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Non-Operative Treatment of Perforated Peptic Ulcer

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The treatment of perforated peptic ulcer has been fairly well standardized. Most clinicians favour early operative treatment (suture only). However, there appears to be a place also for non-operative therapy: Beahrs¹, Berne², Hislop⁴, Seeley⁵, Stead⁶, F. W. Taylor⁷, H. Taylor⁸. From the point of view of mortality and morbidity a conservative regime will give results comparable to those obtained from simple suture of the perforation.

Author	No. of Cases	Years	Treatment	Mortality	Morbidity (days in hospital)
Beahrs	114	1941-1951	surgical	2.6%	16.9
DeBaKey	15,340	1940	surgical	23.4%	?
Hislop et al	104	1947-1952	surgical	8.6%	14.
Hislop et al	104	1947-1952	non-surgical	8.6%	?
Seeley	110	1945-1951	non-surgical	4.5%	14.
This Series	16	1950 and 1952-1958	non-surgical	6%*	18.

*See Figure 2, No. 10.

FIG. 1

Figure 2 is a summary of the pertinent facts of this series. The only death was Case 10, moribund on admission, improved for a time on conservative regime aided by heroic measures to combat shock. At 3 days seemed to be losing ground. At operation found to have re-perforated through omental patch, which had covered the original perforation. Post operatively did fairly well for 28 days, then had massive ulcer hemorrhage which persisted for next 24 hours. Operated, subtotal gastrectomy; satisfactory but slow recovery. Developed small intestine obstruction at 44th. day (71 days after admission) and died post operatively following lysis of adhesions.

Case 16 required surgery for intestinal obstruction (lysis of adhesions). Did well. Discharged 40 days after admission.

The regime followed was:

- (1) Establish diagnosis.
- (2) Insert large Levine tube (18 F. or 20 F.) **Continuous Suction.** This is important. Intermittent, careless suction is of little use.
- (3) Broad spectrum antibiotics.
- (4) Analgesics (narcotics—morphine).
- (5) Intramuscular Probanthine to reduce gastric secretions.
- (6) Adequate parenteral therapy; blood; electrolytes; fluids.

Suction was continued until bowel sounds were audible by stethoscope, then oral feedings as in post-gastrectomy regime.

	Case	Age	Hours Perforated	WBC	X-Ray Air Under Diaphragm	Treatment	Days in Hosp.	Future Course
1.	50-	40	10 hours	10,400	Yes	Conservative	9	Unknown
2.	50-	26	16 hours	21,000	Yes	Conservative	10	Unknown
3.	52-3824	50	12 hours	14,200	No.	Conservative	4 days,	refused further treatment. Future course unknown.
4.	53-2344	28	36 hours	16,000	Yes	Conservative	13	Unknown
5.	53-3259	41	10 hours	12,300	Yes	Conservative	20	Gastrectomy, 1958
6.	53-815	45	8 hours	14,200	Yes	Conservative	39	Gastrectomy, 1955
7.	54-2364	41	18 hours	7,880	Yes	Conservative	22	Unknown
8.	54-2206	48	7 hours	8,000	Yes	Conservative	14	Gastrectomy, 1955
9.	55-2381	31	10 hours	12,500	Yes	Conservative	9	Unknown
10.	55-2879	48	4 hours	1,700	Yes	Conservative	27	*
11.	56-3083	65	17 hours	14,500	Yes	Conservative	15	Unknown
12.	57-3841	72	10 hours	18,700	Yes	Conservative	22	Gastrectomy for pyloric stenosis at 22 days.
13.	58-2732	59	20 hours	15,500	Yes	Conservative	11	Unknown
14.	58-2743	28	4 hours	14,700	Yes	Conservative	12	Well
15.	58-3346	50	5 hours	15,600	Yes	Conservative	17	Well
16.	58-1462	45	10 hours	12,000	Yes	Conservative	40	Laparotomy for G.I. obstruction due to adhesions

*Operated upon 3 days post admission, then hemorrhaged on 25th. day. Gastrectomy on 27th. day. G.I. obstruction on 70th. day. Died 71st day (after laparotomy and lysis of adhesions.)

FIG. 2

Summary and Conclusions:

A small series has been presented to show that conservative management of perforated peptic ulcer can give acceptable results. The diagnosis must be firm and the care adequate.

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The Oxytocics in Obstetrics; a Clinical Evaluation of Synthetic Oxytocin (Syntocinon), Nejdlat Mulla, M.D., Youngstown, O. *Journal of International College of Surgeons*, 31: 174-180, (Feb.) 1959.

Syntocinon was employed in 210 cases for the following indications: uterine irritability, ejection of milk, induction of labor, and postpartum disturbances. Dosage varied with the indications for use.

A slight, fleeting elevation in blood pressure was noted in two cases. Loss of blood was minimal in most of the cases. Five patients exhibited soft uteri and some bleeding. This was controlled by administration of 1 cc. of intramuscular Methergine, 35 to 40 minutes after intravenous injection of Syntocinon.

Regardless of the route of administration of Syntocinon and the anesthetic employed, Syntocinon proved to be a safe and effective oxytocic.

Bullet Wound of the Abdomen With Disruption of the Ureter

Case History

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With Nova Scotia's hunting season, especially deer hunting, becoming increasingly popular more and more victims of hunting accidents will undoubtedly find their way to hospitals outside the capital. Most of these accidents are bullet wounds and a great proportion of them bullet wounds of the abdomen.

One of the three hunting accident patients admitted to St. Martha's Hospital in Antigonish in 1958 was the following bullet wound of the abdomen which included disruption of the ureter. This latter complication is relatively rare. Everidge & Barnes (1946) reported only four cases seen at a base hospital during the last war. Badenoch states that of 10,000 casualties evacuated by air from Normandy and Belgium in 1944-45 and who passed through a hospital to which he was attached only one case of disruption of the ureter by gunshot wounds was seen.

J. A., a 17 year old white male, was admitted to hospital on the first day of the hunting season, 1958, with a bullet wound of the abdomen. The wound was caused by a 22-caliber bullet fired at relatively close range. It had entered to the left of the mid-line above the umbilicus and the wound of exit was to the left of the third lumbar vertebra. The patient was brought to the hospital in a conscious state and, despite moderate pallor, showed no signs of shock. B. P. was 112/70 and the pulse 74. On physical examination the entrance and exit wounds were as noted previously and were bleeding moderately. Some guarding was present in the rectus muscle on the left with slight local rebound tenderness in the left upper quadrant. No masses were palpable. Liver dullness was equivocal. A flat plate of the abdomen with lateral decubitus position showed no opaque foreign bodies and no evidence of free gas in the peritoneal cavity. Hemoglobin done shortly after admission was 14.2 gms. and the urinalysis was negative.

Approximately 2½ hours after admission the patient was taken to the operating room where a laparotomy was performed through a right paramedian incision. The bullet had entered the anterior wall of the stomach, passed out through the posterior wall and, traversing the lesser sac, missed the pancreas by a fraction to tear a portion of the jejunum at the ligament of Treitz. From there its tract was lost as it disappeared into a moderate sized retroperitoneal hematoma and on out the back. No major blood vessels were involved.

In the repair each of the perforations or tears was debrided and enlarged and closed in two layers—a mucosal layer with continuous absorbable suture and a serosal layer with interrupted nonabsorbable suture. The areas involved were drained.

The post-operative course was uneventful until the fifteenth post-operative day. At that time the patient was up and about and began complaining of left lower quadrant pain. On examination a firm mass was felt filling the

whole left lower portion of the abdomen. It was moderately tender. The temperature was normal. Hemoglobin was 12 gms. and urinalysis showed 8-10 WBC/HPF but no red cells microscopically. An IVP done the following day showed a hydronephrosis on the left side. This was followed by a retrograde pyelogram which confirmed the suspicion of extravasation of urine outside the renal pelvis. On this day, the 18th. post-operative day, the urine for the first time showed red blood cells under the microscope.

On the 19th. day after the initial accident, under spinal anaesthesia, a left lumbar approach was used and the left kidney explored. The palpable mass was found to be urine extravasated from the ureter approximately 8 mm. below the uretero-pelvic junction. The whole anterior surface of the ureter was missing for a distance of approximately one cm. (2/3 of the circumference) with a segment of the posterior wall still intact. A plastic repair was performed over a pyelostomy tube. A secondary hemorrhage occurred on the third post-operative day, plugging the pyelostomy tube and requiring its removal. The patency and continuity of the ureter was continued with large ureteral catheters introduced by cystoscopy. Three such changes were necessary to continue the splinting of the ureter and drainage of the kidney for eighteen days.

Following the continued catheterization of the ureter a persistent infection developed, which resisted a gamut of antibiotics. On the 55th hospital day the patient was discharged and placed on a week's therapy of double dosage of Ilosone. An urinalysis done at an office visit a week later showed the urine to be negative microscopically and it has remained so subsequently. An IVP performed four weeks after discharge demonstrated a functioning left kidney with slight to moderate stenosis at the uretero-pelvic junction. The ureter was well demonstrated and appeared normal. The patient continues his love for hunting but insists he intends to sleep through the first day of each hunting season hereafter.

Although this is a short case history of a Nova Scotia hunting accident, a few brief important points are mentionable.

