitis*. However, chronic liver disease is not a recognized complication of acute infectious diarrhoea.

Table 1: Classification of diarrhoea according to its duration

Class	Duration of diarrhoea
Acute	Diarrhoea occur up to 14 days
Persistent	Diarrhoea between 14-30 days
Chronic	Diarrhoea of more than 30 days

Message: (Other than acute complications of acute infectious diarrhoea, some chronic health problems should be kept in mind.)

3. Answer is (c): Rota virus is the commonest cause of acute diarrhoea worldwide and it can be preventable by vaccine. Norovirus on the other hand is a major cause in epidemic acute diarrhoea. *Shigella* is a classic cause of acute bloody diarrhoea (dysentery). *Escherichia coli* is the leading cause of acute diarrhoea in developing countries, and it is the leading cause of traveller's diarrhoea, while acute diarrhoea secondary to *Campylobacter* infections is common in developed countries. In contrary to the common believe in our country, *Entamoeba histolytica* is not a cause for acute diarrhoea. It is commonly asymptomatic, if symptoms develop then it is usually subacute and in the majority the diarrhoea is bloody. *Clostridium difficile* is a major health problem especially in the elderly people but it is one of the most hospital acquired (nosocomial) rather than community acquired infections.

Message: (Viruses are the commonest cause of diarrhoea, *Entamoeba histolytica* is a cause of subacute bloody diarrhoea rather than acute watery diarrhoea.)

4. Answer is (e): Surprisingly, there are few published studies describing the overall incidence of acute diarrhoea, despite its being a common health problem worldwide. In USA, in 1998 a telephone-based survey has shown that 6 % of persons have reported an acute diarrheal attack in the last 6 weeks of the interview, leading to about 0.72 episodes per

person-year. The incidence is more in adult after age of 25 years than those below it. Pathogens are not identified in more than 50% of patients with acute diarrhoea who were admitted to hospitals based in stool culture. Traveller's diarrhoea is not a rare condition in developed country, its attack rate is estimated to be 10–40% for American citizens travel to non-candian non-European cities. faecal-oral route is the main mechanism of infection in acute infectious diarrhoea.

Message: (acute infectious diarrhoea is a major health problem and a cause to high morbidity and mortality, transmitted through faecal-oral route.)

5. Answer is (b): History taking is still a corner stone in the assessment of any patients with acute infectious diarrhoea. It can give us an important clue about the probable causative agent. Gross blood in stool is a sign of invasive pathogens or severe colitis (dysentery) and it can narrow the differential diagnosis. The most common causes of bloody diarrhoea are *Campylobacter*, Shiga toxin-producing *Escherichia coli* (including O157:H7), *Shigella*, *Yersinia*, and to lesser extent *Salmonella*. While non-bloody, watery diarrhoea is a feature of viruses and giardia. Most of the causes of acute infectious diarrhoea can present with a variable degree of abdominal pain making it difficult to predict the cause; however, it has been reported that *Vibrio cholerae* may be presented with a painless diarrhoea. Poultry is linked to infection with *Campylobacter* and *Salmonella*, eggs with *Salmonella*, Mayonnaise with *Staphylococcus*, and Seafood with *vibrio*. Development of symptoms in less than 6-12 hour of food ingestion is a clue to the presence of preformed toxin of *Staphylococcus aureus*, *Bacillus cereus*, and *Clostridium perfringens*, while all other causes need more than 24 hours. *Entamoeba histolytica* is usually presented sub acutely. Presence of fever is a clue for more invasive process like *Campylobacter*, *Shigella*, *Yersinia*, and *Salmonella* infection. Presence of vomiting indicates presence of preformed toxin secreting microorganisms like *S. aureus* and *Bacillus cereus*. Also vomiting has been reported in gastroenteritis caused by viruses.

Message: (History taking is critical for assessment of severity of diarrhoea and suspect-

ing a causative microorganism.)

6. Answer is (c): The recommendation is to do microbiological diagnosis of acute infectious diarrhoea in the following situations where the individual patient is at high risk of spreading disease to others, during known or suspected outbreaks, in cases of dysentery, moderate-to-severe disease, and symptoms lasting >7 days to guide specific antibiotic therapy. It is not recommended to do the microbiological diagnosis for every patient with acute infectious diarrhoea because most of them are self-limiting. Age over 50 or pregnancy are not a cause for doing such diagnosis.

