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Supreme Court Decriminalizes Section 377: Heart Care Foundation of India Welcomes this Historic Judgment

"Section 377 is irrational, arbitrary and incomprehensible", says Supreme Court.

In a historic and unanimous judgment, the Supreme Court of India has decriminalized Section 377 of the Indian Penal Code (IPC), as per which homosexuality is a punishable offence. The five-judge constitutional bench was unanimous in its decision.

The medical community has always considered homosexuality as a normal and natural phenomenon and not a disease or crime.

It becomes important now for a medical doctor to know if the person is a Lesbian, Gay, Bisexual and Transgender (LGBT). Till now, many of them did not come forward and disclose their orientation, fearing the law.

The job of a doctor or the judiciary is to change with the changing times and broaden, delete or re-interpret the laws as per the changing needs of the society.

It is indeed heartening to note that the Court is now coming to the rescue of people, which will help reduce the mental and social disorders in the society.

Following are some key observations of the Supreme Court (TOI).

"*Progressive and pragmatic view should be taken by the court to come to the rescue of the oppressed section of society. The law must be interpreted as per the requirement of changing times*", says Supreme Court.

"*The court must try to protect the dignity of every individual of the society, including people from LGBT community. Sexual orientation is natural and people have no control on it.*"

"*Consensual sex between adults in private space, which is not harmful to women or children, cannot be denied as it is a matter of individual choice.*"

"*It amounts to a retrograde step if we accept the verdict on criminalizing gay sex.*"

"*Section 377 of the IPC was a weapon to harass members of the LGBT community, resulting in discrimination.*"

"*Any kind of sexual activity with animals shall remain penal offence under Section 377 of the IPC.*"

SC terms "*sexual orientation as biological phenomenon, says any discrimination on this grounds is violative of fundamental rights.*"

"*Constitution nurtures dissent as safety valve of society, we can't change history but can pass way for better future.*"

Chief Justice Dipak Misra: "*Sustenance of identity is the pyramid of life. Right to privacy as part of right to life applies fully to LGBT community. Suresh Koushal judgment of SC in 2013 is retrograde.*"

Justice RF Nariman: "*Homosexuality is not a mental disorder, which has been also recognized by Parliament. Center must give wide periodic publicity to the SC judgment to eliminate stigma attached to LGBT community.*"

Justice Chandrachud: *"State has no business to get into controlling the private lives of LGBT community members or for that matter, any citizen... Decriminalising gay sex is only the first step to bury the Colonial Ghost, adding that time has come to move forward and give the LGBT community the other constitutional rights…Denial of right to sexual orientation is akin to denial of right to privacy."*

Justice Indu Malhotra: *"History owes an apology to members of LGBT community and their families for ostracisation and persecution they faced because of society's ignorance that homosexuality is a natural trait; its penal suppression infringes a host of fundamental rights."*

Related links

1. http://kkaggarwal.com/Editorial/homosexuality-is-not-a-medical-disorder/.
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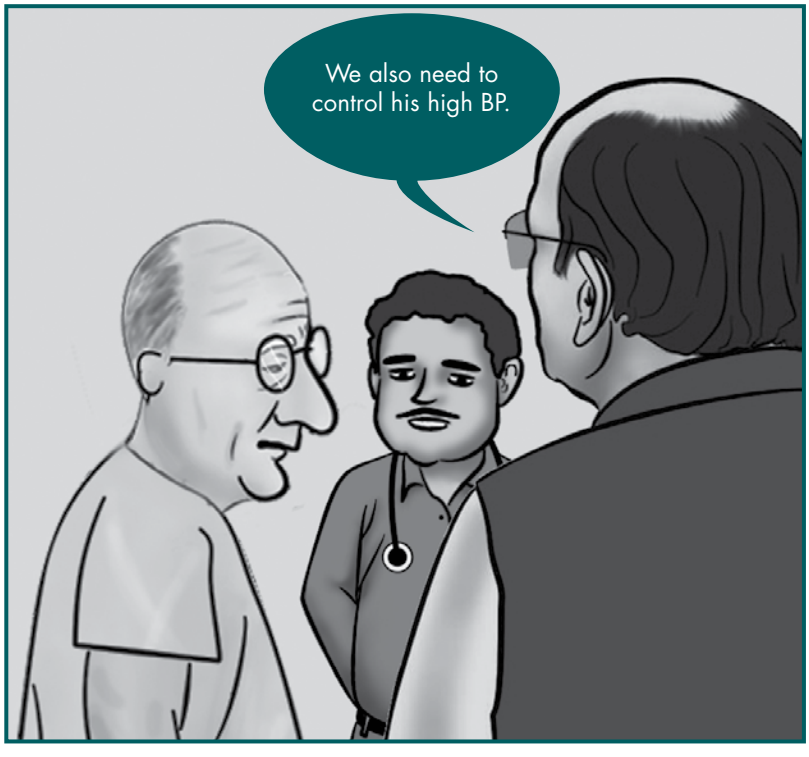
■■■■

Make sure

During Medical Practice

Situation: A patient with uncontrolled type 2 diabetes was also found to have early morning BP surge during hospitalization.



Lesson: Make sure to remember that morning BP surge is an independent predictor of cardiovascular events. In a study, poor glycemic control and insulin resistance were independently associated with the occurrence of morning BP surge in patients with type 2 diabetes, which might be significantly associated with endothelial dysfunction.

Diabetes Care. 2014;37(3):644-50.

AMERICAN FAMILY PHYSICIAN

Diagnosis and Management of Ovarian Cancer

CHYKE A. DOUBENI, ANNA R. B. DOUBENI, ALLISON E. MYERS

ABSTRACT

Ovarian cancer is the most lethal gynecologic cancer. Less than one-half of patients survive for more than five years after diagnosis. Ovarian cancer affects women of all ages but is most commonly diagnosed after menopause. More than 75% of affected women are diagnosed at an advanced stage because early-stage disease is usually asymptomatic and symptoms of late-stage disease are nonspecific. The strongest risk factors are advancing age and family history of ovarian and breast cancer. Women who have symptoms concerning for ovarian cancer should undergo a physical examination, transvaginal ultrasonography, and measurement of biomarkers such as cancer antigen 125. If results are suspicious for ovarian cancer, the patient should be referred to a gynecologic oncologist. Despite the low rate of early diagnosis, guidelines recommend against routine screening for ovarian cancer in average-risk women because screening, including routine pelvic examinations, is ineffective and associated with harm. However, a recent trial found a potential benefit of annual screening using an algorithm based on serial cancer antigen 125 measurements followed by transvaginal ultrasonography for women at increased risk, as determined by the algorithm. Women with an increased-risk family history should be referred for genetic counseling and, if genetic mutations (e.g., *BRCA* mutations) are identified, bilateral salpingo-oophorectomy can be considered for risk reduction. In both average- and high-risk women, long-term hormonal contraceptive use reduces risk by about 50%. The treatment of ovarian cancer usually involves surgery, with or without intraperitoneal and intravenous chemotherapy. Primary care physicians have important roles in post-treatment surveillance and end-of-life care.

Keywords: Ovarian cancer, *BRCA* mutations, Transvaginal ultrasonography, Cancer antigen 125, Bilateral salpingo-oophorectomy

Ovarian cancer is the most lethal gynecologic cancer. It affects women of all ages, but is most commonly diagnosed in those 55 to 64 years of age.[1,2] About 90% of tumors are epithelial ovarian cancers that occur primarily in postmenopausal women.[3-5] Germ cell tumors, which occur primarily in women in their early 20s, comprise 5% of tumors, and sex cord–stromal tumors, which secrete sex steroids and occur at any age (most commonly in a patient's 50s), comprise the remainder.[3,6,7] Early diagnosis when tumors are small and still confined to the ovaries is the most important prognostic factor[1,3,4,7] (Table 1[1,4-7]). Only about 45% of women with ovarian cancer survive for five years or longer from the date of diagnosis.[1] The five-year survival rate is 92% for women with stage I epithelial ovarian cancers but only 17% to 28% for those with advanced-stage tumors.[1,5]

EPIDEMIOLOGY

Although ovarian cancer has a lifetime risk of only 1.3% in the general population and accounts for only 1.3% of all new cancers, it is the fifth-leading cause of cancer-related deaths in women.[1,8] The incidence and mortality rates have decreased slightly over the previous four decades,[1] which may be because of increasing rates of hormonal contraceptive use and decreasing postmenopausal hormone use.[9]

RISK FACTORS

Genetic Syndromes

Familial genetic syndromes are the strongest known risk factors, accounting for about 10% to 12% of ovarian cancers.[4,10] *BRCA* gene mutations are involved in about 10% of cases of ovarian cancer, and hereditary

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Source: Adapted from Am Fam Physician. 2016;93(11):937-944.

Table 1. Ovarian Cancer Survival Rates by Tumor Stage and Type

Stage	International Federation of Gynecology and Obstetrics 2014 stage definitions	Five-year survival by tumor type (%)		
		Invasive epithelial	Stromal	Germ cell
I	**Tumor limited to one or both ovaries** Subcategories of stage I (A to C) are based on whether tumor is present in one or both ovaries, whether the ovarian capsule is intact, and whether there are malignant cells on the ovarian surface or in peritoneal washings or ascites	92	95	96
II	**Tumor involves one or both ovaries with pelvic extension** Subcategories of stage II (A to C) are based on whether extension is into the uterus and/or fallopian tubes, to other pelvic tissues, and whether there are malignant cells in peritoneal washings or ascites.	73 to 78	78	78
III	**Tumor involves one or both ovaries with metastasis outside the pelvis and/or regional lymph node metastasis** Subcategories of stage III (A to C) are based on whether affected nodes are retroperitoneal, the extent of peritoneal metastases, and involvement of the spleen or liver.	39 to 59	65	65
IV	**Distant metastases other than peritoneal metastases** Subcategories of stage IV (A and B) are based on the presence of a pleural effusion and/or involvement of the liver, spleen, and lymph nodes outside the abdominal cavity.	17 to 28	35	35

Information from references 1, and 4 through 7.

nonpolyposis colorectal cancer (Lynch syndrome) is involved in 2% to 3% of cases.[11,12] Table 2 lists features, epidemiology, and lifetime ovarian cancer risks for these and other rare genetic syndromes.[10,11,13,14]

BRCA1/*BRCA2* tumor suppressor gene mutations are the cause of hereditary breast and ovarian cancer syndrome, which affects one in 300 to 800 women, but the prevalence may be higher than one in 50 among Ashkenazi Jews.[10,11,13] In families with a history of ovarian or breast cancer, *BRCA* mutations are responsible for about 90% of cases of ovarian cancer.[10,13,14] The estimated lifetime risk of ovarian cancer is 40% in *BRCA1* mutation carriers and 18% in *BRCA2* mutation carriers.[2,13,15] Because of incomplete penetrance, however, 35% to 85% of *BRCA* carriers do not develop ovarian cancer and about 20% to 30% never develop breast cancer.[2,13-15]

Other Risk Factors

Because only 10% to 12% of cases have a genetic basis, most women with ovarian cancer do not have a relevant family history[10,13] (Table 3[11,13-16]). Known non-genetic risk factors for epithelial ovarian cancers are increased age, postmenopausal hormone therapy (particularly for more than five years), and obesity or weight gain. The roles of diet, nonsteroidal anti-inflammatory drugs, perineal talc exposure, and smoking are controversial, and the effect of infertility drug treatment is uncertain.[2,3,11,17]

Long-term oral contraceptive use (four years or more) reduces the risk of ovarian cancer by approximately 50% in *BRCA*-mutation carriers.[18] Depot medroxyprogesterone use, salpingectomy, tubal ligation, and breastfeeding also reduce risk, but there is less definitive evidence of lower risk for multiparity, late menarche, and early menopause.[11,19,20]

PRESENTATION

About 60% of women with ovarian cancers have metastatic disease at the time of diagnosis because early-stage disease is usually asymptomatic.[1] Late-stage ovarian cancers often have symptoms, but they are usually nonspecific and not recognized as symptoms of cancer.