1. All abdominal, penetrating wounds should be explored as surgical emergencies. Little is gained by time consuming diagnostic work up.
2. Penetrating wounds of the stomach and small bowel should be closed in two layers at least. Simple purse string suturing leaves open the possibility of later haemorrhage from the mucosa.
3. Kidney and ureteral damage by a penetrating missile may not be evident immediately. Regardless of a negative urine, an IVP can give immediate and definite proof of damage, if such damage is a possibility.

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The "Flat Plate of the Abdomen"

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Various opinions are held on the value or otherwise of a radiographic examination of the abdomen in the patient suspected to be suffering from an abdominal catastrophe, but as in other fields of radiology, there is no doubt that the potential benefits to be obtained from such an examination are directly proportional to the quality of the radiographs and the skill with which they are interpreted. In this short presentation it is hoped that it will be possible to help the more isolated Practitioner to obtain satisfactory films and to review some of the salient diagnostic radiographic features in certain acute abdominal emergencies.

It is high time that the term "flat plate of the abdomen" was discarded: we no longer use plates and the patient should not merely be examined in the "flat," or supine, position. Erect and supine views of the abdomen should be requested, except in cases in which the condition of the patient is such that he cannot stand: in these instances a lateral decubitus view may be taken. In this latter view the patient lies on one side, preferably the left; the film is placed behind the patient's back and an exposure is made with a horizontal X-ray beam. To put it another way, an A.P. view of the abdomen is taken with the patient lying on the left side. The patient should be placed in either the erect or the lateral decubitus position for several minutes before the exposure is made. In the supine view the film should include the bladder area and in the erect view both diaphragms must be seen. It should be remembered that the erect view will require between 5 and 10 KV more penetration than the supine view, depending on the size of the patient, if radiographs of comparable density in the two positions are to be obtained. It is possible to produce satisfactory radiographs of the abdomen with a portable X-ray machine provided the patient is not obese and that a competent operator conducts the examination. It is very desirable that the X-ray investigation should be done before the administration of any enema.

One of the most important parts of the training of a Radiologist is teaching him how to examine a film in a systematic way so that none of the information which may be available in the films is overlooked; I make no apology, therefore, in devoting a little space to pointing out what should be looked for when attempting to interpret films of the abdomen.

1. The diaphragms: their level and contour; gas shadows beneath the diaphragms.
2. The bones of the lower thoracic cage, the spine, the pelvis and the femoral heads.
3. Soft tissues: the liver, spleen, kidneys, psoas muscles and bladder.
4. Intestinal gas and the amount and distribution of stool in the colon.
5. Opacities: urinary, biliary and pancreatic calculi; calcified lesions in liver, spleen and suprarenals; calcified mesenteric glands; foreign bodies.

All of the above structures should be examined or searched for before any diagnostic conclusions are reached. It is particularly important not to be

unduly influenced by the clinical findings before the films have been carefully scrutinized; all the positive radiographic evidence should be collected and a final conclusion reached by combining the clinical and radiographic evidence. This helps to prevent overlooking such things as a perforation of the bowel complicating obstruction: the dilated bowel with its fluid levels may be very striking in the radiograph but the trace of gas beneath the right diaphragm may be missed unless consciously sought.

Now that we have got satisfactory radiographs and are in a position to examine them thoroughly and systematically we can consider some of the positive findings which we may expect in the more common intra-abdominal emergencies.

Perforation of a hollow viscus in the gastro-intestinal tract usually, but not invariably, results in the escape of some gas into the peritoneal cavity. This gas tends to rise to the uppermost part of the abdomen and in an erect view must be sought beneath the diaphragms. Care must be taken to distinguish a small gastric air bubble from free gas in the peritoneal cavity: it is rare to find free gas below the left diaphragm with no gas below the right. In the event of uncertainty a left lateral decubitus view will usually solve the problem because free gas tends to collect between the right margin of the liver and the adjacent abdominal wall in this position. With patients in whom it is not possible to take an erect view we must recognize the differences of free gas between the liver and the abdominal wall from the layer of extra-peritoneal fat which is present in some people. The differentiation is usually easy as the extra-peritoneal fat is seen to follow the dip down of the patient's flank and is also present on the dependent side of the abdomen. It must be remembered that quite a large perforation may result in the presence of only a small quantity of free gas and a careful search for this may be necessary. While our attention is directed to the upper abdomen and the diaphragms we must exclude any evidence of basal pleurisy or pneumonia and we should not hesitate to order a radiograph of the chest if we are in any doubt. Even today, patients with basal pneumonia are occasionally submitted to laparotomy.

Undoubtedly our problems would be simplified were all biliary and urinary calculi opaque! The characteristic appearances of the laminated or of the faceted gall stone are familiar to us all. A point to bear in mind, however, is the variable position of the gall bladder and our search for opaque stones must cover not only the right hypochondrium but the whole of the right side of the abdomen and indeed should include the lumbar spine which can occasionally mask the presence of an opaque calculus.

It is sometimes difficult to distinguish a small gall-stone from a renal calculus and in such cases a lateral view of the abdomen will help: the gall bladder is an anterior and the kidney a posterior structure. An intravenous pyelogram may be indicated in some cases. Cholecystography, even by the intravenous method, may be less helpful because of the poor concentrating power of a diseased gall bladder. Calcified mesenteric glands may cause some difficulty in differential diagnosis, but these glands usually lie along the line of the attachment of the root of the mesentery and are often of a more homogeneous density than the gall stone. The radiolucent biliary or urinary calculus cannot be identified without the aid of contrast media: the presence of such calculi cannot therefore be excluded by simple radiographs.

In the normal ambulant adult there is usually very little gas present in the small bowel; more gas may be present in the small bowel of the bedridden

patient and large quantities may be seen in patients who are suffering acute pain and who have been lying down for a few hours. Patients with renal colic are often distended with gas and the phenomenon is attributed to air swallowing associated with the severe pain. The presence of considerable quantities of intestinal gas is therefore not by itself diagnostic of bowel paralysis or obstruction. Fluid levels may be seen in the stomach and duodenal cap of normal individuals and may also be present in asymptomatic diverticula of the small and large bowel. Apart from the stomach, the fluid levels are small in size and few in number and are not associated with loops of bowel which are distended with gas. With these normal appearances in mind we are able to weigh the significance of the intestinal gas shadows which may be present. Before making a diagnosis of obstruction or ileus we should be satisfied that excess gas and excess fluid levels are both present. Gas without fluid levels may be due to aerophagy: fluid levels without an excess of gas may be seen in cases of enteritis. Distended loops of bowel containing fluid levels are pathological. Differentiation between paralytic ileus and obstruction is helped by the history and clinical findings. The time interval between the onset of the symptoms and the X-ray examination is important to know. In the early stages of an acute obstruction the bowel distal to the lesion may be normal in appearance: some time must elapse before this portion of the bowel is emptied of its contents, (gas may remain in the rectum hours after the remainder of the large bowel has deflated). It is not necessary to wait until the bowel distal to an obstruction is empty before making the diagnosis.

The experienced observer can often make a shrewd estimate of the level of an obstruction by noting the appearances of the distended loops of bowel. Jejunum shows fine transverse markings due to the circular folds of mucosa; ileum shows a plain tube appearance; colon has a lobulated margin and shows transverse markings which, unlike jejunum, do not extend across the full diameter of the bowel. By noting the number of dilated loops and the type of bowel pattern it may be possible to deduce the level of the lesion. Incidentally, it should be remembered that distension of small bowel secondary to large bowel obstruction occurs late in the illness, probably because of the non-return action of the ileo-caecal valve. Large quantities of gas may be present in the colon of normal individuals. Incomplete evacuation of an enema will leave residual fluid levels in the colon. It is therefore preferable to delay administering an enema until after the X-ray examination is completed: if this is not done, full allowance must be made for possible errors in diagnosis and the task of interpretation is made very much more difficult.

Mention may be made at this point of the appearances which may accompany mesenteric occlusion of the small bowel. Such a catastrophe results in paralysis of the affected segment and also frequently leads to oedema of the wall of the bowel. In cases in which there are adjacent loops of bowel outlined with gas it may be noted that the interval between the adjacent loops is greater than in cases of simple obstruction; this is because of the thickening of the bowel wall by oedema. This sign is not invariably present but may give assistance in reaching a diagnosis in certain instances.

Volvulus of the large bowel, commonly at the sigmoid level, usually gives a characteristic appearance. Two large segments of distended bowel overlie the left iliac fossa and extend upwards and medially for a variable distance across the abdomen; a fluid level, which may be of considerable size, is seen to be present in each of the two segments; the bowel proximal to the volvulus is

often remarkably normal because the volvulus may act as a non-return valve, permitting gas to enter, but not to leave, the closed loops. The diagnosis is often more difficult to make than the description of the findings would imply because of the vast size to which the closed segments of bowel may be distended; in cases of doubt there should be no hesitation in referring the patient for a barium enema: the characteristic "sickle sign" of the barium at the narrowed twist of the distal loop is diagnostic. The enema should only be attempted by a Radiologist in a center where there are facilities for immediate surgical intervention. Decompression methods by colostomy or intubation do not apply in this condition and, as the volvulus interferes with the blood supply of the bowel, gangrene is an early complication.