Message: (microbiological diagnosis of the cause for acute infectious diarrhoea is not needed in very patient but limited to severe infection, dysentery, persistence of diarrhoea, or when epidemiological diagnosis is needed.)

7. Answer is (a): culture-independent molecular techniques like polymerase chain reaction (PCR) are approved for the diagnosis of the causative agent of acute diarrhoea. They are sensitive, specific, and rapid in comparison to other conventional methods like stool culture; however, it has many drawbacks like being expensive, detecting nonpathological microorganisms and inability to differentiate between viable and nonviable organism. Microscopical examination of stool has been practiced for decades mainly for the diagnosis of parasites not bacteria; however, it is laborious and time intensive, requires technical expertise, and lacks sensitivity and reproducibility. Traditional methods of diagnosis (bacterial culture, microscopy with and without special stains and immunofluorescence, and antigen testing) fail to reveal the aetiology of the majority of cases of acute diarrheal infection. Using markers like faecal leukocytes, stool lactoferrin and calprotectin can be used to discriminate between inflammatory and non-inflammatory causes of diarrhoea, but it cannot be used to guide further diagnostic studies and has been proven to be imprecise and probably unnecessary. Radiology and endoscopic evaluation are not needed in most of the cases except if a biopsy is required for distinguishing inflammatory bowel diseases from infectious diseases.

Message: (microscopical examination of stool has limited accuracy, culture with variety of stains can not diagnose the majority of causes, culture-independent molecular techniques like PCR is more sensitive and specific.)

8. Answer is (e): the practice of withholding food during acute setting of diarrhoea is inappropriate and it should be encouraged. Development of a balanced sodium-glucose solution, not the antibiotics, was one of the most significant advances in the past century. It allows optimal absorption of electrolytes and water from intestine. Availability of oral rehydration solution (ORS) has reduced infant mortality in developing countries by at least 50%. ORS does not reduce the severity of diarrhoea, and the objective of ORS therapy is not to shorten the illness. Traveller's diarrhoea in adults is usually mild and does not lead to dehydration, so symptomatic treatment is usually adequate. Balanced sodium-glucose solution is recommended over any other oral rehydration fluids especially in elderly with severe diarrhoea. Most individuals with acute diarrhoea or gastroenteritis can keep up with fluids and salt by consumption of water, juices, sports drinks, soups, and saline crackers. Popular carbonated soft drinks provide fluids and almost no sodium or potassium, while fruit juices (e.g., apple juice) provide high levels of potassium and carbohydrate, but low levels of sodium and chicken broth is heavy in sodium. Although these fluids are enough in mild diarrhoea, they are not for severe one due to being imbalanced.

Message: (Continue food intake, Balance fluid replacement is essential part of treatment of acute diarrhoea. In mild acute diarrhoea any fluid is enough, in severe acute diarrhoea balanced sodium-glucose solution is required.)

9. Answer is (b): although many reports talk about probiotics and prebiotics in treatment of acute diarrhoea, the recommendation is to use it only in cases of postantibiotic-associated illness. In general, antidiarrhoeal drugs can be used in diarrhoea of mild to moderate severity and to be avoided in severe inflammatory diarrhoea. Two groups of antidiarrhoeal agents are used in treatment of acute diarrhoea. The first is anti-secretory

which interfere with secretion of fluid. An example of this group is Bismuth subsalicylates (BSSs) which reduces the stools passed by ~40% in patients with mild to moderate secretory diarrhoea. Discolouration of tongue and stool in black is one of its side effect. The second group is antitomotility like loperamide and diphenoxylate. Loperamide is preferred than diphenoxylate because it has less central opiate effects and less atropine like effects. However, a common complaint of loperamide therapy in acute diarrhoea is post-treatment constipation. Antitomotility drugs have been associated with intestinal complications such as toxic dilatation of the colon or prolonged illness when used in bacterial inflammatory conditions; however, this association is rare and can be minimized if it is used with antibiotics.