In a survey of 1,709 women diagnosed with ovarian cancer, 72% reported having back pain, fatigue, abdominal pain/bloating, constipation, or urinary symptoms for three months or more before diagnosis; 35% reported symptoms for six months or more.[21] A case-control study developed a six-item symptom index and found that the presence of any one symptom

Table 2. Genetic Syndromes with Increased Risk of Ovarian Cancer

Syndrome	Gene mutations	Features/epidemiology	Lifetime ovarian cancer risk
Hereditary breast and ovarian cancer syndrome	*BRCA1* and *BRCA2* tumor suppressors, possibly others	10 times more common in Ashkenazi Jews; associated with breast, ovarian, fallopian tube, peritoneal, and pancreatic cancers	*BRCA1*: 25% to 65% *BRCA2*: 10% to 30%
Hereditary nonpolyposis colorectal cancer (Lynch syndrome)	*MLH1, MLH3, MSH2, MSH6, TGFBR2, PMS1,* and *PMS2*	Increased risk of colon cancer, as well as endometrial and ovarian cancers	10%
MUTYH-associated polyposis	*MUTYH*	Polyps in the colon and small intestine; increased risk of colon and other cancers, including ovarian and bladder cancers	No good data available
Peutz-Jeghers syndrome	*STK11*	Polyps in the stomach and intestine in teenagers; increased risk of esophageal, stomach, small intestine, and colon cancers, as well as epithelial ovarian cancer and stromal tumors (sex cord tumor with annular tubules)	No good data available
PTEN hamartoma tumor syndrome	*PTEN*	Increased risk of thyroid disorders and thyroid, breast, and ovarian cancers	No good data available

Information from references 10, 11, 13, and 14.

(i.e., pelvic pain, abdominal pain, increased abdominal size, bloating, difficulty eating, or early satiety) for 12 days per month or more in the previous 12 months had low sensitivity (56.7%) for early disease but higher sensitivity (79.5%) for late-stage disease. The specificity was 90% for women 50 years or older and 86.7% for women younger than 50 years.[22] The sensitivity is low because many women are asymptomatic or present with symptoms other than those mentioned here.[21-23]

In addition to these nonspecific symptoms, ovarian cancer may present with paraneoplastic syndromes such as subacute cerebellar degeneration; sudden onset of seborrheic keratoses (Leser-Trélat sign); or unexplained spontaneous, recurrent, or migratory venous thrombotic events (Trousseau syndrome). Advanced disease may present with symptoms of regional spread or metastasis, such as bowel or ureteral obstruction, or shortness of breath.[3,17] An exception to the late presentation of ovarian cancer symptoms is sex cord–stromal tumors, which produce hormonal manifestations such as precocious puberty, abnormal uterine bleeding, and virilization; 70% of these tumors are diagnosed at stage I.[24]

DIAGNOSTIC EVALUATION

History

The evaluation should be guided by a history of the presenting symptoms and assessment of the risk factors previously mentioned, including personal and family history of gynecologic and other cancers (Table 3[11,13-16]). This information can help determine whether ovarian cancer should be considered as a cause of a patient's symptoms.

Physical Examination

Patients with symptoms that might be related to ovarian cancer should undergo a complete physical examination, including a rectovaginal examination with the bladder empty to evaluate for pelvic and abdominal masses. However, the physical examination has limited accuracy, especially in obese patients, and a mass could easily be missed or, if detected, could be caused by conditions other than ovarian cancer (Table 4).[23]

In addition to the rectovaginal examination, the physical examination should assess for signs of endocrine dysfunction, paraneoplastic syndromes, and metastatic disease, including inguinal or left supraclavicular lymphadenopathy, pleural effusion, and umbilical mass (Sister Mary Joseph nodule).[3,17,23,25]

Imaging

Women with suspected ovarian cancer based on clinical presentation or a pelvic mass should undergo transvaginal ultrasonography[17,23,25] (Figure 1), which can assess ovarian architecture and vascularity, differentiate cystic from solid masses, and detect ascites. The sensitivity and specificity for distinguishing

Table 3. Indications for Ovarian Cancer Genetic Risk Assessment and Genetic Counseling

Characteristic	Women with ovarian cancer	Family history in women who do not have ovarian cancer
Known mutation in a susceptibility gene*	✓	✓
Ovarian cancer*	✓	✓
Breast cancer diagnosis by age (years)		
≤ 45	✓	✓ (first- or second-degree relative)*
46 to 50		
With ≥ 2 primary breast cancers, or ≥ 1 close blood relatives† with breast cancer (any age)	✓	
51 to 60		
Triple-negative breast cancer (negative for estrogen receptor, progesterone receptor, and *HER2* receptor)	✓	
Any age		✓ ≥ 2 close blood relatives†
With ≥ 2 relatives with primary breast cancers	✓	✓
≥ 1 relatives with breast cancer (≤ 50 years)	✓	
≥ 1 relatives with epithelial ovarian cancer (any age)	✓	
≥ 2 close blood relatives† with breast and/or pancreatic cancer (any age)	✓	
High-risk population (e.g., Ashkenazi Jews)	✓	
≥ 1 close blood relatives† with pancreatic cancer, prostate cancer (Gleason score ≥ 7), sarcoma, adrenocortical carcinoma, brain tumors, endometrial cancer, leukemia/lymphoma, thyroid cancer, diffuse gastric cancer, or gastrointestinal hamartomas	✓	✓ Plus ≥ 1 close blood relatives† with breast cancer
Male blood relative with breast cancer	✓	✓

Note: Only one of the criteria is required, whether a woman has ovarian cancer or not.

*Further risk assessment and referral for genetic counseling based on family history are warranted when any of the conditions are met for a woman without a history of ovarian cancer, or if there is one third-degree relative with breast and/or ovarian cancer and two or more other close blood relatives with breast cancer (at least one 50 years or older) and/or ovarian cancer.

†Close blood relative refers to a first- (parent, sibling, or child), second- (grandparent, aunt, uncle, nephew, niece, grandchild, or half-sibling), or third-degree (great-grandparent, great-aunt, great-uncle, great-grandchild, or first cousin) biologic relative from the same side of the family.

Information from references 11, and 13 through 16.

Table 4. Causes of Palpable Mass on Pelvic Examination that may be Confused with Ovarian Cancer

Gynecologic	Nongynecologic
Benign	Benign
Ectopic pregnancy	Appendiceal abscess or mucocele
Endometrioma	Bladder diverticulum
Functional cyst	Diverticular abscess
Leiomyoma	Nerve sheath tumors
Mature teratoma	Paratubal cyst
Mucinous cystadenoma	Pelvic kidney
Serous cystadenoma	Ureteral diverticulum
Tubo-ovarian abscess or hydrosalpinx	Malignant
	Gastrointestinal cancer
	Metastasis
	Retroperitoneal sarcoma

Information from reference 23.

benign from malignant adnexal lesions on transvaginal ultrasonography are 86% to 94%, and 94% to 96%, respectively.[26,27]

Laboratory Testing

A complete blood count, blood chemistry including liver function tests and calcium (to assess for paraneoplastic syndromes), and serum biomarkers should be obtained if ovarian cancer is suspected. Cancer antigen (CA) 125 is the biomarker commonly tested, but its diagnostic utility depends on disease risk and stage at the time of presentation.

CA 125 is elevated in about 80% of epithelial ovarian cancers overall, but in only 50% of early-stage epithelial ovarian cancers.[17] Furthermore, CA 125 can be elevated in benign conditions such as endometriosis and fibroids.[2,17,23,25] The specificity and positive predictive

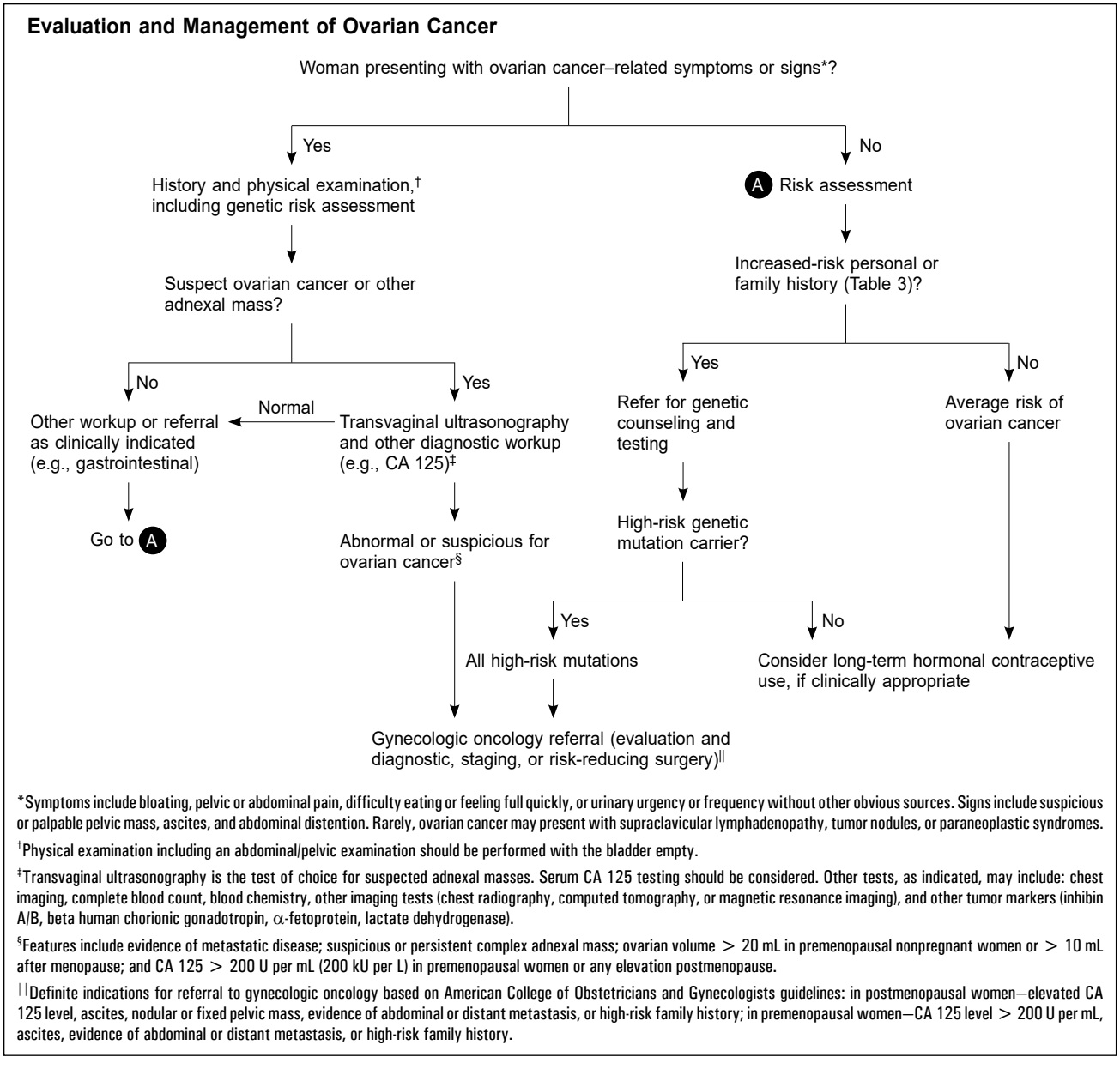

Figure 1. Algorithm for the evaluation and management of ovarian cancer. This algorithm is most applicable for epithelial ovarian cancer.

CA = Cancer antigen.

value of CA 125 are higher in postmenopausal women than in premenopausal women, partly because of the higher pretest probability of cancer and lower prevalence of the benign lesions after menopause.

There are other serum biomarkers under investigation including human epididymis protein 4 (HE4), a glycoprotein expressed in about one-third of ovarian cancers that lack CA 125. HE4 is used primarily to assess disease progression and monitor for recurrence. However, a positive HE4 or CA 125 level during the diagnostic process may improve the sensitivity and specificity of the six-item symptom index to 83.8% and 98.5%, respectively.[28]

Biomarkers for nonepithelial ovarian cancers include inhibin A/B for sex cord–stromal tumors, and serum α-fetoprotein and quantitative beta human chorionic gonadotropin for germ cell tumors.

INDICATIONS FOR REFERRAL

Women who have a high-risk family history should be referred for genetic testing.[13,16] Women whose evaluation

suggests ovarian cancer (based on imaging or laboratory test results) should be referred to a gynecologic oncologist (Figure 1). A serum CA 125 level greater than 200 U per mL (200 kU per L) in a premenopausal woman or any elevation in a postmenopausal woman, nodular or fixed pelvic masses, evidence of metastasis, or unexplained ascites are definite indications for referral.