A sign which may be present in cases of torsion of an ovarian cyst is displacement of bowel shadows by the cyst. Unless the cyst is a dermoid containing radio-opaque structures, it will have no contrast with surrounding soft tissue structures unless these contain air. Owing to the associated pain, there may be aerophagy and it is not uncommon to find gas distributed through the small and large bowel. If the cyst is large enough to displace loops of bowel it will be revealed by an area of the abdomen which is free of all gas shadows. To prevent confusion the bladder should be empty before the X-ray examination is made and pregnancy must, of course, be discounted when present.

Views of the abdomen may be very helpful when atresia or obstruction is suspected in the new born baby. In the normal baby gas is present throughout both small and large bowel between six and twenty-four hours after birth and distension above an area of obstruction is of rapid onset. The presence of obstruction in babies is usually easy to detect, but experience is necessary to differentiate between the underlying causes such as atresia, volvulus, meconium ileus etc., and it is beyond the scope of this presentation to do more than indicate the value of radiology in such cases.

To summarize, an attempt has been made to indicate the views required and the procedure to be followed to investigate acute abdominal emergencies without using contrast media. The salient diagnostic radiological features of perforation, biliary and urinary calculi, obstruction, mesenteric occlusion, volvulus, twisted ovarian cyst, and neo-natal obstruction have been mentioned. It will be evident to Radiologists and Surgeons that the scope of this presentation is limited in extent, but it is hoped that it will be of some assistance to the more isolated medical practitioner who may be required to make a diagnosis without the immediate assistance of a Radiologist.

The Labile Electrocardiograph In Hypothyroidism

J. E. MacDonell, M.D.

Electrocardiographic abnormalities in the hypothyroid states have been extensively studied and consist in sinus bradycardia; low amplitude of both auricular and ventricular complexes; flat or inverted T-waves in any of the leads; and in prolongations of the Q-T interval.

This essay is particularly concerned with changes in the praecordial electrocardiograph in hypothyroidism; changes which may mimic those of the coronary insufficiency pattern.

The cause of these abnormal patterns is not apparent. There is no certain evidence that tissue changes are responsible (whether "anoxic" or "myxoedematous"); and the presence of pericardial effusion is neither necessary nor the rule.

Case 1: A female, 59, single and a school-teacher, presented with frank clinical myxoedema. There were no symptoms nor signs of cardiovascular disease and X-ray examination of the heart and lungs was negative. The initial B.M.R. was -27; the serum cholesterol 725 mgm., while the praecordial electrocardiograph showed T-wave inversions of all six leads. QRS and T-wave amplitudes were decreased but the S-T segments were normal.

Six weeks later there was dramatic clinical improvement; the B.M.R. was normal; serum cholesterol was still 494 mgm; and the praecordial electrocardiograph was normal. Subsequently the cholesterol has reached and maintained a normal level and the praecordial tracing has remained normal. The patient has continued to be well on a variable intake of desiccated thyroid between gr. $1\frac{1}{2}$ and 2.

Comment: This case did not pose too difficult a problem because of the clear-cut clinical picture. Nevertheless the changes in the praecordial leads caused sufficient concern to dictate a very small initial dose of thyroid; and a cautious increase in dosage. The rapid return of the electrocardiographic pattern to normal would seem to confirm the initial impression that the original abnormalities were not due to coronary artery disease.

Case 2: A female, 53, para. 5 and a housewife, presented as a chronic anxiety state. She had been told that she had heart trouble. For several years she had been experiencing "an uncomfortable sensation" in the chest, more apical than sternal, and radiating down the lateral aspect of the left arm. There was no evidence of myxoedema nor any abnormality of the cardiovascular system on examination. The pulse was 50 and since a slow heart rate was a familial tendency, this was discounted; it was not discounted by a surgeon who saw her in consultation (on a minor surgical condition) and the B.M.R. was -24 with a serum cholesterol of 326 mgm. X-ray examination of heart and lungs was negative. The electrocardiograph showed T-wave inversions in leads V2, V3 and V4.

Six weeks later both B.M.R. and cholesterol were within normal limits and the praecordial electrocardiograph was normal. It has remained so and the maintenance dose of desiccated thyroid has been approximately gr. 3.

Comment: This case presented as one suggestive of coronary artery disease; the reversal of praecordial T-wave inversions with thyroid medication is felt to rule against this diagnosis. Treatment has relieved the fatigue and the chest pain disappeared, not with thyroid therapy, but immediately on being informed that there was no firm evidence of heart disease. She continues to suffer from chronic anxiety.

Case 3: A female, 49, para 3 and a housewife, presented as a chronic anxiety state. She had numerous complaints and one of these was of "dull pain" over the lower sternum and "a tired feeling in the arms whenever I get the pain." Clinical and radiological examination of the cardiovascular system was negative. Fatigue was the sole symptom prompting estimation of the B.M.R., which was -24 with a serum cholesterol of 310 mgm. The praecordial electrocardiograph showed S-T depressions (of slight degree) and T-wave inversions in leads V2, V3 and V4.

Eight weeks later patient had shown remarkable clinical improvement on minimal thyroid dosage of gr. $\frac{1}{2}$ daily when she was admitted to hospital as an emergency, with clinical shock and severe lower sternal pain radiating to the left arm. Examination revealed a rapid pulse (100) but a normal B.P. and considerable epigastric tenderness. The electrocardiograph was completely normal and the ultimate diagnosis was of acute penetrating duodenal ulcer (an ulcer was demonstrated by X-ray) with pancreatitis. She made a good recovery but has continued to demonstrate chronic anxiety. In broad terms, the electrocardiograph is normal when she is taking thyroid and shows the praecordial T-wave inversion when she is not. Medication has been intermittent because of a propensity to bouts of paroxysmal auricular fibrillation seemingly precipitated by minute amounts of dessicated thyroid.

Comment: This case showed clinical symptoms suggestive of angina pectoris and had one episode which closely mimicked myocardial infarction. The praecordial electrocardiographic pattern, very like that of coronary insufficiency, returned to normal on very small doses of thyroid and, during the acute episode so strongly suggestive of acute infarction, (which occurred during a period of thyroid therapy) was completely normal. The abnormal pattern continues to appear when the patient is not taking thyroid. She continues to suffer from all of the original complaints.

Conclusion: The cases described are felt to have had abnormalities in the praecordial electrocardiograph due to hypothyroidism; and although the changes are suggestive of ischaemic patterns, the response to thyroid medication (which would be expected to aggravate the ischaemic heart) leaves no firm electrocardiographic evidence for a diagnosis of coronary artery disease.

There is an adage: "If a woman is under 60 and has a myocardial infarction, look for diabetes." On the evidence of the cases cited one is tempted to say: "If a woman is under 60 and seems to have coronary artery disease, look for hypothyroidism." The patients cited were seen initially 7, 6 and 3 years ago; none has yet developed a myocardial infarction. In spite of this, one remembers the hypercholesterolemia of hypothyroidism and the tendency to atherosclerosis (particularly in frank myxoedema); and one hopes that since thyroid medication does reduce serum cholesterol levels, early recognition and treatment of mild hypothyroidism would result in a prevention of atherosclerosis; and perhaps in a prevention of coronary artery atherosclerosis.

A Case of Renal Failure

Carmen N. MacIntosh, M.D.

The following case is presented not because of anything new or unusual, but because it serves as a review of many of the principles of treatment of renal failure.

This thirty-two year old male was transferred to St. Martha's Hospital on April 18th, 1957 with a long history of hospitalization and illness, but this present attack was more severe and was not responding to treatment. In 1947 while working in the woods, he was struck by a falling tree, and immediately became paralysed from the waist down. He had fracture dislocations of the 10th, 11th and 12th thoracic vertebrae and laminectomy was performed. He was then sent to the Paraplegic Center at Queen Mary Road Hospital in Montreal in an attempt to rehabilitate him. While there he developed both right and left kidney stones and it was necessary to remove the left kidney. From that time on he had an indwelling Foley catheter and repeated urinary tract infections. At this time he also developed a gastric ulcer and a gastrectomy was performed. In 1950 he had an operation for a Meckels Diverticulum. When admitted here he was in a very advanced state of renal failure. His face was puffy to the point that his eyes were barely discernible. From the waist down he was one oedematous mass involving lower back, hips, scrotum and penis, thighs and entire lower extremities. He had a catheter in place but this was draining only the odd drop of thick red urine. The lower half of his body was covered by numerous pressure sores, especially on the buttocks and heels. He was in a semiconscious state, was noisy, uncooperative, vomited continuously, had some twitching of face and extremities, and frequently took definite convulsive seizures with typical carpo-pedal spasm. Laboratory findings were as follows:

Urea Nitrogen 104, CO₂ Combining Power 16%.

Serum Potassium 5.3 m.Eq/L, Serum Calcium 5.4 mgs.

Serum Sodium 154 m.Eq/L

W.B.C. 9,900, Hb. 6.7 gms.

Urine Alb + + + +

A nasal polyethylene catheter was inserted and through this he was fed 1000 c.c. of the following mixture each 24 hours.

Dextrose 400 gms.

Peanut Oil 100 gms.

Acacia—Sufficient to make an emulsion and water to 1000 c.c.

He was put on multivitamins and antibiotics, and Paraldehyde was used as a sedative to control extreme restlessness.