Message: (antidiarrhoea agent can be used in severe acute diarrhoea or in traveller's diarrhoea, loperamide is preferred, probiotics can be used only in cases of postantibiotic-associated illness.)

10. Answer is (d): the most common cause of acute diarrhoea worldwide is viral and it is usually a self-limiting disease, so antimicrobial agents are not required. However, traveller's diarrhoea, acute dysentery, diarrhoea caused by *Giardia* and *Entamoeba histolytica*, diagnosis of invasive pathogens like *Salmonella typhi* and *Shigella*, or *Clostridium difficile* infection are all indications for using antimicrobials. Watery diarrhoea is usually due to infection with viruses or non-invasive organisms that antimicrobials have no role in its treatment.

Message: (Watery diarrhoea does not need antimicrobials)

11. Answer is (b): Fluoroquinolones are the drug of choice for the treatment of bacterial causes of acute diarrhoea when indicated; however, a growing evidence suggesting an increase in resistance by *Campylobacter* which are sensitive to azithromycin. Due to the emergence of resistance Ampicillin or trimethoprim/ sulfamethoxazole are not used routinely in the treatment of shigellosis. Many studies have shown that a single dose treatment is as effective as 3 days. Three-day course of antibiotic is still preferred over a single dose in severe cases with fever or dysen-

tery. Enteric infection by *Shigella dysenteriae* need 5 days treatment with antibiotics. Metronidazole or tinidazole are the treatment of choice for *Giardia* and *Entamoeba histolytica*.

Message: (Fluoroquinolones are the first choice with a single dose treatment, severe infection or dysentery need treatment for 3-5 days. In cases of resistance, azithromycin is a good substitute.)

12. Answer is (b): : medical counselling about preventive measures against acute diarrhoea is not recommended except in individuals in close contact, high risk persons like pregnant women, and people will o travel to areas of poor sanitation. Hands washing with water and soap is better in prevention of

acute infectious diarrhoea than regular use of alcohol-based hand sanitizers and both have a proven efficacy in preventing infections needed low inoculum like norovirus and shigella. Antibiotic prophylaxis has moderate to good effectiveness in prevention of acute diarrhoea in high risk people especially in travels diarrhoea but for a short-term use. Its benefit should be waited against the cost and potential emergence of resistance.

Message: (hands washing with soap and water is very effective in prevention of acute diarrhoea. Chemoprophylaxis can be helpful in high risk persons.)

Answers are based the clinical guidelines of American College of Gastroenterology 2016, and the global guidelines of the World Gastroenterology Society 2012.

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PART 3 | Medical Ethics in Clinical Practice

Medical mistakes and disclosure: an ethical standards

Huda Adnan Habib

MBChB, FICMS FM, Consultant Family Physician, Assistant Professor, Department of Family and Community Medicine / Al-Kindy College of Medicine / University of Baghdad. Iraq. E mail: huda_adnan70@yahoo.com

Health services work hard to provide safe and high quality care, but sometimes people are inadvertently harmed. Unsafe health care has been recognized as a global challenge and much has been done to understand the causes, consequences and potential solutions to this problem.¹

Medical errors are often described as human errors, it occurs when a health-care provider chooses an inappropriate method of care, improperly executes an appropriate method of care.^{2,3} These mistakes (errors) are an inevitable part of the practice of medicine and pose a significant threat to the safety of patients.⁴ Medical errors are the fifth leading cause of death in the United States and result in annual costs of up to \$29 billion, according to estimates from the Institute of Medicine.⁵

All physicians make mistakes, and most mistakes are not the result of negligence. A physician may make a mistake because of an incomplete knowledge base, an error in perception or judgment, or a lapse in attention.^{3,6} Making decisions on the basis of inaccurate or incomplete data may lead to a mistake, the environment in which physicians practice may also contribute to errors, lack of sleep, pressures to see patients in short periods of time, and distractions may all impair an individual's ability to avoid mistakes.⁷

System and process failures contribute to most medical errors in medical

practice include poor communication between multiple health care providers and inadequate labelling of drug interactions.⁴

Patient safety has always been an important principle in the practice of medicine. Non-maleficence (do no harm) an ethical and medical obligation to avoid causing harm, Harm from errors, system flaws, accidents, complications, and known risks are all consequences that must be avoided wherever possible.⁶