Referral to a gynecologic oncologist is also recommended for women with suspicious or complex adnexal masses on transvaginal ultrasonography that persist on short-interval (typically one to three months) follow-up imaging; premenopausal non-pregnant women with an ovarian volume greater than 20 mL; or women with ovarian volume greater than 10 mL after menopause.[23]

TREATMENT

Surgery is the primary treatment for ovarian cancer. It is used for staging and cytoreduction (debulking), but it is potentially curative in disease confined to the ovaries.[23,25] Fertility-sparing surgery involving unilateral salpingo-oophorectomy, preserving the uterus and contralateral ovary, is an option for women with early-stage invasive epithelial ovarian cancers, lesions with low potential for malignancy (e.g., lesions with histologically abnormal cells that are judged to have a low likelihood of developing into cancer), germ cell tumors, or sex cord–stromal tumors.[23,25]

Postsurgical adjuvant chemotherapy is recommended for late-stage disease and stage II cases, but it is generally not indicated for disease confined to the ovaries.[29] Postsurgical combination intraperitoneal and intravenous chemotherapy, in particular, increases the median survival rate by 12 months compared with intravenous chemotherapy alone, and is the current standard of care for late-stage tumors. Neoadjuvant (pre-surgical) chemotherapy has no advantage over postsurgical initiation of chemotherapy.[30] Evidence does not support routine maintenance chemotherapy following the primary course.[31]

SCREENING

Transvaginal ultrasonography and CA 125 testing are the two most studied ovarian cancer screening modalities.[16,32,33] A U.S. clinical trial found that using these tests to screen average-risk women did not decrease mortality risk and was associated with increased harms,[32] but a U.K. trial reported a benefit of screening with no substantially increased harms.[33]

The Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial, a pragmatic trial, randomized women 55 to 74 years of age in 1993 to 2001 to annual CA 125 testing for six years plus transvaginal ultrasonography for four years (n = 39,105) or to a control group (n = 39,111). After an average follow-up of 12.4 years, there was a 21% higher rate of ovarian cancer detection and an 18% higher mortality rate in the women who were screened vs. those who were not.[32] The higher mortality rate in the screening group was likely due to false-positive results in 3,285 screened women; 1,080 of these women underwent surgical procedures, of whom 15% experienced serious infectious, cardiovascular, pulmonary, and other complications. False-positive results often represent ovarian lesions that have a low potential to become a lethal cancer. For instance, in one study, only about one in 22 patients with such lesions developed cancer over three years.[34]

However, the United Kingdom Collaborative Trial of Ovarian Cancer Screening reported potentially promising results on the effectiveness of screening. The study recruited 202,638 postmenopausal women 50 to 74 years of age in the United Kingdom between 2001 and 2005. They were randomized to receive annual multimodal screening, screening with annual transvaginal ultrasonography alone, or no screening. Multimodal screening involved use of an algorithm based on rising CA 125 levels from baseline to classify women as low, intermediate, or increased risk; transvaginal ultrasonography was performed within six weeks in women classified as increased risk. Women were followed for a maximum of 13.6 years. The primary outcome was death from ovarian cancer. There was a trend indicating benefit from screening, with the ovarian cancer mortality rate 15% lower with multimodal screening (95% confidence interval, −3 to 30; P = .10) and 11% lower with transvaginal ultrasonography alone (95% confidence interval, −7 to 27; P = .21) compared with the mortality rate in women who were not screened. However, this trend was not statistically significant and the confidence intervals were wide.[33] Furthermore, surgery was performed for what turned out to be false-positive results at rates of 14 and 50 per 10,000 in the multimodal screening and transvaginal ultrasonography groups, respectively.[33]

Based on results of the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial and other studies, the U.S. Preventive Services Task Force (USPSTF) and the American Academy of Family Physicians recommend against routine screening for ovarian cancer in asymptomatic women,[16,35] but recommend that women with a high-risk family history be offered referral for genetic counseling and, if appropriate, genetic testing[35,36]

(Table 3[11,13-16]). An American College of Physicians practice guideline also recommends against screening, including annual pelvic examinations, in asymptomatic women.[37] The USPSTF is expected to update its ovarian cancer screening recommendations within the next one to two years to incorporate the results of the UK Collaborative Trial of Ovarian Cancer Screening.

PREVENTION

Risk-reducing bilateral salpingo-oophorectomy is the most effective prophylactic treatment for *BRCA* carriers. It reduces ovarian cancer risk by 69% to 100%,[38] but a small risk of developing peritoneal carcinomatosis remains. Risk-reducing salpingo-oophorectomy induces premature menopause with its attendant risks and limits reproductive capacity. It may also negatively affect a woman's body image and sexuality.[38]

Other preventive measures are avoiding long-term (greater than five years) postmenopausal hormone therapy and maintaining a healthy lifestyle. Long-term hormonal contraceptive use is a promising chemopreventive approach, even for *BRCA1* carriers, and especially in women with early menarche, women who delay first pregnancy, or women who are infertile. However, this potential benefit should be balanced against adverse effects and a slight increase in the risk of breast cancer.[11,17]

SURVIVORSHIP CARE

Post-treatment care involves providing emotional support, monitoring for and managing treatment complications and comorbid conditions, and promoting general well-being.[39] It also includes referral for genetic counseling, if not already made, and counseling about signs, symptoms, and surveillance for recurrence. Approximately 25% of patients diagnosed with early-stage disease and 75% to 80% of patients with advanced disease experience recurrence within five years.[39] However, evidence on the effectiveness of post-treatment surveillance for preventing or minimizing disease-related outcomes is limited.

According to expert opinion, post-treatment surveillance should be provided by a gynecologic oncologist for the first five years after diagnosis. After that, care may transition to an annual review of systems and physical examination in primary care.[39] The recommended surveillance testing for epithelial ovarian cancer is shown in Table 5,[39] but it varies according to the histologic type. Computed tomography, positron emission tomography, or both are recommended if recurrence is suspected.[39] Measurement of serum CA 125 and HE4 levels is recommended if they were elevated at the time of diagnosis. Measurement of inhibin A/B is used in postoperative follow-up for some sex cord–stromal tumors.

Table 5. Surveillance Recommendations for Epithelial Ovarian Cancer

Gynecologic oncologist visits every two to four months for two years and then every three to six months for three years; annual visits after five years (surveillance may transition to primary care at this point)
Physical examination including pelvic examination
Testing for cancer antigen 125 or other tumor markers every visit, if initially elevated
Genetic counseling referral, if not previously initiated
Complete blood count and blood chemistry as indicated
Chest/abdominal/pelvic CT, magnetic resonance imaging, PET-CT, or PET as clinically indicated
Chest radiography as clinically indicated

CT = Computed tomography; PET = Positron emission tomography.

Information from reference 39.

PALLIATIVE AND END-OF-LIFE CARE

Palliative care and advance directives, including designation of a health care proxy, should be discussed at the time of initial decision making about treatment. This is particularly important for patients with stage II to IV disease, and is an area for primary care clinical involvement.

Palliative care planning should focus on maximizing quality of life through aggressive management of distressing symptoms such as pain, nausea and vomiting, respiratory symptoms, urinary tract infection, renal failure, edema, cancer-related fatigue and neuropathy, hypercalcemia, and anxiety or depression.[40]

End-of-life care is the terminal phase in the care continuum. Validated tools, such as the Memorial Symptom Assessment Scale,[41] facilitate communication between the patient and care team. Psychological and social support for the patient and family, as well as spiritual and existential issues, become central if there is no realistic hope of cure. Comfort care is critical when death is imminent.

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CHAT WITH DR KK

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Practice Guidelines

ACCP GUIDELINE FOR THE TREATMENT OF UNEXPLAINED CHRONIC COUGH

Persistent cough with an unknown etiology is difficult to treat and can significantly affect quality of life. Although the evidence for the diagnosis and treatment of adults with unexplained chronic cough is limited, the American College of Chest Physicians (ACCP) released guidelines based on the best available evidence. Further study is needed to establish universal terminology and the optimal method of investigation.

Recommendations

Diagnosis

Unexplained chronic cough should be diagnosed if cough persists for longer than eight weeks with no etiology identified after evaluation and supervised therapeutic trial(s) that follow published best-practice guidelines. Key to the definition of unexplained chronic cough are adequate assessment, investigation, and therapy.

Adults with unexplained chronic cough should undergo a guideline/protocol-based assessment, including objective testing for bronchial hyperresponsiveness and eosinophilic bronchitis, or a therapeutic corticosteroid trial.

Treatment

Multimodality speech pathology therapy (e.g., education, counseling, cough suppression techniques, breathing exercises) is recommended for adults with unexplained chronic cough. A therapeutic trial of gabapentin is also recommended. However, the evidence is limited, and there is a possibility of adverse effects. The risk-benefits profile should be discussed with the patient before initiating gabapentin and reassessed at six months.

Inhaled corticosteroids should not be used in patients with unexplained chronic cough and negative results on testing for bronchial hyperresponsiveness and eosinophilia (sputum eosinophils, exhaled nitric oxide). Proton pump inhibitors should not be used in patients with a negative workup for acid reflux disease.

Source: Adapted from Am Fam Physician. 2016;93(11):950.

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Photo Quiz

HYPERKERATOTIC PLAQUES ON HANDS

A 10-year-old boy presented with a rash on both hands that had been present for at least several weeks. He had not worn any new gloves or other clothing. He had received a new video game at Christmas about five months prior and had played it for at least three to four hours every day since.

On physical examination, he was not in distress. There were hyperkeratotic plaques on the lateral aspect of both of his index fingers (Figure 1). The lesions were symmetric, lichenified with erosions, and painful. The rest of the dermatologic examination was unremarkable.

Question

Based on the patient's history and physical examination findings, which one of the following is the most likely diagnosis?

A. Frictional hyperkeratotic hand dermatitis.

B. Irritant contact dermatitis.

C. Palmoplantar keratoderma.

D. Psoriasis.

E. Tinea manuum.

Discussion

The answer is A: frictional hyperkeratotic hand dermatitis. The patient's lesions developed at the sites of direct contact with his video game controller, and the diagnosis was made based on the repetitive friction and trauma caused by overuse of the video game. He was successfully treated by significantly reducing his video game use and applying topical emollients.

With the increased use of computers and electronic devices by persons of all ages over the past 20 years, new manifestations related to repetitive mechanical activities may occur, affecting superficial structures, such as the skin, and less commonly deeper structures, such as nerves and tendons. Frictional hyperkeratotic hand dermatitis develops as a result of repetitive mechanical friction, trauma, vibration, or pressure. Several terms have been used to describe injuries from overuse of electronic devices, including "Nintendonitis," "Wiitis," and "Playstation thumb."

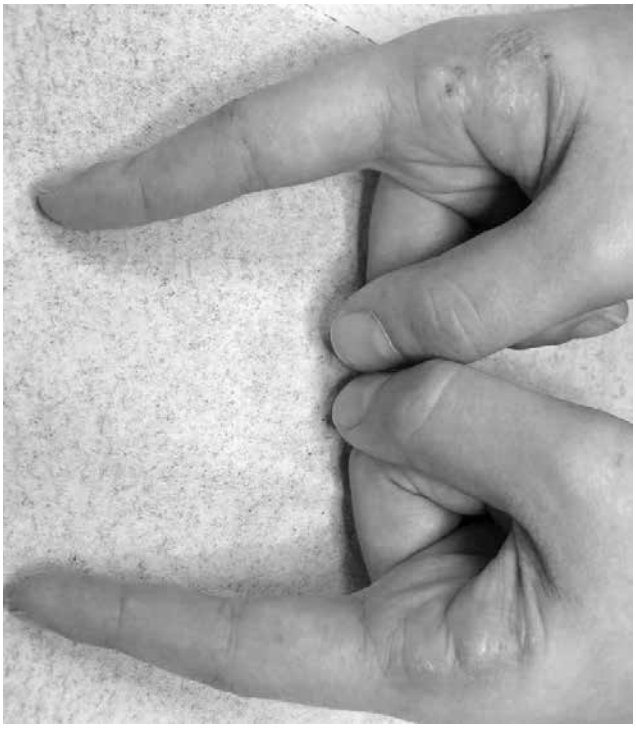

Figure 1.

Irritant contact dermatitis is a localized inflammatory response to physical, environmental, or chemical agents. It usually presents as erythema, erosions, and scaling and may cause pruritus or a burning sensation. Mild symptoms result from prolonged or repeated exposure to the irritants. Strong chemicals may produce a direct reaction similar to that of a thermal burn.[1]

Palmoplantar keratodermas are a heterogeneous group of disorders with hyperkeratotic thickening of the palms and soles.[2] These disorders may be hereditary or acquired. The diffuse form has a thick, symmetric hyperkeratosis involving the entire palm and sole. The focal form has hyperkeratotic lesions at sites of recurrent friction, mainly on the feet. The punctate form is characterized by punctate keratotic papules on the palms and soles.[3]

Psoriasis is a chronic, immune-mediated inflammatory disease.[4] It presents as erythema, thickening, and

Source: Adapted from Am Fam Physician. 2016;93(11):945-946.