From the time of his admission this man required almost continuous supervision in order to balance his electrolytes, keep him nourished, and correct his anaemia, without adding to his oedema.

Calcium Gluconate was administered intravenously in 10 c.c. doses t.i.d. until he was able to take Calcium Lactate Tabs grs. x t.i.d. orally. Basaljel was given in doses of 30 c.c. t.i.d. and his acidosis was corrected by the daily administration of 1/6 M. Sodium Lactate. An attempt was made to correct the anaemia by the repeated use of packed cells. By April 26th it was possible to remove the nasal tube, but it was still necessary to give parenteral Sodium Lactate, Vitamin K, and carbohydrate feedings and medication. At this

time his intake was 2770 c.c. and his output was 1035 c.c. By May 8th his oedema had subsided, he was comfortable, was not twitching and was eating well. His urine had a Sp. Gr. of 1.012, Protein +. Occasional W.B.C., and 1 to 2 R.B. cells per h.p.f. . Serum Potassium 4.5 m.Eq/L Serum Sodium 138 m. Eq/L, Urea Nitrogen 13 mgms., CO₂ Combining Power 47%.

Unfortunately at a later date this man's condition again deteriorated, he developed an acute pericarditis, and died.

It is not possible to review all the literature on the subject in such a short article, but a few observations based on this case may be useful.

1. The symptoms in Renal Failure due to blockage or kidney destruction are said to be manifestations of acid base and allied disorders due to products of protein catabolism which are returned to the blood stream. Another detrimental factor is hyperkalaemia which is one of the chief causes of death in these patients, the other being pulmonary oedema because of too vigorous treatment by the administration of excessive quantities of fluids, and also because of the possible toxic effect of Sodium on the myocardium of the anuric patient whose cells are depleted of Potassium.

2. The acidosis is due to the accumulation of sulfates, phosphates and organic acids resulting from cellular breakdown. Protein catabolism should be reduced to a minimum by the administration of a carbohydrate-fat diet. This diet cannot spare all protein breakdown but it can reduce it. Since protein also contains Potassium, this diet also helps prevent hyperkalaemia.

3. The acidosis should be corrected by the administration of 1/6 M. Sodium Lactate or Sodium Bicarbonate.

4. Should Hyperkalaemia occur i.e. when the plasma potassium level is over 5.5 m Eq/L, therapy in the form of cation exchange resins should be used either orally or by enema.

5. The total fluid intake must be carefully controlled. In the absence of fever, vomiting, or diarrhoea, a daily fluid intake of 500-700 c.c. is adequate. Added allowances must be made for fluids lost by these other means.

6. Because of the failure to excrete phosphates, a compensatory reduction in calcium occurs. However, although the total calcium is low, the ionized calcium may not be down much, because acidosis tends to increase the ionized calcium. In most cases of uraemia the muscular twitching does not respond to Calcium and is not thought to be due to a reduced calcium concentration in the blood. However, in this case I think that there was a true tetany because of the typical carpo-pedal spasms, and the relief of symptoms by the administration of Calcium Gluconate and Calcium Lactate.

7. There is no evidence that a high non protein nitrogen i.e. accumulation of blood urea nitrogen, creatinine, uric acid, creatine, and amino acids is of any great significance. It is felt that these substances do not materially alter the metabolism of the patient, and that therefore no particular remedial measures are indicated.

8. Almost all anuric patients develop hyponatraemia. This is not due to loss of sodium from the organism, but is due to a shift of the sodium ion from the extracellular fluid, and it is felt that it replaces the intracellular potassium lost in anuric patients. This low serum sodium is not corrected by the administration of sodium solutions, in fact such administration seems to enhance the shift into the cells.

9. Antibiotics and vitamins should be used where indicated. An attempt should be made to correct the anaemia by the use of packed cells if

the patients clinical condition indicates that it may be contributing to the severity of his illness.

10. Fibrinous Pericarditis is a frequent terminal event.

11. In spite of adequate, careful treatment, patients suffering from renal failure will frequently die. This may be a result of the initial causative factor or of very severe renal damage. At times, although the diet and therapy have been those generally advocated, the patients may become dull, stuporous and pass into a coma. This may occur when the plasma electrolyte levels are almost within normal limits, and some observers are of the opinion that this coma and subsequent death are due to the accumulation of catabolic end products as yet unknown, and have reported life saving results with the use of the artificial kidney and peritoneal dialyses. In other cases, pulmonary oedema will develop although there has been meticulous replacement of water only in the quantity that is lost. In these instances digitalis is of no value and phlebotomy would seem to be the more rational form of therapy, but is only rarely helpful.

A great deal more is found in the literature on this subject of renal failure, but I have attempted to present only a summary of the more practical points which are applicable in considering this case.

Demonstration of the Mouth-To-Mouth Artificial Respiration to the Public

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During the past several years much research took place in the United States into the various methods of artificial respiration, with particular reference to the "Expired Air Inflation" later to become known as "Mouth-to-Mouth Resuscitation."

Several Panel discussions took place, attended by eminent authorities in the field of artificial respiration. As a result of one such Panel Discussion organized under the aegis of the National Academy of Sciences, (National Research Council) a report was submitted in March 1957 to The American National Red Cross recommending mouth-to-mouth resuscitation as the most effective method of artificial respiration in infants and children.

In May 1958, The Council of Medical Physics of American Medical Association authorized the publication of a symposium on "The Mouth-to-Mouth Resuscitation" based on the reports submitted by four groups of investigators in the field of artificial respiration. The value of the method, as compared to manual push-pull techniques of Sylvester or Holger—Nielsen was proved by conducting actual resuscitations of paralyzed (curarized) volunteers and obtaining vital measurements of alveolar and blood concentrations of oxygen and carbon dioxide and ventilatory efficiency of expired-air inflation.¹

Data obtained in those controlled experiments confirmed the theoretical calculations that mild hyperventilation on the part of the rescuer (1000 ml 12-20 times/min.) will effect normal gas exchange in the adult "victim." Tidal volumes greater than 1500 ml. could be moved in all subjects with the mouth-to-mouth technique, while Holger—Nielsen and Sylvester methods did not move more than dead-space air in 50 per cent of victims whose tracheae were not intubated.

Problem of upper airway obstruction in comatose victims has received the closest attention. The pharynx of these victims becomes obstructed when the head is flexed in supine as well as in prone position if the jaw remains unsupported. In some cases even drawing the jaw forward is insufficient. To maintain a free airway an artificial oropharyngeal airway has to be inserted in order to ensure proper ventilation. It is obvious that one rescuer could not do both things, i.e., expand the thoracic cage by pulling on the latter through the muscular attachments of the arms and secure clear airway at the same time.

A further refinement of the mouth-to-mouth technique is the S-shaped oropharyngeal airway developed by Peter Safar of Baltimore.² This piece of apparatus, made by fusing together of two conventional oropharyngeal airways, while not indispensable for effective resuscitation, facilitates the maintenance of the clear airway and at the same time makes the procedure more acceptable to the rescuer on esthetic grounds.

It would seem that the following are the main advantages of the Mouth-to-Mouth Resuscitation:

1. Adequate pulmonary ventilation with or without artificial airway,

able to overcome the initial hypoxia and hypercapnia and to prevent their recurrence.

2. Constant control over victims airway on the breath-to-breath basis during the resuscitation.
3. Energy expenditure of the mouth-to-mouth breathing is less than that of manual methods.
4. Mouth-to-Mouth breathing can be performed without any equipment anywhere, anytime.

Impressed by the undeniable simplicity of the method and its reported effectiveness and at the same time prompted by the realization of existing need for an easy-to-learn, easy-to-apply method of artificial respiration, the Medical Staff of this Hospital approved that a series of demonstrations of mouth-to-mouth resuscitation be arranged for the benefit of Medical and Nursing Staff and a separate demonstration for outside public.

After preliminary "trials," three such demonstrations were organized in the months of June and July, 1958, using healthy, anaesthetised volunteers as "victims." The third demonstration was attended by the members of the Town Police, Town Fire Dept., Electric Power linemen, Sport supervisors and other interested persons.³

Below is the description of mouth-to-mouth resuscitation of a paralyzed (curarized) "victim" as performed during such a demonstration:

The "victim" was resting on the recovery-room carriage in supine position. When the respirations ceased the rescuer, standing on the left side of the "victim's" head (right side could equally well be used), grasped the lower jaw of the "victim" between the thumb (inside the mouth) and the index finger of his left hand, and lifted the jaw upward. This, the most important single step in maintaining a free airway, was allowed to be examined by the members of the audience at close quarters and some were allowed to practice the hold on the "victim." The thumb and the index finger of the other hand clumped off the "victim's" nose. The rescuer then placed his mouth over the "victim's" mouth making a relatively leakproof seal. He then breathed with a short, smooth exhalation until "victim's" chest began to rise and he felt the resistance of the expanded lungs and thorax. The demonstrator then removed his mouth, and allowed the exhalation to take place. The cycle was repeated approximately 16 times.