Disclosure of medical errors to patients and family members serves as a catalyst for litigation and thus, the establishment of appropriate moral and ethical standards cannot be ignored when implementing solutions to remedy the situation.⁴

The fact that there will always be ways to improve patient safety is the main reason that it always has been and always should be such a prominent feature of medical practice and medical ethics.⁶

Although most doctors believe that errors should be disclosed to patients when they occur, in reality, most doctors and institutions do not disclose such mishaps to patients and their families. Rather, they engage in extensive cover ups under the guise of protecting the doctor-patient relationship and not causing harm to patients. Non-disclosure of medical errors to patients and/or their families is a violation of ethical principles

and cannot ever be justified.⁸

In general, even trivial medical errors should be disclosed to patients. Any decision to withhold information about mistakes requires ethical justification. If a physician believes there is justification for withholding information about medical error from a patient, his judgment should be reviewed by another physician and possibly by an institutional ethics committee.⁷

Moral courage is therefore needed if doctors are to do the right thing when medical errors occur. This moral courage can be facilitated by institutions having policies and guidelines on disclosure of errors in place, training doctors and other hospital staff on how to disclose medical errors and providing emotional support for doctors who make mistakes in their efforts to treat patients and save lives.^{7,8}

CASE SCENARIOS

Case number 1:

An 18-month-old child presents to the clinic with a runny nose. Since she is otherwise well, the immunizations due at 18 months are administered. After she and her mother leave the clinic, you realize that the patient was in the clinic the week before and had also received immunizations then.

Q: Should you tell the parents about your mistake?

- a) No because the error is a trivial one.
- b) No because no harm is done.
- c) No because the mother will never find out.
- d) Yes because an open and honest approach to errors is most appropriate.

Case number 2:

A 3-month-old infant has been admitted to the hospital with a newly diagnosed ventricular septal defect. She is in early congestive heart failure and digoxin is indicated. After discussing the proper dose with the attending physician, you write an order for the drug. Thirty minutes later the baby vomits and then has a cardiac arrest and dies. You discover that in writing the digoxin order you misplaced the decimal point and the child got 10 times too much digoxin.

Q: What is your duty here?

- a) Inform the parents about the mistake and say you are sorry.
- b) Do not inform the parents.
- c) Do not say sorry.
- d) Let the liability insurance company handle everything, because a malpractice lawsuit may follow.

Case number 3:

A 4-year-old presents to the emergency department. She was diagnosed with pyelonephritis by her physician yesterday, treated with an intramuscular injection of antibiotic and sent home on an oral antibiotic. She is vomiting today and unable to keep the antibiotic down. As you prepare to admit her, you feel she should have been admitted yesterday.

Q: Should you tell the parents that their physician made a mistake?

- a) Yes the parents should be told.
- b) The parents should not be told.
- c) Discuss the case first with the other treating physician, then tell the parents.
- d) Report the incident to the risk manager and not the parents.

ANSWERS OF CASE SCENARIOS

Answer of the case 1 is d

Ethical formulation:

The error is a trivial one. Aside from the discomfort of the unnecessary immunization, no harm has resulted. Nonetheless, an open and honest approach to errors is most appropriate. While the parents may be angry initially about the unnecessary injection, they will appreciate your candor. On the other hand, should they discover the error and believe you have been dishonest, their loss of trust will be significant.⁹

Answer of the case 2 is a:

Ethical formulation

This unfortunate event represents a serious error with profound implications for the patient and family. You owe this family an honest explanation. They need to hear you say that you're sorry. Any attempt to hide the details of the event would be dishonest, disrespectful, and

wrong. Though a lawsuit may follow, these parents are less likely to litigate if you deal with them honestly and take responsibility for the error.⁹

Answer of the case 3 is b :

Ethical formulation

The practice of medicine is not an exact science. Frequently physicians will disagree about what constitutes the most appropriate management in a given case. Often these are legitimate disagreements with more than one acceptable course of action. Simply because you would have managed a patient differently does not mean the other physician made a mistake. In this case, you may wish to discuss the case with the other physician and explain why you manage children with pyelonephritis differently. However, in situations where standard practice varies, the parents should not be told that a mistake has been made.^{7,9}

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