Summary Table

Condition	Characteristics	Etiology
Frictional hyperkeratotic hand dermatitis	Hyperkeratotic plaques of the hands that are symmetric, lichenified with erosions, and painful	Repetitive mechanical friction, trauma, vibration, or pressure
Irritant contact dermatitis	Erythema, erosions, and scaling; possibly pruritus or a burning sensation	Localized inflammatory response to physical, environmental, or chemical agents
Palmoplantar keratodermas	Diffuse form: thick, symmetric hyperkeratosis involving the entire palm and sole Focal form: hyperkeratotic lesions at sites of recurrent friction, mainly on the feet Punctate form: punctate keratotic papules on the palms and soles	Hereditary (autosomal recessive, autosomal dominant, or X-linked), or acquired
Psoriasis	Erythema, thickening, and scaling of skin; deep, painful fissures or palmoplantar pustulosis	Immune-mediated inflammatory disease
Tinea manuum	Diffuse, dry, scaling hyperkeratotic lesions; possibly vesicular, exfoliating, erythematous, annular lesions on the dorsal surface of the hand	Superficial, noninflammatory dermatophyte infection

scaling of the skin. It may be accompanied by deep, painful fissures or palmoplantar pustulosis.

Tinea manuum is a superficial, noninflammatory dermatophyte infection of the hand. It usually presents as diffuse, dry, scaling hyperkeratotic lesions, although vesicular, exfoliating, erythematous, annular lesions on the dorsal surface of the hand have also been reported. Unilateral tinea manuum is associated with moccasin-type tinea pedis or onychomycosis, a pattern sometimes referred to as two feet, one hand disease.[5]

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What is One Peg of Alcohol?

Definitions of a "standard drink" differ, both within and between countries.

- United States: 14-15 g alcohol (0.5 to 0.6 fl oz), equivalent to 12 oz beer, 5 oz wine and 1.5 oz of 80 proof liquor
- Great Britain: 8 g alcohol
- Japan: 19.75 g alcohol
- India: 10 g alcohol
- Patiala peg: 20 g alcohol
- National Institute on Alcohol Abuse and Alcoholism (NIAAA): 12 g of alcohol (equivalent to 360 mL (12 oz) of beer, 150 mL (5 oz) of wine, or 45 mL (1.5 oz) of 80 proof distilled spirits)
- Most countries: 8-12 g alcohol.

Huge Denture Causing Acute Obstruction in Esophagus and Stridor

SHAMENDRA KUMAR MEENA

ABSTRACT

We report a rare case of an unusually long foreign body (denture) impacted in the mid esophagus of a 62-year-old man. He was illiterate and drank wine regularly. He came to me with some attendants with history of taking wine with lunch, followed by acute obstruction since lunch at 12:30 pm on 22-5-2016 and reached Kota by 9:30 pm. Till then, he was nil by mouth (NBM). Following investigations, we made a diagnosis of foreign body esophagus and with the help of rigid esophagoscopy under general anesthesia, we removed the foreign body. Next morning, he could swallow food and water without any difficulty, and we discharged him.

Keywords: Foreign body, esophagus, denture

A large number of ingested foreign bodies, especially smooth or <12 mm in diameter, tend to pass safely through the gastrointestinal tract. However, severe problems, such as perforation, may occur following ingestion of sharp objects, bone fragments, pins or long foreign bodies (>6.5 cm).[1,2] The postcricoid region is a common site of impaction of foreign bodies (in nearly 84% of the subjects). Impaction of a bolus of food in the distal esophagus in adults is often associated with a pre-existing stricture, diverticulum or tumor.[2] Adults with non-food foreign bodies have a high incidence of psychiatric and social derangements. Most foreign bodies pass through the pylorus; however, some objects may remain in the stomach for a long period. Once they have crossed the pyloric canal, most objects, even sharp edged foreign bodies such as pieces of glass or nails, pass without harm. But, terminal ileum is again a site with predisposition for impaction. Sometimes, the ingested foreign bodies may remain fixed in the cecum, ascending colon or sigmoid colon.[2] Noncontrast computed tomography (CT) scan is done for diagnosing suspected upper esophageal foreign bodies that may not be visible on plain radiography,[3] and in order to rule out perforation.[4]

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CASE REPORT

A 62-year-old gentleman presented to the emergency services at night with complaints of difficulty in swallowing, pain on swallowing, drooling of saliva and pain in the chest following the accidental ingestion of denture while drinking wine and eating lunch. He reported that suddenly he swallowed a piece of denture, measuring approximately 4-5 cm, that caused acute obstruction and distress. He was also having problem in respiration. He came to me at 9:30 pm at night from Bundi. He could not retrieve it and landed in emergency department.

He was illiterate, without any chronic disease, and at presentation, there were symptoms of respiratory distress or hoarseness. The general physical examination was unremarkable except that he was looking anxious (Fig. 1). Examination of the ear, nose and throat was all within normal limits and on indirect laryngoscopy, there was pooling of saliva in both pyriform sinuses. An X-ray of the neck and chest region, anteroposterior (AP) and lateral view, was unremarkable (Fig. 2).

Subsequently, a CT scan of the neck and chest region revealed a long radio-opaque foreign body in the whole length of the esophagus and also impinging into the stomach. So, a diagnosis of foreign body esophagus was made and the patient was subjected to rigid esophagoscopy under general anesthesia. Using an adult esophagoscope, upper end of the foreign body was encountered just beyond the cricopharynx and

Figure 1. Patient with respiratory distress and looking anxious.

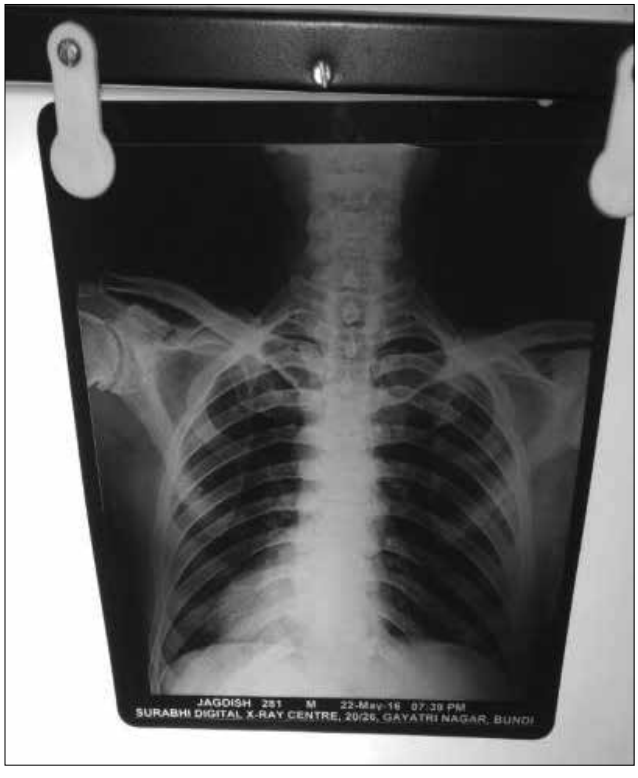

Figure 2. X-ray evaluation was unremarkable.

it was grasped securely with a grasping forceps and 37.5 cm long wooden foreign body was removed along with the Jackson's rigid esophagoscope (Fig. 3).

A check esophagoscopy was done and revealed no injury to the esophageal mucosa. The postoperative period was uneventful and the patient was allowed food orally after 12 hours.

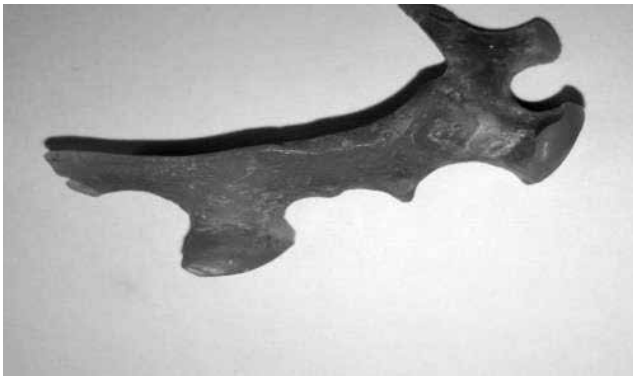

Figure 3. Foreign body removed.

DISCUSSION

A foreign body impacted in the esophagus calls for immediate attention and treatment. Dysphagia (92%) and tenderness in neck (60%) have been found to be the most common clinical features. A vast majority of patients come to the hospital within 24 hours of foreign body impaction. X-ray of the neck (lateral view) appears to be the most valuable investigation tool. Presence of air in the esophagus is a significant finding.[5] Most foreign bodies are radio-opaque and can be recognized on a plain radiograph. Their progress can be checked periodically in the bowel. Bone fragments look like linear or slightly curved densities with sharp margins. Small fish bones or pieces of plastic and wood; however, can appear only faintly radio-opaque calling for a CT scan for their detection.[2] Foreign bodies in hypopharynx and cervical esophagus such as chicken and fish bones often require radiologic evaluation. Noncontrast CT scan may show these small calcified esophageal foreign bodies when X-ray and barium swallow fail.[6]

Indirect signs that can be seen on plain radiography include soft tissue swelling and/or air due to edema or hematoma. In case of suspected perforations, esophagography should first be performed with hydrosoluble contrast medium to exclude perforation and can then be followed by a barium examination. The contrast medium may impregnate the surface of the foreign body and making it noticeable. Dilatation of the esophagus proximal to the obstruction with air fluid level and absence of air in the fundus of the stomach are signs of impaction in the distal esophagus, as evidenced on a radiograph.[2]

The postcricoid region was found to be the site of impaction of foreign bodies in 84% of the subjects in a study. Esophagoscopy was successful in 97% of the patients and failed in 3%. Coins appear to be the most common foreign bodies (60%), followed by meat-related

foreign bodies (22.5%) and dentures (5%). Complications were noted in 18% patients and were more common in adults (37.1%) in comparison with children (8.8%). Pneumomediastinum was the most serious of all complications. Maximum complications occur with dentures (80%) and bone chips (42%).[5] Foreign body in the esophagus is therefore a serious condition and warrants early removal by rigid esophagoscopy as it is a safe and effective procedure.

Other treatment interventions involve removal with a laryngoscope in case of foreign bodies impacted in the pharynx, or with a hypopharyngoscope for hypopharyngeal foreign bodies. Less easily, foreign bodies can be removed using a flexible esophagoscope. The common complications encountered with a rigid esophagoscope include injury to the lips, teeth, tongue, palate and esophageal perforation commonly at the level of cricopharyngeal sphincter.[2] Complications can; however, be limited if treatment is initiated within 24 hours of foreign body impaction.[7]

Sharp end of the foreign body has to be taken in the lumen of the endoscope to avoid complications. Partial dentures with sharp hooks, metallic springs and screws are the most difficult and dangerous object to remove from the esophagus.[8] One can cause laceration and perforation during removal of such objects.

CONCLUSION

Early diagnosis and immediate removal of a foreign body are key to avoid any complications. Although 80-90% of the foreign bodies pass smoothly through the gastrointestinal tract, the nature of foreign body has to be determined. In case of a disc battery, it should be removed surgically if it remains in any one position for more than 24 hours. Sharp and large foreign bodies such as a screw have to be removed to prevent any further complications.

It is advisable to have a team approach while dealing with sharp and impacted foreign bodies.

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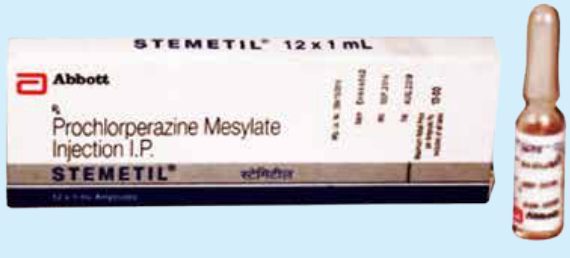

Inj 12.5 mg (for acute cases)[2]

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Stemetil MD (Prochlorperazine mouth dissolving tablets)
Composition: Each tablet contains: Prochlorperazine maleate 5mg I.P.
Indications: Symptomatic treatment of vertigo due to Meniere's syndrome, labyrinthitis and other causes; nausea and vomiting of any aetiology, including that associated with migraine; in the treatment of schizophrenia, acute mania and as an adjunct in short term management of anxiety. **Dosage and Administration:** *Prevention of nausea and vomiting:* 5-10 mg twice or thrice daily. *Treatment of nausea and vomiting:* 20 mg stat followed, if necessary, by 10 mg two hours later. *Vertigo and Meniere's syndrome:* 5 mg thrice daily increasing, if necessary, to a total of 30 mg daily. After several weeks dosage may be reduced gradually to 5-10 mg daily. *Prevention of migraine:* 5 mg three or four times daily. *Treatment of migraine:* 20 mg stat, followed by 10 mg two hours later, if required. *Schizophrenia and other psychotic disorders:* Treatment varies depending on the condition. *Adjunct in the short term management of anxiety:* 15-20 mg daily in divided doses initially, but this may be increased, if necessary, to a maximum of 40 mg daily in divided doses. **Contraindications:** Hypersensitivity to phenothiazines or history of narrow angle glaucoma. **Precautions and Warnings:** Keep out of reach of children. Should be used with caution in elderly patients. To avoid in patients with renal and hepatic dysfunction, epilepsy, Parkinson's disease. To be avoided in pregnancy unless the treating Physician considers it essential. Nursing mothers: Breast-feeding should be suspended. **Adverse effects:** Generally well tolerated. Transient drowsiness, mild skin reactions, liver dysfunction, postural hypotension, extrapyramidal symptoms and rarely cardiovascular disorders have been reported. **Presentation:** 5 mg of Mouth Dissolving tablets: Strip of 10 tablets.