A demonstration would last 5 to 10 minutes from the start of apnoea to resumption of spontaneous effective respiration. The "victim's" good colour and little change in her pulse and blood pressure during the artificial respiration were pointed to the audience. The S-shaped airway was not yet available at the time these demonstrations took place.⁴

During the ensuing discussion the following points concerning the technique were brought up:

1. In infants and small children the rescuer places his mouth over the mouth and nose of the victim, allowing the free hand to exert a slight pressure over the victim's epigastrium to prevent the distention of the stomach.
2. With S-shaped airway in the victim's mouth the part of the airway which remains outside serves as a mouthpiece for rescuer. Standing this time behind the victim's head, he grasps the angles of the mandible with both hands, and pulls forcibly upwards. The nostrils are closed with operator's thenar eminences.

3. The importance of starting resuscitation without delay was stressed.
4. The physiological facts that dead space air is little different from the surrounding atmosphere in its composition and that this is the first to reach the victims lungs following the inflation; that not all oxygen is extracted from the alveolar air during the respiratory cycle and that, with hyperventilation, there is still enough oxygen left in rescuer's expired air to sufficiently supply the victim's blood, were explained in simple terms to questioners.

The keen interest shown during the demonstrations and many questions asked would confirm that many people are genuinely interested in obtaining the skill of a dependable method of artificial respiration. It behooves medical profession to support and further propagate this interest in mouth-to-mouth resuscitation, which in its simplicity has no rival. Time gained in spreading this knowledge without delay might be measured in numbers of lives saved.

The author wishes to take this opportunity to express thanks to Miss Isabel Fraser, R.N. and Miss Noreen Fillier, R.N. for their willingness to act as "victims" and to Sr. Ann Estelle, R.N. for her valuable help in arranging the demonstrations.

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Transcutaneous Hepatic Cholangiographic Study: Its Importance in the Diagnosis and Management of Biliary Disease, Earl J. Halligan, M.D., and Rahim Farid, M.D., Jersey City. *Journal of International College of Surgeons*, 31: 145-153, (Feb.) 1959.

With a background of more than 3,000 liver biopsies without complications, the authors are convinced that this procedure should be routine in all cases of obstructive jaundice in which a differential diagnosis cannot be made or the site or type of lesion cannot be determined. Eight cases of obstructive jaundice, with operative and postmortem studies of the liver, are discussed.

An Unusual Recurrent Heterotopic Pregnancy

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Most of the studies of this concurrent intra and extra-uterine pregnancy give a relative frequency of one heterotopic pregnancy to each thirty thousand deliveries. Davoe and Pratt, in the American Medical Journal of Obstetrics and Gynecology Volume 56, 1948, reviewed the literature and, at that time, noted three hundred and ninety-six cases reported. Since that time quite a number of cases have been recorded so that this entity, while rare, is not unique. The first reported case was published by Duvernie in 1708, which was discovered at autopsy following death from ruptured ectopic gestation. In a review of the literature by Zarou and Sy, in the American Journal of Gynecology Dec. 1952, heterotopic pregnancy is defined as including all cases of concurrent intra and extrauterine pregnancy regardless of the time that either, or both pregnancies terminate, which is usually in the first trimester. The majority of heterotopic pregnancies are uterine and ectopic, but there are quite a number of cases of ovarian and uterine, and some abdominal and uterine pregnancies. In a study by Nandi, in the Journal of Obstetrics and Gynecology of the British Empire Feb. 1953, twelve cases are recorded of delivery of live babies from both uterus and abdomen. In an interesting paper by Reeves and Savarese, in Obstetrics and Gynecology Nov. 1954 in which they reported a case, their summary was particularly interesting and I quote:

- “1. They are not so rare as once thought.
2. The ectopic aspect overshadows the uterine.
3. They occur most frequently in patients who have delivered twins.
4. The frequency increases with the multiparity.
5. The amount of intraperitoneal bleeding determines to a great extent the fate of the uterine pregnancy.”

All of these conclusions are quite strikingly brought out in the case to be presented. I have not found any case of recurrent heterotopic pregnancy described, and would hesitate to assess the relative incidence of this condition.

Case No.: 54-2045. The case recorded here is a 38-year old woman rather slight, and not particularly well nourished. She had ten children living and well, and had twins prematurely at 7 months gestation both of which died shortly after birth. An appendectomy had been done seven years previously, and the rest of her family history is not relevant. She was admitted here on the 3rd day of July, 1954 at 8.20 p.m. by stretcher. She had had a 40-mile trip from Cape Breton, and was extremely shocky on arrival. Her blood pressure was 60/0, red blood count 2.4 million R.B.C.'s and her hemoglobin 7 grams. Her last menstrual period was given as the 2nd of May 1954, and she stated that she had been having vaginal bleeding frequently since the 15th of June, 1954. She stated that she developed very severe agonizing abdominal pain at 9.00 a.m. on the morning of admission. This pain doubled her up, and she developed severe pain in left shoulder area on breathing. She did not bleed a great deal vaginally on the day of admission and, on admission, was extremely weak. Abdominal and rectal examination were done, and extreme rigidity of the abdomen with marked rebound tenderness was noted, and breathing caused intense pain in left shoulder. Rectal examination showed a

fullness in the Cul-de-sac, and a sense of bogginess. The cervix was not dilated. The uterus appeared to be the size of a two months pregnancy. A diagnosis of ruptured ectopic gestation was made. Laparotomy was done and an emergency transfusion was given. Laparotomy revealed a large amount of clotted and free blood intraperitoneally with a rupture near the uterine end of the tube and some decidual tissue extruding from this rent. A foetus was found in one of the clots removed. The foetus was the size of a two months gestation. The right tube was removed and the ovary was left intact. Examination of the rest of the abdomen, after clearing out blood clot, showed the uterus was the size of a two and one-half months pregnancy. The left tube and ovary were normal. It was felt at this time that she had a concurrent uterine pregnancy but, as she had been bleeding off and on for about two weeks, it was felt that she would abort spontaneously. The Pathologist's report of removed tissue was that it was a tube with rent, placental tissue and clot. She made a good recovery and on the 7th of July she passed some tissue, which appeared to be placental tissue, by vagina, and the Lab. report showed 10 grams of degenerated placental tissue. No further pains or bleeding occurred, and she was allowed home on the 12th day. Dr. Guzdziol of Port Hawkesbury, who had referred the case here, was advised of the fact that there was apparently a placenta still in the uterus and that we did not feel that there was any possibility of foetal life. She was seen by Dr. Guzdziol subsequently. The uterus did not enlarge or resolve and, on the 29th of Nov. 1954, she passed a placenta and there was no demonstrable foetus noted.

Case No.: 55-2417. On Aug. 14, 1955, this patient was again admitted by stretcher, but in much better shape. The history given this time was that her last menstrual period had been the 5th of June 1955, and that she had spotted frequently, but not in any great quantity, in the last two weeks. She had had some vague abdominal pain, but no severe pain. On the morning of admission she developed a severe pain in abdomen with some vague spotting, and was again referred to hospital. At this time her hemoglobin was 11 grams, red blood count 3.4 million, and her blood pressure 100/60. She had only had the pain from 9.00 a.m. until 2.00 p.m. when she was admitted to hospital here. Abdominal and rectal examination were done, and these revealed practically the same findings as on the previous year. The uterus was enlarged the size of a two and one-half months pregnancy, and there was a boggy sense of fullness in the Cul-de-sac. Abdominal tenderness was extremely severe, she did not have nearly as much shoulder pain as on previous occasion, and rebound tenderness was not so marked. A diagnosis of ruptured ectopic gestation was again made and, although the uterine pregnancy was considered, too great a respect for the law of averages prevented a full diagnosis being made pre-operatively. A laparotomy was done again. This time there was a rent in the left tube close to the fimbrial end. There was not nearly as much blood or clot intraperitoneally as on the previous occasion. The uterus was enlarged to the size of a two and one-half months pregnancy. The left tube was removed, and both right and left ovaries were left intact. The Pathologist reported a ruptured ectopic gestation with placental tissue noted. She made a good recovery. This time the uterine pregnancy carried to term and, on the 16th of March 1956, she was delivered of a normal female baby by Dr. Guzdziol in Port Hawkesbury.

Two unusual cases have been presented, and this is the first report of these two cases.

Amnionitis

A Case Report

Amnionitis is a relatively new clinical term and it is hoped that this brief report will contribute to the literature on this interesting subject.

This is a case of prolonged labor with early rupture of the membranes, infected amniotic fluid, infection of the amnion, Wharton's jelly, and infection and death of the fetus.

Summary of Case History:

Patient—white; age 32; Para 6; Gravida 7.

Previous pregnancies all full term with normal, non-instrumental deliveries.

Present pregnancy—full term. Monthly prenatal examinations were carried out by her family doctor and she was well throughout her entire pregnancy.

Labor began about 26 hours prior to admission to hospital. The membranes ruptured shortly after the onset of labor.

Her doctor reported that although the pains were occurring regularly, at intervals of 5-10 minutes, uterine contractions were weak and that after 26 hours there was very little dilatation of the cervix or advancement of the presenting part. It was his opinion that the cause of the prolonged labor was uterine inertia.

Clinical Examination:

On admission to hospital the patient was pale and appeared quite tired. General physical examination was essentially negative. Her temperature was 98 degrees, respirations 24 per minute, pulse rate 108 per minute, blood pressure 124 systolic and 76 diastolic. There was no oedema of the extremities.

Fetal presentation—LOA, fetal heart tones about 150 per minute and of good quality. On rectal examination the head was engaged, the cervix about 2 centimeters dilated and not rigid. No vaginal examinations were done.

Laboratory Examinations:

Rh-factor-positive. V.D.R.L. test negative. Hemoglobin 7.5 gms.%. The urine showed a slight trace of albumin (Non-catheter specimen).

X-ray of the pelvis showed a single fetus presenting in the LOA position. The fetal head was engaged and nothing was seen to indicate disproportion.

In view of her admission history and findings, it was decided to give her antibiotic coverage and to sedate her, in the hope that normal uterine contractions would occur. This hope was not realized and labor was terminated by mid forcep delivery about 48 hours after her admission to hospital.

On delivery the baby was pale and lifeless. Artificial resuscitation was carried out and respirations established but the baby's cry was feeble and respirations quite rapid. The chest was X-rayed and the radiologist reported no evidence of pulmonary atelectasis. The baby expired about three hours after birth.

At autopsy, the pathologist reported evidence of inflammation of the amnion adherent to the umbilical cord, together with inflammation of Wharton's jelly, indicating the presence of amnionitis.

The cause of death was established as an intra-uterine pneumonia with subsequent septicemia, pyemia and a tentorial tear.

The suggestion that the child had inspired infected amniotic fluid and in fact had swallowed this material, was supported by the finding of amniotic squames and structureless material suggestive of meconium in the bronchi and alveoli, as well as the finding of inflammatory debris adherent to the inner lining of the esophagus.

It was also felt that septicemia with pyemia followed aspiration of the infected amniotic fluid by the fetus *in utero* and this conclusion was supported by the presence of pyemic abscesses in the brain and adrenals, as well as the presence of a septic thrombus in a cranial sinus.

It was further noted that the tentorium in the region of the tentorial tear was the seat of a septic process.

SUMMARY:

A case is presented of:

1. Uterine inertia with early rupture of the membranes and infected amniotic fluid, amnion and Wharton's jelly.
2. Aspiration of infected amniotic fluid by the fetus in-utero, and subsequent death of the fetus due to aspiration pneumonia, septicemia, pyemia and a tentorial tear.

T. B. Murphy, M.D.

De Quervain's Disease, Timothy A. Lamphier, M.D.; John F. Pepi, M.D.; Charles Brush, M.D.; Joseph Ostroger, M.D., Boston. *Journal of International College of Surgeons*, 31: 192-200 (Feb.) 1959.

A series of 84 cases of De Quervain's disease is presented. Eighty-three (99 per cent) of the patients were treated successfully by operation. Conservative therapy, rather than surgical intervention, is to be greatly discouraged as it only prolongs disability and loss of working hours. Local injections of hydrocortisone acetate have no value in the therapy of this disease.

The actual cause of the disease is unknown, although it is generally accepted in industrial circles as related to manual labor. A surgical technic for treatment of De Quervain's disease is described.

Bacteriological Diagnosis In The Diarrhoeas

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The day is past when a clinician can submit a specimen of stool to a laboratory, without specific requests for the type of examination desired, or alternatively without clinical data, and anticipate that an all-inclusive and conclusive report will be received.

Medical progress has made it apparent that the bacteriological examination of a stool is somewhat more complicated than has been taught, excepting to comparatively recent medical graduates. Laboratories cannot, because of limited facilities, utilize all the modern bacteriological techniques available for the examination of a fecal specimen on each and every specimen submitted. In the absence of specific directions on the part of the clinician, and of adequate clinical information, the techniques adopted by the Laboratory may not be appropriate for the condition in question and the diagnosis may be missed.

The infective diarrhoeas may be classified etiologically as bacterial, viral, and parasitic. It is generally well known that different techniques have to be utilized by a laboratory for the identification of amoeba and other organisms causative of parasitic diarrhoeas, and that the mere submission of a stool for culture will not result in the average laboratory in an examination being performed for these organisms. There is also a general awareness that the isolation of viruses requires special techniques not generally available in the ordinary bacteriological laboratory. This short discussion, therefore, will be confined to the clinical implications of cultural methods in bacterial types of diarrhoeas.

The normal stool contains innumerable bacterial organisms of various types. *E. Coli*, *Aerobacter*, *Clostridia*, *Proteus*, *Pyogenes*, a few *Staph.* yeasts and others. In this galaxy of bacterial life, specific techniques are required to separate the possible pathogens from the innumerable other organisms present. Generally speaking, the type of technique or treatment of the specimen designed to reveal the presence of one class of pathogen cannot be relied upon to reveal the presence of other possible pathogens. On the other hand, some of the techniques are quite laborious and the average laboratory cannot be expected to apply all techniques available to each and every specimen submitted.

Everyone is, of course, familiar with enteric infections due to *Salmonella* and *Shigella*, that is, the typhoid, paratyphoid and dysentery organisms. In general, the routine of most bacteriological laboratories applicable to fecal specimens always includes inoculation of media specifically designed to detect these organisms.

In these days of comparative rarity of infection with these organisms it is well, however, for the clinician to refresh his memory to note that particularly when dealing with dysenteries, the fresher the specimen the more likely the isolation. Furthermore, the isolation is more likely if the clinician ensures or takes steps to ensure that a fecal specimen containing blood or mucus is examined rather than leaving this matter to chance.

It should also be pointed out that reliance should not be placed on the receipt of one negative report. If the possibility of a *Salmonella* or *Shigella* infection cannot be ruled out, repeated specimens of stool should be submitted.

The Staphylococcus has recently become of very great importance as a causative agent of a severe type of neonatal enterocolitis acquired in hospital. The infection can be quite virulent and death with emaciation and anemia can occur in a very short time. Chronic and acute diarrhoeas in infants in hospital nurseries and after discharge from hospital should be investigated for this possibility.

Staphylococci have also been implicated as the causative agent in pseudo-membranous enterocolitis, a rapidly fatal infection occurring characteristically in post operative cases, particularly where antibiotic therapy is being given.

The clinician should be aware that the routine methods commonly used in bacteriological laboratories for the isolation of Salmonella and Shigella will not demonstrate a staphylococcal infection. Special selective media must be used in such cases. If the laboratory is not informed of the condition suspected in such cases or is not given any clinical data the bacteriological diagnosis may be missed.

In infants, especially in the case of epidemic diarrhoeas, the causative organism may be one of the many strains of enteropathogenic E. Coli. These organisms cannot be demonstrated by either the technique used for the isolation of Salmonella and Shigella, or the technique used for the isolation of Staphylococci. A rather elaborate technique must be used in such cases, as the organisms differ so very slightly from the large numbers of non-enteropathogenic E. Coli found in every stool. Not only must a special selective medium be inoculated, but many colonies of Coliform organisms must be picked from the growth and subjected to serological tests before the examiner can reasonably satisfy himself that these organisms are not present.

It should therefore be apparent that in this instance, as in most others, the bacteriological laboratory is not an automaton, where you put in your nickel and out comes the pie. The clinician who expects to get the most and best information from the modern bacteriological laboratory must provide intelligent and specific requests with a reasonable amount of clinical information. Routine requisitions usually, in this as in any other laboratory section, merit and receive routine treatment.

The Control of Acute Respiratory Disease In Industry—With Special Reference to Influenza.*

L. Holland Whitney, M.D., Medical Director,
American Telephone and Telegraph Company,
Industrial Medicine and Surgery,
October, 1958

One quarter of the lost time in industry is attributed to respiratory diseases. For some of these, effective vaccines have been developed. Children are the main source of respiratory illnesses among adults.

The significance of respiratory diseases as a cause of absence in industry has been well documented by many studies. Acute respiratory diseases account for nearly half of the incidence of absence and at least one quarter of the total lost time. This is estimated as amounting to 150 million work days annually, in addition to the reduced efficiency which results from employees who are on the job in various stages of illness. From the viewpoint of cost alone industry should have a considerable interest in health maintenance and disease prevention.

Absenteeism

Despite the fact this country is enjoying the highest level of health in the world, the direct cost of absence owing to illness is increasing. This undoubtedly reflects the trend toward broader coverage, increased scale of benefits and a tendency for more liberal interpretation of what constitutes justifiable cause for absence.

Let us consider briefly the complex subject of absenteeism. The term implies a medical problem when we know in fact that there are many other factors involved including personal motivation, family responsibilities, pay treatment, etc. Measures directed solely to the control of diseases as such quite probably never will provide the entire answer. There is good reason to believe that there is a strong interrelationship between a man's health, behavior and job performance with the kind of man he is, where he comes from, what he wants and needs, what he is facing now in his home and personal life and what he has faced in the past. There is little doubt that when science has made available to us the means for prevention and control of the common cold, the favorable impact on absence will be spectacular.

Respiratory Disease

Considerable progress has been made in the study of acute respiratory diseases during recent years. There is good reason to believe that as more money is channeled into research in this field, we will have even more precise diagnosis and more knowledge of prevention and control.

At present the causative agents of respiratory infections can be identified in approximately 50% of all cases occurring in children and adults, according to the Scientific Advisory Committee of the Common Cold Foundation. These identifiable agents include the influenza viruses, the adenoviruses, the J. H. virus viral agents 2060 and Myxo viruses.

In the infections caused by these different viruses an immune response occurs, followed by protection for variable periods of time. The scientists believe then, that properly prepared vaccines similar in the antigenic composition to the viruses in question would have an immunity and protective value. This has been shown to be true for influenza and for types three, four and seven of the adenoviruses.