1. Curthoys et al.1998. Vestibular Compensation. Therapy.Adv.Otorhinolaryngol. Basel, Karger, 55-82-110 2. Prochlorperazine. Prescribing Information. 2015 # Of Vertiginous Origin

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A Clinical Insight into the Pharmacological Treatment of Vertigo

KRANTI BHAVANA

ABSTRACT

Vertigo and dizziness are common symptoms in everyday clinical practice. The treatment is dependent on the specific etiology. Depending on the cause of the vertigo, drugs with different mechanisms of action may be used to combat this disabling disease. Symptomatic treatment is given special importance in the treatment of vertigo. This article critically reviews the commonly used drugs, single or in combination, in the therapy of patients with vertigo.

Keywords: Pharmacotherapy of vertigo, cinnarizine, dimenhydrinate, dizziness, vertigo

Vertigo is one of the most common complaints in everyday clinical practice. Vertigo and dizziness are reflective of the symptoms of a variety of disorders that involve the peripheral and/or the central vestibular systems. In acute cases, vertigo, nausea and vomiting are the symptoms while in case of chronic disease, dizziness and/or disequilibrium may be the manifest symptoms.[1]

METHODOLOGY

PubMed, Cochrane database and Google Scholar were the databases used for the literature search. The search strategy included a combination of 'key word search' and 'backward chronological search'. The search terms included pharmacotherapy of vertigo, cinnarizine + dimenhydrinate, treatment of vertigo and dizziness, side effects of drug therapy in vertigo, dizziness, vertigo, guidelines. Boolean operators were used for the search. Twenty-five original research articles, systematic reviews and meta-analyses were included for the development of this review (Table 1).

WHEN IS A PHARMACOLOGICAL TREATMENT GIVEN?

The pharmacological treatment of vertigo and dizziness depends on:[1]

- Correct diagnosis
- Correct drug
- Appropriate dosage
- Sufficient duration.

The pharmacological management of vertigo is decided after the underlying causes behind it are correctly evaluated.[2] The most commonly observed reasons for starting vertigo treatment are:[2,3]

- Acute vestibular related clinical presentation
- Causes of vestibular symptoms such as Meniere's disease and epilepsy (disease-specific treatment)
- Any chronic vestibular disorder such as central vestibular symptomatology (non-specific but empirical treatment strategy).

PHARMACOLOGICAL TREATMENT

Dizziness often represents a wide range of symptoms. For managing dizziness, physicians should consider a comprehensive approach which includes faster resolution of symptoms for restoring normalcy, treating vertigo of any origin to avoid recurrence, managing associated conditions like nausea, vomiting; addressing anxiety, stress which delays recovery and increases recurrence. Such a comprehensive approach will not only facilitate recovery, but also help in improving quality-of-life and thus will increase patient satisfaction.

Common medication classes that are beneficial in the treatment of vertigo include anticholinergics, antihistamines, benzodiazepines, calcium channel antagonists and dopamine receptor antagonists. These medications are endowed with multiple actions and can modify the intensity of symptoms or they may affect

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Table 1. Literature Search Strategy

Databases	Search terms	Result	Comments
PubMed, Cochrane, Google Scholar	Pharmacotherapy of vertigo, cinnarizine + dimenhydrinate, treatment of vertigo and dizziness, side effects of drug therapy in vertigo, dizziness, vertigo, guidelines	25 Original research articles + systematic reviews + meta-analyses	Published literature corresponding only to human subjects and in English language were selected

the underlying disease process. Most of these agents, especially the ones with a sedative potential, also have a potential to modulate the rate of compensation for vestibular damage.[4]

Also, medications are highly useful for treating acute vertigo that lasts a few hours to several days. Vertigo which persists for more than a few days points to a permanent vestibular injury, and in these cases, medications should be stopped. A broad range of medications are used to treat vertigo and the frequently concurrent vegetative symptoms of nausea and vomiting.[5]

In the case of patients with benign paroxysmal positional vertigo (BPPV), an early diagnosis and treatment is warranted as it will result in decreased levels of anxiety, decreased number of other related panic disorders as well as less severe depression. An immediate and symptomatic relief is extremely important as it will help in reducing length of hospital stay, number of hospital admissions, costs associated with medical testing and loss of wages.[6] The treatment of vertigo should be organized and methodical to maximize patient satisfaction. The treatment aims at the elimination of vertigo and vestibular suppressants and antiemetic drugs (such as prochlorperazine, meclizine and diazepam) are the mainstay of treatment of vertigo. Prochlorperazine improves vestibular as well as associated vegetative symptoms of vertigo. The most commonly used pharmacological drugs are elucidated in the following paragraphs.[7]

Based on the available literature, the most commonly used therapeutic drugs are presented in Table 2.[2,8,9]

Cinnarizine

Cinnarizine is a calcium channel blocker which has vestibular suppressant effect. It also has anticholinergic, antihistaminic effects. Cinnarizine is recommended when antihistamines and antiemetics have had no effect. The effect of suppression of the vestibular response is achieved for a longer period of 6-8 weeks. The most common side effect of cinnarizine is drowsiness and also weight gain. Gastric disturbances and depression may also occur, although less commonly. Calcium channel blockers like cinnarizine are drugs which are not recommended in pregnancy.[9,10]

Betahistine

Betahistine has been claimed to be one of the most frequently chosen anti-vertigo drug globally. Betahistine is involved in facilitating vestibular compensation. The efficacy of this drug in vertigo management is due to its action on histamine receptors.[2,11]

Betahistine is used in the management of vertigo and vestibular pathologies with different etiologies. Its therapeutic effect is dependent on the dose and the duration of the treatment.[12] However, betahistine is not fully approved by the Food and Drug Administration (FDA) in the US. It is be moderately effective in suppressing the symptoms of Meniere's disease.[10]

The optimal therapeutic effects are visible only after a few months; hence, it is recommended to use it for 2-3 months.[2] Comparatively, prochlorperazine is prescribed for short-term (up to 7 days) symptomatic management of vertigo and it also takes care of extrapyramidal symptoms.[7]

Prochlorperazine

Prochlorperazine has been used in the treatment of vertigo since a long time. It was reported to be superior to be cinnarizine in the treatment of vertigo irrespective of the central or peripheral vertigo, in a study conducted in Indian patients.[13] Another study showed that where cinnarizine caused drowsiness in 8% of the study population, prochlorperazine caused drowsiness in only 3% of the study patients.[13] In a registry of patients, prochlorperazine provided immediate relief in BPPV and long-term benefits in Meniere's disease.[14] According to a review, prochlorperazine has anticholinergic and antidopaminergic effects and thus relieves the patient from the very debilitating rotating/spinning sensation and also from the associated vegetative symptoms.[15] Dizziness is commonly associated with nausea and vomiting in patients with vestibular disorder which can be debilitating. Prochlorperazine has been a safe, effective and appropriate option for the treating

Table 2. Commonly Used Therapeutic Drugs in the Treatment of Vertigo[2,8,9]

Drugs	Dose and duration	Mechanism of action	Side effects	Used in
Cinnarizine	75 mg/day for 3 days	Selective calcium channel blocker, acts primarily on the peripheral vestibular labyrinth by affecting local calcium ion flux. Beneficial in vertiginous syndrome caused by over-reactivity or unbalanced activity of labyrinthine apparatus in the inner ear	Sedation Pedal edema Extrapyramidal disorders Weight gain	Vertigo (peripheral cases)
Cinnarizine + dimenhydrinate	Cinnarizine 20 mg + dimenhydrinate 40 mg/day for 3 days	Cinnarizine regulates vestibular calcium influx of the labyrinth and improves cerebral circulation Dimenhydrinate regulates vestibular nuclei and adjacent vegetative nuclei and adjacent vegetative centers in the brainstem Dimenhydrinate augments the actions of cinnarizine	Affect the occupation and cognition extrapyramidal side effects High somnolence	Vertigo Motion sickness
Betahistine	48 mg/day, 3-6 months	Increased cochlear and vestibular blood flow Enhances histamine turnover in the central nervous system Increase in the level of histamine in damaged vestibular nuclei diminishes inhibition by intact vestibular nuclei by H3 hetero-antagonistic action	Mild side effects such as gastrointestinal complaints, fatigue and altered taste	Vertigo
Prochlorperazine	10-15 mg/day	Reduces abnormal excitement in the brain Does not impact any measure of nystagmic or perceptual vestibular function	Drowsiness and dizziness Dry mouth	Acute vertigo and dizziness Nausea, vomiting Anxiety
Diazepam	5 mg/6-8 hours	Causes inhibition throughout the central nervous system, including activity in the vestibular nerve and vestibular nuclei	Drowsiness Dizziness Respiratory depression	Anxiety, vertigo

dizziness associated with nausea and/or vomiting in vertiginous disorders.[16] A study showed that prochlorperazine with supplemental antinausea and antiemetic properties significantly reduced recurrence of both these symptoms in the first week of treatment initiation.[14]

Combination Drug: Cinnarizine + Dimenhydrinate

The combination of cinnarizine and dimenhydrinate is an effective and well-tolerated option for the symptomatic treatment of vertigo.[17] However, in the treatment of vertigo, combination of drugs belonging to the same class is not recommended.[18] It has also been shown that long-term use of vestibular suppressants and/or tranquilizers is counterproductive for vestibular compensation. These agents should only be considered in case of truly acute vertigo and stopped as soon the symptoms subside.[19]

A double-blind, placebo-controlled, repeated measures design study was conducted with healthy male volunteers in order to investigate the clinical and cognitive side effects of baclofen, meclizine, dimenhydrinate + cinnarizine and promethazine + d-amphetamine. It was shown that dimenhydrinate-cinnarizine combination had a negative influence on the working memory. Other significant side effects of the combination included sleepiness and blurred vision.[20]

Another study also showed that dimenhydrinate adversely affects psychomotor function; however, single dose cinnarizine is not associated with any negative effects on performance.[21] Cinnarizine is

also known to cause drowsiness, in turn hampering the performance of complex motor tasks such as driving a car. It is also not recommended for use in pregnancy.[9,10]

Another important factor which can not be missed in the safety and efficacy studies on combination of cinnarizine and dimenhydrinate is that since the study population comprises of a heterogenous group and there is a lack of control group, the susceptibility of vertigo symptoms to placebo effects must be adequately considered when interpreting the efficacy results.[22]

CLINICAL PRACTICE UPDATES

The American Academy of Otolaryngology-Head and Neck Surgery Foundation have issued comprehensive clinical practice guidelines to identify and treat patients with BPPV, which is one of the most common vestibular disorder in adults.[23]

The guidelines are intended to improve quality of care and outcomes for BPPV by improving the accurate and efficient diagnosis of the condition; limiting the inappropriate use of ancillary tests such as radiographic imaging and vestibular testing, and to promote the use of effective repositioning maneuvers for treatment.[23]

The guidelines strongly recommend clinicians to diagnose posterior semicircular canal BPPV with an office-based diagnostic test and also test patients for a second type of BPPV affecting the lateral semicircular canal when initial testing is inconclusive.[23] The guidelines strongly recommend that clinicians should treat or refer to a clinician who have expertise in treating patients with posterior canal BPPV with a canalith repositioning procedure (CRP). It also recommends that clinicians should not recommend post-procedural postural restrictions after CRP for posterior canal BPPV. Another recommendation is that the clinician may offer vestibular rehabilitation in the treatment of BPPV.[23]

The guidelines are against the routine use of vestibular suppressant medications such as antihistamines or benzodiazepines to treat BPPV. This is to decrease the use of unnecessary medications with potentially harmful side effects as well as cost of treatment. The guidelines state that the medications may be used for short-term management of autonomic symptoms, such as nausea or vomiting, in a severely symptomatic patient. Antiemetics may also be considered for prophylaxis for patients who have previously had severe nausea and/or vomiting with the Dix-Hallpike maneuvers and in whom a CRP is planned. It is also advisable for a clinician to provide counseling that the rates of cognitive dysfunction, falls, drug interactions and machinery and driving accidents increase with use of vestibular suppressants.[23] Pharmacologic treatment seems to have no role in the treatment of BPPV. Vestibular suppressant medications should be avoided since they can interfere with central compensation and may increase the risk of falls.[24]

In those cases where vertigo is due to vestibular neuritis, treatment is done with medications and vestibular rehabilitation. Antiemetics and antinausea medications should not be used for more than 3 days. Vertigo and associated nausea or vomiting can be treated with a combination of antihistaminic, antiemetic or benzodiazepine.[24]

In the treatment of vertigo caused in Meniere's disease, vestibular suppressant medications may be used for acute attacks. Prochlorperazine, promethazine and diazepam have been found to be effective.[24]

PRACTICE CHANGING SUTRA

- A clinician can improve his overall vertigo management practices by giving due importance to associated symptoms being reported by large number of patients, which is important for overall patient satisfaction.
- Pharmacological therapy should only be considered in case of truly acute vertigo and should be stopped as soon as the symptoms subside.
- Symptomatic treatment is of particularly important role, regardless of the etiology of vertigo.
- Vestibular suppressant medications such as benzodiazepines and antihistamines should not be used to treat BPPV.
- If vertigo is due to vestibular neuritis, medications and vestibular rehabilitation are the preferred approach to treatment.
- In case of Meniere's disease, vestibular suppressant medications may be used.