There remains a sizeable segment of upper respiratory tract infections, most if not all of which are caused by viral agents. It is in this segment, the most frequent of all, the common cold falls. At the present time there is no means of controlling this group.

The most effective way to use immunizing agents is during childhood which is the normal time of life in which the largest number of respiratory infections occur. In a study made in Cleveland it was found approximately 75% of the acute respiratory infections were introduced into the home by the children.

If we should then only attempt to protect population groups by vaccinating the adult members, the source of these infections which reside mainly in children would not be affected. The control and prevention of acute respiratory infections is indeed complicated.

At this stage of our knowledge on the control of respiratory diseases in industry we are limited to three general methods of approach. The first avenue of control might be considered under the general heading of health education, which includes personal hygiene and such simple procedures as covering the sneeze, washing the hands before eating and maintaining that intangible something known as general body resistance. Adequate control of the environment by proper ventilation, heating and good housekeeping is also important. And finally the specific measures already available through vaccines, antibiotics and the sulfa drugs can be considered.

Influenza Vaccine

Some industries have been offering the polyvalent influenza vaccine to their employees each fall for the past eight or 10 years. The impracticality of accurate prediction of an epidemic and the uncertainties of the strain and type of virus likely to be responsible have prompted others to discontinue this procedure. Vaccines effective against the adenovirus infection also have been developed. Doctor Maurice Hillman, who developed the bivalent type of vaccine, does not recommend its use at this time in the adult civilian population because of the low attack rate. He is, however, enthusiastic about the results obtained in reducing the incidence rates for febrile respiratory illnesses in military recruit populations.

This brings up another point. I believe we in industrial medicine have a real obligation to take an increasing interest both in support of scientific studies and in cooperative ventures to evaluate the progress made.

During the fall of last year 400,000 Bell System employees were vaccinated against the type A-Asian strain of influenza. The incidence of significant reaction to the vaccine was negligible. At our headquarters location an analysis of the absences in excess of seven days due to all respiratory diseases among vaccinated and unvaccinated employees during the months of October and November shows a ratio of 1.0 to 4.2 respectively. This represents a group of nearly 9,000 employees, approximately two-thirds of whom elected to be vaccinated.

These preliminary reports are presented only as an indication of apparent results, and not as a finished or scientifically validated piece of research. Our experts assure us that the difference between the two groups is statistically significant.

As preventive measures against respiratory disease become available, industry is in a position to reach a considerable segment of the adult population. The particular industry's decision on whether to do so will be governed by many factors which include costs, anticipated results, company policy and the potential threat of an epidemic. Perhaps one of the most important considerations will be the possible impact of the disease on the productive capacity of the industry and the significance of this to the welfare of the public which it serves.

The goal still ahead is a challenge to all of us, and in reaching it there is ample opportunity for cooperative efforts between industrial medicine, private medicine, and both voluntary and public health agencies.

*Abstracted by National Tuberculosis Association.

Printed through co-operation Nova Scotia Tuberculosis Association.

INFECTIOUS DISEASES—NOVA SCOTIA
Reported Summary for the Month of February, 1959

Diseases	NOVA SCOTIA				CANADA	
	1959		1958		1959	1958
	C	D	C	D	C	C
Brucellosis (Undulant fever) (044)	0	0	0	0	3	0
Diarrhoea of newborn, epidemic (764)	0	0	0	0	3	0
Diphtheria (055)	0	0	0	0	2	11
Dysentery:						
(a) Amoebic (046)	0	0	0	0	0	0
(b) Bacillary (045)	0	0	0	0	73	0
(c) Unspecified (048)	0	0	0	0	1	0
Encephalitis, infectious (082.0)	0	0	0	0	2	2
Food Poisoning:						
(a) Staphylococcus intoxication (049.0)	0	0	0	0	0	0
(b) Salmonella infections (042.1)	0	0	0	0	0	0
(c) Unspecified (049.2)	0	0	0	0	54	0
Hepatitis, infectious (including serum hepatitis) (092, N998.5)	23	0	12	2	591	0
Meningitis, viral or aseptic (080.2, 082.1)						
(a) due to polio virus	0	0	0	0	0	0
(b) due to Coxsackie virus	0	0	0	0	0	0
(c) due to ECHO virus	0	0	0	0	0	0
(d) other and unspecified	0	0	0	0	8	0
Meningococcal infections (057)	1	1	0	0	14	0
Pemphigus neonatorum (impetigo of the newborn) (766)	0	0	0	0	0	0
Pertussis (Whooping Cough) (056)	1	1	7	0	393	583
Poliomyelitis, paralytic (080.0, 080.1)	0	0	0	0	2	3
Scarlet Fever & Streptococcal Sore Throat (050, 051)	147	0	820	0	2189	1419
Tuberculosis						
(a) Pulmonary (001, 002)	*	2	16	0	280	551
(b) Other and unspecified (003-019)		0	3	0	0	24
Typhoid and Paratyphoid Fever (040, 041)	1	0	0	0	7	19
Veneral diseases						
(a) Gonorrhoea —						
Ophthalmia neonatorum (033)	0	0	0	0	0	0
All other forms (030-032, 034)	25	0	24	0	997	1198
(b) Syphilis —						
Acquired—ordinary (021.0, 021.1)	0	0	0	0	0	8
— secondary (021.2, 021.3)	0	0	0	0	0	3
— latent (028)	2	0	3	0	0	0
— tertiary — cardiovascular (023)	1	0	0	0	0	0
— .. — neurosyphilis (024, 026)	0	0	0	0	0	0
— .. — other (027)	0	0	0	0	0	0
Prenatal—congenital (020)	0	0	0	0	0	0
Other and unspecified (029)	1	1	0	0	140	133
(c) Chancroid (036)	0	0	0	0	0	0
(d) Granuloma inguinale (038)	0	0	0	0	0	0
(e) Lymphogranuloma venereum (037)	0	0	0	0	0	0
Rare Diseases:						
Anthrax (062)	0	0	0	0	0	0
Botulism (049.1)	0	0	0	0	0	0
Cholera (043)	0	0	0	0	0	0
Leprosy (060)	0	0	0	0	0	0
Malaria (110-117)	0	0	0	0	0	0
Plague (058)	0	0	0	0	0	0
Psittacosis & ornithosis (096.2)	0	0	0	0	0	0
Rabies in Man (094)	0	0	0	0	0	0
Relapsing fever, louse-borne (071.0)	0	0	0	0	0	0
Rickettsial infections:						
(a) Typhus, louse-borne (100)	0	0	0	0	0	0
(b) Rocky Mountain spotted fever (104 part)	0	0	0	0	0	0
(c) Q-Fever (108 part)	0	0	0	0	0	0
(d) Other & unspecified (101-108)	0	0	0	0	0	0
Smallpox (084)	0	0	0	0	0	0
Tetanus (061)	0	0	0	0	0	0
Trichinosis (128)	0	0	0	0	0	0
Tularaemia (059)	0	0	0	0	0	0
Yellow Fever (091)	0	0	0	0	0	0

C — Cases D — Deaths

*Tuberculosis cases were not available for the month of February.

REMARKS:

Influenza Epidemic: Early in March Surveillance Reports from the Halifax City Department of Health indicated that there was a high incidence of influenza-like disease, sometimes complicated by pneumonia, in the City of Halifax. In some business houses 25% to 30% of employees were absent from work at one time due to this illness. On March 17 the Atlantic Division reported some 500 cases of influenza-like disease from the Hubbards area, about 2000 cases in the Dartmouth area and about 500 cases on the Eastern Shore. A report from the Lunenburg-Queens Division stated that there were thousands of cases in that area. A report from the Cape Breton North Division stated that there were an estimated 500 to 1000 cases of influenza-like disease in the City of Sydney on March 15.

Laboratory investigations are being carried out with a view to establishing the diagnosis of this disease. To date our Virus Laboratories have reported that influenza Virus B has been definitely isolated from several cases in the Halifax area.

According to the W.H.O. report of February 6, 1959, this is the predominant organism responsible for the recent outbreaks of influenza in the different parts of Europe although influenza virus types A, A/Asian and C have been reported in a few cases.

DIPHTHERIA, AND TETANUS TOXOIDS COMBINED WITH PERTUSSIS AND POLIOMYELITIS VACCINES (D.P.T. POLIO VACCINE)

The Department of Public Health now has supplies of D.P.T. Polio Vaccine and will make it available to practising physicians on the same basis as it has made triple antigen available in the past, i.e., physicians will obtain the material free of charge by signing form C.D.C. 4 stating that they will administer the vaccine free of charge or at a reduced rate.

This material is available in 10 c.c. rubber-stoppered vials and it becomes outdated in twelve months. D.P.T. Polio Vaccine is recommended for use in infants and children up to school age.

A second new material, diphtheria and tetanus toxoids combined with polio vaccine (D.T. Polio Vaccine) is expected to be available this year. This second new material will be used for older children and adults.