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Acute Intermittent Porphyria: A Frequently Misdiagnosed Chameleon!

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ABSTRACT

Acute intermittent porphyria (AIP) is an inborn disorder of heme biosynthesis, autosomal dominant in inheritance. It is a frequent occurrence in young females of reproductive age group. While abdominal pain is the most frequent presentation of this disorder, it can present with a myriad of clinical and biochemical features, frequently leading to misdiagnosis of this condition. We present a case of a 17-year-old young female who presented with an acute onset weakness in all four limbs along with absent deep tendon reflexes but characteristically preserved ankle jerks, who was initially diagnosed as Guillain-Barré syndrome (GBS), treated with intravenous immunoglobulin (IVIg), succumbed to a chronic progressive course of weakness and put on oral steroids. Lack of improvement and subsequent development of abdominal pain led us to investigate her for urine for porphobilinogen which came out to be positive, thus leading to a final diagnosis of acute intermittent porphyria.

Keywords: Acute intermittent porphyria, abdominal pain, Guillain-Barré syndrome

Porphyrias are a group of relatively uncommon metabolic disorders produced by defective biosynthesis of heme. There are broadly two categories, i.e., hepatic and erythroid and clinically they can be classified as neurovisceral, cutaneous or mixed. Acute intermittent porphyria (AIP) is the most common of all and results from partial deficiency of porphobilinogen deaminase enzyme. Being an easily missed entity, it should be looked for with high index of suspicion in any patient presenting with acute onset weakness and abdominal pain. There have been case reports on misdiagnosis of AIP mostly as Guillain-Barré syndrome (GBS) due to acute presentation of the disease. We report a case here with acute presentation of weakness of all four limbs, subsequently attaining a progressive form of weakness and wasting, mimicking chronic inflammatory demyelinating polyneuropathy (CIDP). Based on our literature search, this transition from acute to chronic phase in AIP has not been described before.

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CASE REPORT

A 17-year-old young female presented with history of subacute onset weakness of all four limbs in the form of difficulty in carrying out overhead activities and performing fine activities, along with difficulty in rising from sitting position, for the last 4 months. There was no associated sensory complaint, difficulty swallowing, bowel or bladder involvement. She was treated 4 months back as a case of acute motor axonal neuropathy (AMAN) variant of GBS with intravenous immunoglobulin (IVIg) on the basis of her neurophysiological study, which revealed pure motor axonal affection of the tested nerves. She developed acute abdominal pain during hospital stay along with vomiting and was treated as a case of acute cholecystitis. After 15 days, as no significant improvement was found, she was subjected to nerve biopsy and started on oral corticosteroid treatment thinking of CIDP. She had minimal improvement with steroids; her nerve biopsy report was inconclusive and after 4 months, she presented to our institute with residual and static weakness. On asking about her family, she revealed that her younger sister suffered with fever, abdominal pain and seizures last year, which lasted for a month, followed by her sad demise.

On examination, the patient was tachypneic and had resting tachycardia. On neurological examination, there was wasting of posterior fibers of deltoid; both anterior and posterior compartments of arms and

Figure 1. Bilateral wrist drop.

Figure 2. Urine sample turned cola-colored on exposure to sunlight.

forearms bilaterally; interossei, chiefly the first dorsal interosseous; anteromedial compartment of thighs and calf muscles. Generalized hypotonia was present along with bilateral wrist drop (Fig. 1). Power was 4/5 in upper limbs at shoulder and elbow joints, 0/5 at dorsiflexors of wrists, 4/5 in lower limbs at hip and knee joints, 5/5 at ankle bilaterally. Deep tendon reflexes were absent, except ankle jerk which was 2+ bilaterally. Sensory and cerebellar examination was unremarkable. Her urine sample was sent for porphobilinogen and a sample was also kept in sunlight to see for change in its color (Fig. 2) considering the past history of acute abdominal pain, vomiting, neuropathy along with suspected positive family history. The report came out to be positive and patient was advised high carbohydrate diet and avoidance of all the drugs that precipitate porphyria. Thus, after a great diagnostic odyssey, the patient was finally labeled as AIP and advised high carbohydrate diet. On follow-up after 2 months, the patient has shown marked improvement in her functional status.

DISCUSSION

Porphyrias are heme biosynthetic disorders leading to accumulation of toxic porphyrin precursors and porphyrin itself, the excess of which accumulates in various tissues giving rise to a myriad of clinical features. There are eight main varieties of hepatic and erythroid porphyrias, amongst which AIP is the most common. It is caused by the deficiency of porphobilinogen deaminase leading to excessive accumulation and urinary excretion of porphobilinogen. AIP is most prevalent in young females of reproductive age group and crises mostly occur after puberty. This disease is manifested by acute gastrointestinal manifestations like abdominal pain, nausea, vomiting, constipation; neurological manifestations like neuropathy involving both motor and sensory nerves, psychiatric symptoms, seizures; cardiovascular manifestations like arrhythmias and autonomic disturbances.

The symptoms can range from acute crisis to chronic progressive neurological weakness, thus making it difficult to be diagnosed timely. AIP can mimic many other illnesses like in our case, the patient was initially thought to have GBS with co-existent cholecystitis. Subsequently, when she attained a chronic progressive course of weakness, she was treated as CIDP but all in vain. Misdiagnosis of GBS in a case of porphyria has been reported previously, highlighting the fact that muscular weakness progressing to quadriparesis can mimic GBS in a case of porphyria.

CONCLUSION

This case establishes the fact that AIP can be a great masquerader and thus easily misdiagnosed in clinical settings. Thus, a high index of suspicion is required when confronted with a blend of gastrointestinal and neurological manifestations in a patient in order to prevent a delayed diagnosis and grave outcomes.

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Is Alzheimer's Disease Another Brain on Fire? (Big News Big Debate)

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Is Alzheimer's disease another brain on fire? Big news. Big debate.
Depression is never simple. More than a prescription, it's plan for quitting.

ABSTRACT

Dementia is a term used to describe symptoms that affect memory, performance of daily activities and communication skills. Alzheimer's disease (AD) is the most common type of dementia. AD worsens with time and affects memory, language and thought. Younger people can develop dementia or AD, and the risk increases as the age advances. Still, none of the conditions is a normal part of aging. As the disease progresses, deficits in memory, visuospatial orientation, judgment, personality and language are seen. Typically, over a course of 5-10 years, the affected individuals become profoundly disabled, mute and immobile. Patients rarely become symptomatic before 50 years of age; the incidence of the disease increases with age, and the prevalence roughly doubles every 5 years, starting from a level of 1% for the 60- to 64-year old cohort. Progressive increase in the incidence with increasing age has given rise to major medical, social and economic concerns in countries with aging populations. About 5-10% of cases are familial forms of AD; these have provided important insight into the pathogenesis of the more common sporadic form of the disease. While pathologic examinations of brain tissue remain necessary for the definitive diagnosis of AD, the combination of clinical assessment and modern radiologic methods allows accurate diagnosis in 80-90% of cases as confirmed at autopsy.

Keywords: Alzheimer's disease, senile dementia, genome-wide association studies, immunoblotting, guanylate cyclase activity, 8-hydroxyguanosine

Alzheimer's disease (AD) is a complex, neurodegenerative disease that presents with impaired cognitive function in elderly individuals. AD imposes immense suffering on patients and their families. Younger people can develop dementia or AD, and the risk increases as the age advances. Exposure to cortisol over several days at doses and plasma concentrations associated with physical and psychological stress in humans can reversibly decrease specific elements of memory performance in otherwise healthy individuals, similar to pharmacological glucocorticoids treatment. Vitamin E and vitamin C supplements, when used in combination, seem to be associated with a decreased prevalence and incidence of AD.

Over the years, memory loss and other cognitive deficits in the elderly have been considered to be occurring as a result of the aging process and are called "senile dementia," whose prevalence and incidence increases with age.

The fact that certain mitochondrial defects seen in AD patients are not brain-limited, as shown by lower enzymatic activity, such as cytochrome oxidase, in mitochondria from peripheral cells (platelets and fibroblasts), provide a firm support to the concept of AD being a systemic disease.

Resveratrol, and its derivative pterostilbene, can potentially cross the blood-brain barrier and impact brain activity. The most common form of dementia, occurring in more than half of affected individuals, is AD.

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AD is a progressive neurodegenerative disorder characterized by severe impairments of memory, language and behavior. Elevations in total-tau (T-tau), phosphorylated tau (P-tau) (S396), interleukin-6 (IL-6) and hydroxyl radical ($^{\bullet}OH$) in the cerebrospinal fluid (CSF) have a significant correlation with cognitive impairment in patients with Parkinson's disease (PD). The findings thus highlight the potential biomarkers relating pathological proteins, neuroinflammatory factors and free radicals in PD patients with cognitive impairment.

It has been suggested that neuronal damage in chronic neurodegeneration leads to a damaging pro-inflammatory microglial response. Peripheral and central inflammations play a key role in the pathogenesis of AD.

Genome-wide association studies (GWAS) have identified several risk AD candidate genes for inflammatory pathways, which support the critical role of inflammation in early AD etiology. A meta-analysis showed that there is increased systemic inflammation in patients with PD, which is closely related to dementia with Lewy bodies (DLB). Brain tissue in patients with AD is exposed to oxidative stress or OS (e.g., protein oxidation, lipid oxidation, DNA oxidation and glycoxidation) during the course of the disease.

Oxygen radicals have a role in several biochemical activities of cells such as signal transduction, gene transcription and regulation of soluble guanylate cyclase activity. Nitric oxide ($NO^{\bullet}$) is a key signaling molecule known to regulate the relaxation and proliferation of vascular smooth muscle cells, leukocytes adhesion, platelets aggregation, angiogenesis, thrombosis, vascular tone and hemodynamic.

Deep sequencing data yield convincing evidence that the spectrum of somatic point mutations in mitochondrial DNA (mtDNA) in aging tissues lacks G>T transversion mutations. There is a significant increase of an oxidized nucleoside derived from RNA, 8-hydroxyguanosine (8-OHG), and an oxidized amino acid, nitrotyrosine, in vulnerable neurons among patients with AD. OS is associated with normal aging and several neurodegenerative diseases, including AD.

HISTORY

It was not until 1901 that German psychiatrist Alois Alzheimer identified the first case of what became known as AD, named after him, in a 50-year-old woman, Auguste D. He followed her case, until she died in 1906 when he first reported publicly on it. During the next 5 years, 11 similar cases were reported in the medical literature, some using the term *Alzheimer's disease*. Emil Kraepelin first described the disease as a distinctive disease after suppressing some of the clinical (delusions and hallucinations) and pathological features (arteriosclerotic changes) mentioned in the original report of Auguste D. Alzheimer's disease, also named presenile dementia by Kraepelin, was included as a subtype of senile dementia in the 8th edition of *Textbook of Psychiatry*, published in 1910. The terminology was changed after 1977, when a conference on AD came to the conclusion that the clinical and pathological manifestations of presenile and senile dementia were almost identical. The authors also mentioned that this did not rule out the possibility that they had different causes. This eventually led to the diagnosis of AD independent of age. The term "senile dementia of the Alzheimer type (SDAT)" was used to describe the condition in those aged above 65, with classical AD being used to describe those who were younger. AD usually affects people between ages 60-65, as in Ms. Auguste D's case, who was 55 years old when she died. She had a form what is now known as early-onset AD.

SIGNIFICANT GAP IN RESEARCH

Use of vitamin E and vitamin C supplements in combination is linked with decreased prevalence and incidence of AD. Antioxidant supplements should be further studied as agents for the primary prevention of AD. Antioxidant vitamins, specifically the combination of vitamin E and C supplements, may prevent AD. A formal proof of such an effect can only be obtained from randomized prevention trials. A valid demonstration of their efficacy would have significant public health implication. The link between abnormal mitochondrial gene expression and oxidative damage in the development and progression of AD is not clear. Using immunoblotting, digitonin fractionation, immunofluorescence and electron microscopy techniques, the link between mitochondria and Aβ in Tg2576 mice and N2a cells expressing mutant human amyloid precursor proteins (APP) and wild-type (WT) human APP was investigated and an association was found between mutant APP derivatives (Aβ monomers and oligomers) and mitochondria in cerebral cortex slices from Tg2576 mice and N2a cells expressing mutant APP.

WHERE DOES THE RESEARCH GO NEXT?

Oxidative damage may impair cell structure and function, being cause and effect of a mitochondrial

reduced activity. The damage is not restricted to the brain alone but can also be seen in peripheral cells and tissues. Scientists are treating AD as a systemic disease and are paying more attention to the correlation between the brain and other organs. NO is a signaling molecule that regulates the relaxation and proliferation of vascular smooth muscle cells, leukocyte adhesion, platelets aggregation, angiogenesis, thrombosis, vascular tone and hemodynamic. Current neurobiology research suggests that unregulated metal metabolism plays a catastrophic role in catalyzing *in vivo* chemical reactions leading to OS and neuronal cell death as final cause. Metals are key cofactors in carrying out several *in vivo* catalytic enzymatic reactions in cellular metabolism and cell signaling. Mutations in Mt DNA or metal overload in aged brain gives way to OS and free radical-mediated pathological changes in neurons. Neuronal proteins and structural components are altered due to OS in different neurological disorders leading to neuroinflammation and loss of cognitive function in AD, PD, multiple sclerosis (MS) and amyotrophic lateral sclerosis (ALS). OS has been defined as the key pathological cause of neurodegeneration, and antioxidants are proposed as therapeutic options to fight-free radical generation and maintenance. Evidence suggests that brain tissue in patients with AD is exposed to OS (e.g., protein oxidation, lipid oxidation, DNA oxidation and glycoxidation) during the course of the disease.

MAJOR ADVANCES AND DISCOVERIES

There is increasing attention towards identifying biomarkers for diseases in which OS is involved. Various invasive and semi-invasive means of assessing oxidative biomarkers are available; these include measurements in CSF, synovial fluid, bronchoalveolar lavage (BAL) fluid, urine and tissue biopsies. Recent studies focus on noninvasive techniques to evaluate OS, for instance, inflammatory lung diseases such as asthma, chronic obstructive pulmonary disease (COPD), and cystic fibrosis. The assessment of biomarkers of OS in exhaled breath condensate represents a promising area of future research in inflammatory lung diseases. Resveratrol is well-tolerated; however, gastrointestinal discomfort and diarrhea have been observed at high doses. Neuroprotective efficacy of resveratrol has been demonstrated in animal models of vascular dementia.

CURRENT DEBATE

Low levels of zinc in the body were believed to contribute to the development of Alzheimer's. However, when scientists at the University of Melbourne in Australia tested the zinc theory, they encountered unexpected results. While some researchers found excessive aluminum in the brain tissues of Alzheimer's sufferers, others stated that the aluminum came from chemical agents, the researchers used to analyze the brain tissue. Population studies have shown that people were more likely to have Alzheimer's if they had been drinking from public water treated with aluminum sulfates to make the water clearer. Animal studies have shown an aluminum-Alzheimer's link. When aluminum was injected into the brains of rabbits and cats, changes in their behavior and their brain mimicked changes in Alzheimer's victims.

Dialysis fluid is made from water containing large amounts of aluminum. This may give rise to a condition called dialysis dementia. An experimental drug that draws aluminum out of the body seems to slow down the progression of AD. Aspirin therapy may prevent AD. While taking an aspirin every day can ward off stroke and heart disease, now there may be another unexpected benefit.

Some Alzheimer's experts believe that aspirin, ibuprofen, naproxen and another nonsteroidal anti-inflammatory drugs (NSAIDs), commonly recommended for arthritis, can prevent AD. A study was conducted with 50 pairs of elderly twins. Only one of each set of twins had used NSAIDs. That twin was less likely to develop AD or developed it years later than the other twin. However, one must talk to the doctor before starting an aspirin a day. NSAIDs can cause ulcers and bleeding in stomach.

Therefore, an individual's risk of heart disease, stroke and Alzheimer's must be weighed against the risk of stomach problems and bleeding. AD is the most common cause of dementia in older adults, with an increasing incidence as a function of age. The disease usually becomes clinically apparent as insidious impairment of higher cognitive functions.

Over a period of 5-10 years, the patient becomes extremely disabled, mute and immobile. Patients rarely become symptomatic before the age of 50. The incidence of the disease increases with age, and the prevalence increases nearly twofold every 5 years, starting from a level of 1% for the 60- to 64-year old cohort. The progressive increase in the incidence with increasing age has given rise to major medical, social and economic concerns in countries with aging populations. About 5-10% of cases are familial forms of AD. These have provided important insight into the

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pathogenesis of the more common sporadic form of the disease. Pathologic examinations of brain tissue are necessary for the definitive diagnosis of AD. However, the combination of clinical assessment and modern radiologic methods enables accurate diagnosis in 80-90% of cases as confirmed at autopsy.

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Dreaded Complication of Free Flap Failure Managed Intelligently

ASHOK SHARMA[*], SANJIV K GOYAL[*], SANDEEP SINGH MAAVI[†], VIJAY JAGAD[‡], AMITABH KUMAR UPADHYAY[#]

ABSTRACT

Salvage surgery in head and neck carcinoma is often followed by dreaded postoperative complication. Reconstruction with free flap is usually the ideal treatment option. Here, we present the case of a 46-year-old man with necrosis of free flap in post-radiotherapy carcinoma buccal mucosa. The flap was thus taken down and was replaced by a large pectoralis major myocutaneous flap to cover the intra-oral defect and part of the facial defect. The area in front of ear was left bare, to be reconstructed after stabilization of the patient. Later, the patient was taken up for surgery and posterior auricular flap was used to cover the defect anterior to the ear. Astute knowledge of local flap with preserved blood supply is thus needed in post-radiotherapy cases with failure of free flap.

Keywords: Head and neck carcinoma, free flap, salvage surgery

Salvage surgery in head and neck carcinoma is often met with dreaded postoperative complication. Reconstruction with free flap becomes the ideal intervention as it gets new blood supply to the area and hence theoretically improves the chances of viability of flap. In case of necrosis of free flap, very little options are left for the cover of the defect. Here, we are presenting the case of necrosis of free flap in post radiotherapy carcinoma buccal mucosa. After multiple surgeries, patient received adequate cover of the defect with local flaps but with poor functionality.

CASE REPORT

A 46-year-old man presented to us with history of ulcer in left buccal mucosa and severe trismus for past 3 months. In past, patient had undergone surgery and radiation for carcinoma left buccal mucosa 1½ year back.

On examination, patient had severe trismus Grade IV and the lesion was seen starting from left anterior commissure; due to severe trismus, posterior extent of the lesion was not assessable. Magnetic resonance imaging (MRI) scan of the face and neck revealed irregular thickened lesion involving whole of left buccal mucosa extending from upper alveolus to the lower gingivobuccal sulcus. Biopsy from the buccal mucosal lesion revealed squamous cell carcinoma. In accordance with the extent of lesion and the post radiotherapy status of the neck skin, we planned for wide excision and cover with free flap.

Patient underwent wide excision with left hemimandibulectomy, left upper alveolectomy and cover with anterolateral free flap. Post-op on second day, the free flap became dusky and revision surgery was planned (Fig. 1). The flap was taken down and was replaced by a large pectoralis major myocutaneous (PMMC) flap to cover the intra-oral defect and part of the facial defect. The PMMC flap did not cover the defect completely and the area in front of left ear was left open (Fig. 2). Patient was managed conservatively and later

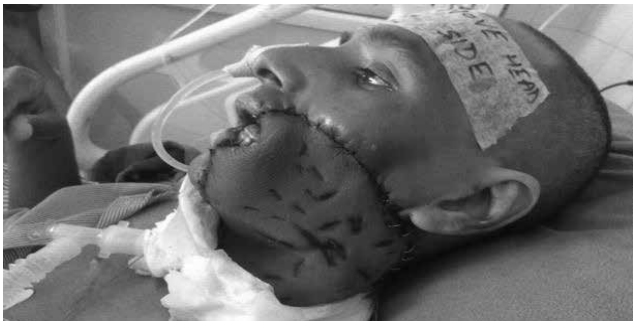

Figure 1. Free flap getting dusky at post-op Day 2.

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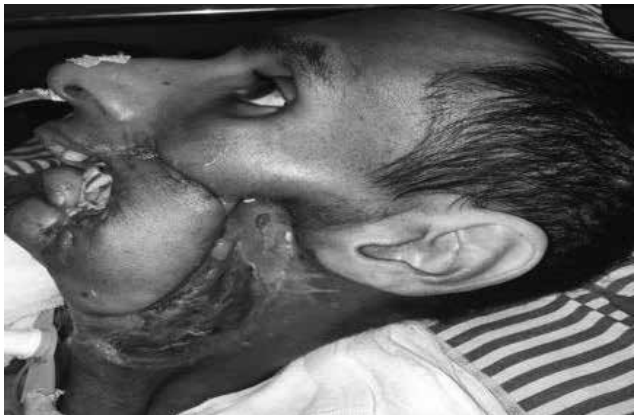

Figure 2. PMMC flap covering part of the defect after taking down the free flap, preauricular area still left uncovered.

Figure 3. Complete cover of the defect after using posterior auricular flap.

after complete recovery, posterior auricular flap was used to cover the defect anterior to left ear (Fig. 3).

DISCUSSION

Post radiotherapy recurrent tumors in head and neck regions are taxing for surgeons to deal with. These cases are met with maximum postoperative complication due to reduced vitality of the tissue. The tissue, after radiotherapy, undergoes fibrosis with severe contractures and reduced blood supply. Reconstruction of the defect after full thickness excision is another challenge. The option of local rotation flap is not viable due to extensive radiotherapy effect and associated contracture. Plastic surgeon needs to bring viable tissue from nonirradiated area to the site of defect and anastomose to it. This can be best done by myofasciocutaneous free flap. Still postoperative complication rate of infection, fistula formation, flap necrosis remains high in these cases.

An ideal free flap which suits best for the defect and has least complication is not derived yet. One has to choose according to the site and size of the defect for optimal functional and cosmetic rectification. This patient of ours had lesion involving left buccal mucosa right from anterior commissure to the retromolar trigone and also the left lower gingivobuccal sulcus. The left cheek was puckered post radiotherapy, but frank invasion of tumor into the skin was not there. In view of extensive buccal mucosal involvement and thick nonpliable cheek skin, we planned for complete full thickness excision and reconstruction with free flap. Anterolateral thigh flap was used for reconstruction of inner buccal mucosal lining and for the outer skin coverage.

On post op Day 2, flap became dusky and on stroking the flap no prompt bleeding was noted. Plan was made to take down the flap and for local flap cover. Patient's left side face and neck was irradiated and hence there were minimal options for local flap. PMMC flap was used to cover the defect, intra-oral lining was covered completely but the face was partly covered. The area in front of ear was left bare for reconstruction after stabilization of the patient. After 2 weeks, he was taken up for surgery and posterior auricular flap was used. Patient was discharged after complete take up of the flap. Astute knowledge of local flap with preserved blood supply must be there in post radiotherapy cases with failure of free flap.

CONCLUSION

Free flaps are the best to cover the defect after salvage surgery in head and neck carcinoma. Free flap failure leads to bad functional as well as cosmetic aspect of head neck region. A redo surgery with cover from local flaps is difficult and that compromises the final outcome of the patient.

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Issue of Infections in Traumatized Patients

AMIT AGRAWAL

Recently, the issues of infections in traumatized patients with special reference to growing medico-surgical concern have been discussed and many important aspects are highlighted.[1] All of us would agree that the concept of trauma care, establishment of trauma centers and availability of efficient antibiotics have changed the outcome of trauma patients remarkably. However, there is a need to study our patient population in detail, including injury patterns and the incidence of infections, details of antibiotics prescriptions including outcomes in further details. With the help of the institutions and experts who are dealing with trauma care, we can find out the pattern of infections in trauma cases and can develop guidelines to find out the indications for prophylactic and therapeutic agents according to our patient population where the resources and finances are major limiting factors. While developing the guidelines, we need to develop the strategies to propagate the message, so it should reach to the most peripheral health personnel who are involved in patient care.