The Department of Public Health recommends the following schedule of immunization using the D.P.T. Polio Vaccine:

Recommended Schedule of Immunization using D.P.T. Polio Vaccine (Infants and Children)

Age	Immunizing Agent	Dose
3 mo.	D.P.T. Polio	$\frac{1}{2}$ c.c.
4 mo.	D.P.T. Polio	1 c.c.
5 mo.	D.P.T. Polio	1 c.c.
	Smallpox Vaccine at time of last dose.	
1 yr.	D.P.T. Polio	1 c.c.
3 yr.	D.P.T. Polio	1 c.c.
5-6 yrs.	D.P.T. Polio	1 c.c.
	Smallpox Vaccine	

Secretary's Page

Report on Legislation of Interest to Medicine - 1959

Amendments to the Medical Act. Amendments placed before the legislature were four. One was not at all contentious having to do with the Discipline Committee of the Provincial Medical Board. Two other amendments emanated from meetings of the Committee on Legislation (Doctor J. McD. Corston, Chairman) of The Medical Society and the Committee on Legislation of the Provincial Medical Board.

The Medical Society had concern relative to the proper use of X-ray. The undoubted value of X-ray examination as an assistance to diagnosis, management and prevention of disease in the human is recognized, but also to be recognized is the inherent danger, somatically and genetically, of its uncontrolled use. The objective of the proposed amendment was to limit the use of the X-ray machine to those qualified, as well as to obtain the best diagnostic results for the patient in terms of the product (the X-ray plate) and its use in arriving at a diagnosis: in other words, the efficient use of the X-ray from machine to interpretation. As there is no reference to this in the Medical Act it was proposed to introduce the following:—

“Subsection (1) of Section 19 of the said Chapter 172 is amended by **adding** immediately after clause (d) thereof the following:

- “(e) Own, rent, use or supervise the use of any apparatus or instrument which produces ionizing radiation, for the cure, diagnosis or treatment of any human disease defect, abnormality or injury, except doctors of dental surgery duly registered under the Dental Act. This subclause shall not apply to the use of such equipment by qualified X-ray technicians working under the supervision of a duly qualified and registered medical practitioner, doctor of dental surgery, or in any hospital or university.”

A second amendment was designed to more clearly define the “practice of medicine.” One of the difficulties in successful prosecution of those who would practise or imitate the practice of medicine without qualifications lies in the not too clear description of what constitutes the “practice of medicine.”

The section referred to reads as follows:—

- “(b) to advertise or claim ability or willingness to prescribe or administer, or to prescribe or administer any drug, medicine or treatment, or to perform any operation or manipulation, or to apply any apparatus or appliance for the cure or treatment of any human disease, defect, deformity or injury.”

As amended it would have read:

“to advertise or claim ability or willingness to prescribe or administer, or to prescribe or administer any drug, medicine or treatment, or to perform any operation or manipulation, or to apply **or use** any apparatus or appliance for **the diagnosis** or cure or treatment of any human disease, defect, deformity or injury.”

These two amendments were not accepted.

A third amendment in Section 21 was accepted. This now reads:—

“Every person who violates Section 19 is liable to a penalty not exceeding five hundred dollars for a first offence and a penalty of five hundred dollars and to imprisonment for not less than seven days for a second or subsequent offence.”

This a change from “\$20 for each day that the violation occurs.”

In reporting to the Legislature on the Bill (No. 74) the Law Amendments presented the following resolution and was accepted by the House:—

“THAT in the opinion of this Committee there should be some general regulation of the use of X-ray in the Province applicable to all persons and that this Committee recommends that the Government of Nova Scotia initiate a careful study of the problem with a view to preparing appropriate legislation for introduction in the next Session of the Legislature.”

In effect the Legislature decided that the subject of X-ray required special study, and any reference to it in the Amendments of the Medical Act had been deleted, and the foregoing resolution presented.

Chiropractic Bill

Reference to this subject was made in the March issue as it stood on March 20, 1959.

Bill No. 67 was considered by the Committee on Law Amendments on March 25, 1959. The Committee made numerous amendments and reported it to the Legislature “for favourable consideration as amended.” The Legislature resolved into a Committee of the Whole House on Bills and among many considered was the Chiropractic Bill together with the recommendation of the Law Amendments Committee. The Bill as amended was defeated 26 to 14.

It will be remembered that the Chiropractic Bills of 1957 and 1958 each had been given a six months hoist on the recommendation of the Law Amendments Committee. 1959 is the first time that that Committee has amended the Bill—and reported the Bill, as amended, for favourable consideration of the House. It is of interest to note the vote of the ten members of this Committee on the Bill in the House. Four voted for the passage of the Bill, four voted against it, one was not present when the vote was taken and one member could not vote because he was chairing the Committee of the Whole House.

The debate on the recommendation for favourable consideration was most interesting. It started at 12.35 A.M. Thursday morning and the vote was taken at 1.40 A.M. In that interval, 25 minutes were devoted to explaining the amendments and justifying them with the intent of “limiting chiropractic” to its supposed purposes. The proponents advanced the proposition that disease for this purpose should mean “discomfort” and that the Bill as amended was intended to limit chiropractic to “disease” caused by interference with nerve transmission. If the Bill as amended were to be passed, then, it was inferred it would be left to the courts to decide and the truth would be disclosed through due legal process! The opponents of the Bill could not and would not accept the implication that all diseases are due to interference with nerve transmission. They emphasized that chiropractors do not have training in and are not competent in the field of diagnosis. The opponents stressed the danger of chiropractic to the public health and did not believe that legal recognition of chiropractic made it any less dangerous.

It was also interesting to note that the reference to X-ray in Bill 67 had been deleted and this was remarked on as being a good thing. Unfortunately nothing had been introduced in the Bill to prohibit the use of X-Ray to produce "shadow graphs of the skeletal framework."

The impression received from the debate and the vote is that the majority of members have accepted the evidence that chiropractic is a danger to the public health. It is not clear whether the minority have come to that conclusion, but it is apparent that they believe legal recognition is warranted on the basis that there are chiropractors in Nova Scotia. It would seem that they regard the dangers of chiropractic as relatively unimportant, as compared with the desirability of legal recognition.

The fact is that this became a real test in the legislature; that defeat of the amended chiropractic bill shows that the dangers inherent in chiropractic are recognized. The Legislature is to be congratulated on its discernment.

C.J.W.B.

FOR SALE

Various sundry instruments belonging to the estate of the late Doctor James A. Muir. List available upon request.

The ACADIA TRUST COMPANY,
 Executor,
 Truro, Nova Scotia.

FOR SALE

Westinghouse 300 MA X-ray Unit equipped with fluoroscope and spot film changer. Also a 40" stainless steel tank, film dryer and a number of cassettes. Apply in care of The Nova Scotia Medical Bulletin, The Medical Society of Nova Scotia, Dalhousie Public Health Clinic, Halifax, N. S.

THE MEDICAL SOCIETY OF NOVA SCOTIA

(Nova Scotia Division of C.M.A.)

ANNUAL MEETING—KELTIC LODGE, INGONISH, N. S.

Provisional Programme

Tuesday, June 23, 1959

- 4.00 p.m.- 8.00 p.m. Registration.
 9.00 p.m. Cape Breton Ceiliah.
 Get Together, Refreshments, Music, Dancing,
 Entertainment, Sandwiches, Coffee.

Wednesday, June 24, 1959

- 8.30 a.m. Registration.
 9.30 a.m. Annual Meeting Convenes.
 9.30 a.m.-11.00 a.m. Business Meeting.
 11.00 a.m.-11.30 a.m. Coffee Break—Visit Exhibits.
 11.30 a.m.-12.30 Clinical Session—Dr. M. M. Hoffman.
 1.00 p.m. Luncheon—Speaker—R. McD. Black, Chairman,
 Hospital Insurance Commission, Nova Scotia.
 2.30 p.m. Afternoon off! Take your choice, Deep Sea Fishing,
 Golf Tournament, Sight Seeing, Lawn Bowling, Trout
 Fishing, Drives, Walks, Beaches, Tennis, or Just
 Loafin'.
 8.00 p.m.-10.00 p.m. Lobster Party on Keltic Beach.

Thursday, June 25, 1959

- 9.30 a.m.-11.00 a.m. Business Meeting.
 11.00 a.m.-11.30 a.m. Coffee Break—Visit Exhibits.
 11.30 a.m.-12.30 p.m. Panel Discussion—Public Relations.
 Moderator, Dr. F. A. Dunsworth.
 1.00 p.m. Luncheon—Speaker—Dr. J. W. Reid.
 Subject—"The View from Other."
 2.30 p.m.- 3.30 p.m. Clinical Session—Dr. M. M. Hoffman.
 3.30 p.m.- 5.00 p.m. Business Meeting.
 6.00 p.m. President's Reception.
 7.00 p.m. Annual Banquet.
 10.00 p.m.- 2.00 a.m. Annual Ball.

Friday, June 26, 1959

- 9.30 a.m.-11.00 a.m. Business Meeting.
 11.00 a.m.-11.30 a.m. Coffee Break.
 11.30 a.m.-12.30 p.m. Panel Discussion—Health Insurance.
 Moderator, Dr. D. M. MacRae.
 2.30 p.m. Meeting of New Executive.

The Executive Committee will have a regular meeting on Monday, June 22.

The Annual Meeting of the Executive Committee will be on Tuesday, June 23.

N.B.—The hotel charge of \$13 per person per day includes meals.

A registration fee will take care of all entertainment.