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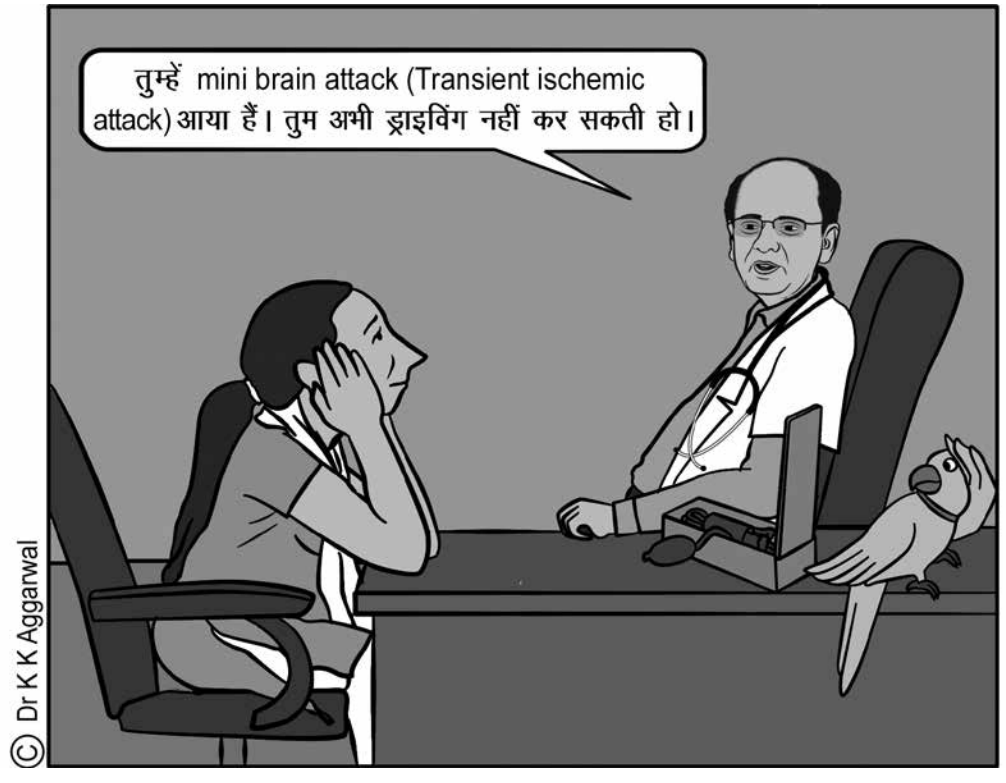

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EXPERT OPINION

Immunotherapy in Dermatology

S MURUGUSUNDRAM

Immunotherapy is a *type of biological therapy that uses substances to stimulate or suppress the immune system to help the body fight cancer, infection and other diseases*. Several cutaneous disorders occur as a result of an imbalance in the immunological pathway. The use of immunotherapy is well-established in malignancies and has a recognized role in the management of infections as well.[1,2]

Certain immunotherapies only target certain cells of the immune system while others affect the immune system in general. The immunotherapy can be of two types: **activation immunotherapy**, where immunity is induced or enhanced (used in infections, cancers) or a **suppression immunotherapy** where immunity is suppressed (used in autoimmune diseases). The different types of immunotherapy available today include cytokines, vaccines and some monoclonal antibodies.[2]

Topical immunotherapy has been used in the treatment of basal and squamous cell carcinoma, Bowen's disease, actinic keratosis, cutaneous T-cell lymphoma and primary and secondary malignant melanoma. Other conditions known to be treated successfully include lichen nitidus, nodular prurigo, vulval intraepithelial neoplasms, vulval paget's disease, condyloma accuminata, conjunctival squamous papillomata, atopic eczema and systemic lupus erythematosus.[3]

TOPICAL IMMUNOMODULATORS IN DERMATOLOGY

Topical immunomodulators are molecules which act by modifying the immune response locally when applied to the skin. They work by either **up-regulating (activating immune response/immunostimulation)** or **down-regulating (suppressing immune response/ immunosuppresion)** the immune response. Immunomodulators have been used in various dermatoses where the changes in the cutaneous immunology are central to their pathogenesis. They are categorized as steroidal and nonsteroidal immunomodulators.[4]

Founder and Medical Director
Chennai Skin Foundation and Yesudian Research Institute, Chennai, Tamil Nadu

The immunomodulator agents are classified as:[4]

Macrolactums

- Tacrolimus
- Pimecrolimus
- Sirolimus
- ABT-281
- Cyclosporine

Contact allergens

- Diphencyprone/Diphenylcyclopropenone (DPCP)
- Squaric acid dibutylester
- Dinitrochlorobenzene

Immunostimulators

- Imiquimod
- Resiquimod

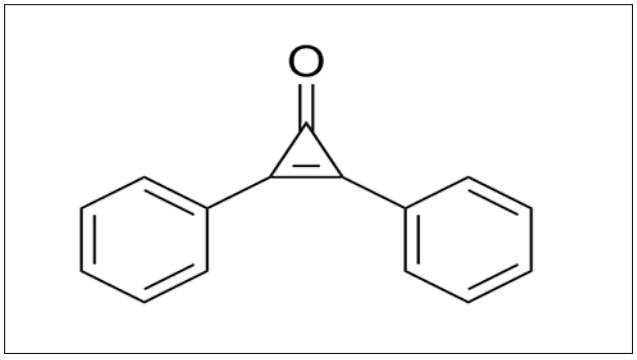
Miscellaneous agents

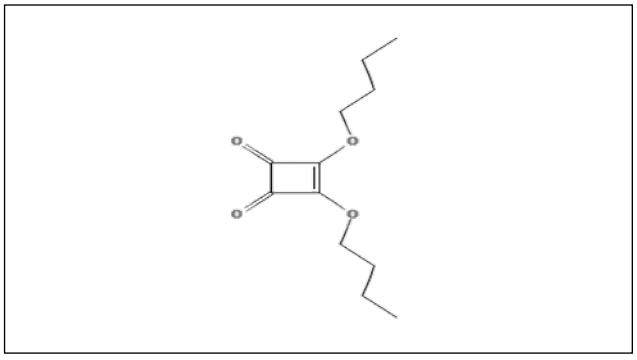
- Calcipotriol
- Anthralin
- Topical zinc
- Topical interferon
- Intralesional interferon
- Intralesional BCG.

Immunomodulators have emerged as the therapy of choice for several immune-mediated dermatoses such as atopic dermatitis, contact allergic dermatitis, alopecia areata, psoriasis, vitiligo, connective tissue disorders such as morphea and lupus erythematosus, disorders of keratinization and several benign and malignant skin tumors. The advantages associated with them include comparable efficacy, ease of application and greater safety when compared with their systemic counterparts. They can also be used for longer periods without aggressive monitoring.[4]

Diphencyprone or Diphenylcyclopropenone

It has been widely used as a topical treatment of alopecia areata and common warts. In alopecia areata, its use is based on antigenic competition theory, where the immune reaction to one antigen is proposed to





inhibit the development of immune response to other antigens. In the treatment of warts, the mechanism of action is not clear; however, it triggers a nonspecific cell-mediated immune response, triggering virus-infected cell lysis and death.[4]

Adverse effects include regional lymphadenopathy, eczema at treated site and impaired sleep. The less common side effects include fever and chills, fainting and flu-like symptoms. In female patients of childbearing age, pregnancy test should be negative before starting DPCP and a reliable contraception should be used by the patient throughout the treatment period. It is also recommended that it should not be used in children <15 years of age due to lack of long-term toxicity data.[4]

Squaric Acid Dibutylester

The mechanism of action of squaric acid dibutylester (SADBE) is similar to that of DPCP; however, long-term treatment of alopecia areata has the potential to lead to significant nonspecific suppression of delayed hypersensitivity reaction. Topical SADBE is used for the treatment of alopecia areata and warts.[4] Even though the side effects of SADBE are similar to DPCP, unlike DPCP, it is not mutagenic. It is not as stable as DPCP in acetone and requires refrigeration.[4]

Dinitrochlorobenzene

Dinitrochlorobenzene (DNCB) was the first topical sensitizer which was studied for use in the immunotherapy of alopecia areata and warts. It contains contaminants that have been shown to be mutagenic and carcinogenic in animal studies. Almost 40% of the drug is absorbed systemically. It has been largely replaced by DPCP and SADBE. It is used topically in the immunotherapy of alopecia areata and warts, skin cancers, melanoma, human immunodeficiency virus (HIV) infections and atopic dermatitis. Adverse effects include regional lymphadenopathy, eczema at treated site and impaired sleep. The less common side effects include fever and chills, fainting spells and flu-like symptoms.[4]

THE EVOLVING ROLE OF IMMUNOTHERAPY IN THE TREATMENT OF WARTS

Immunotherapy has become increasingly popular in the treatment of refractory cutaneous and genital warts including topical, intralesional and systemic agents. Even though there are no well-defined criteria on when immunotherapy should be tried in patient with warts, still the recent indications include recalcitrant warts, recurrent warts, extensive warts and difficult to treat areas (periungal and palmoplantar sites).[2]

There are many agents used for immunotherapy which show significant results in terms of safety and efficacy. Various agents used in the immunotherapy of warts are: topical agents (imiquimod, sinecatechins, Bacillus Calmette-Guérin [BCG]), intralesional agents (Mw vaccine, BCG vaccine, purified protein derivative [PPD], MMR vaccine, candidal extract, Trichophyton antigen, tuberculin, vitamin D_3, interferon α-2b) and systemic agents (such as zinc, cimetidine, levamisole, echinacea, propolis, human papillomavirus [HPV] vaccines).[2]

It is important to approach immunotherapy based on a patient-to-patient basis after considering factors such as disease burden, availability of medication, cost of therapy, potential side effects and immune status of the patient. Combined use of immunotherapy with other destructive modalities such as cryotherapy and radiofrequency ablation or concomitant use of multiple modalities of immunotherapy has been shown to enhance the treatment response.[2]

Immunotherapy can be administered in various ways for the treatment of warts, the simplest being topical application of certain inorganic molecules. These molecules elicit a contact hypersensitivity reaction with secondary activation of an immunological response, or

even topical applications of immune modulators like imiquimod and BCG vaccine.[5]

Use of immunotherapeutic agents in the treatment of recurrent warts (such as intradermal PPD) may be an effective, well-accepted and cost-effective treatment approach, especially in India where vaccination against tuberculosis is performed routinely and is mandatory. Various open studies and small randomized trials have also shown that immunomodulators are effective and devoid of major adverse effects. An additional advantage of the use of immunotherapy is that they have the potential to prevent recurrence of warts.[5]

TOPICAL IMMUNOTHERAPY IN ALOPECIA AREATA

Topical immunotherapy has been documented to be the best treatment for severe alopecia areata. DNCB, SADBE and DPCP are the contact allergens, which have been used for this purpose. While DNCB is mutagenic and is largely replaced by DPCP and SADBE, DPCP and SADBE are both nonmutagenic compounds. They are known to possess comparable efficacy and relapse rates. It has been seen that DPCP shows a response rate of 60% in severe alopecia areata to 17% in patients with alopecia totalis or universalis and shows about 88-100% high response rate in patients with patchy alopecia areata.[3]

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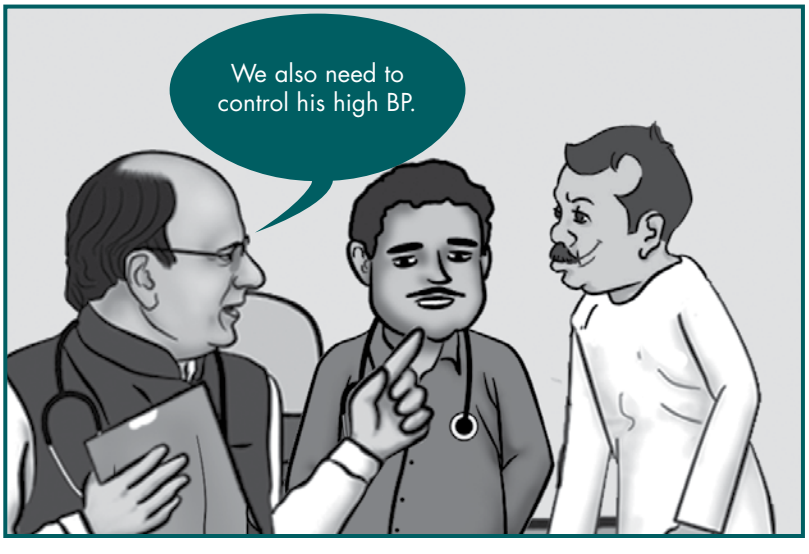
Make sure

DURING MEDICAL PRACTICE

SITUATION: A hypertensive patient with type 2 diabetes had high serum uric acid levels.



LESSON: Make sure to remember that serum uric acid had a strong association with levels of systolic and diastolic BP in type 2 diabetic patients. More attention to the serum uric acid level and treatment of hyperuricemia could halt the progress of diabetic nephropathy.

Iran J Kidney Dis. 2014;8(2):152-4.

Clinical Aspect to Admit a Patient Under MBBS Doctors and Specialist

KK AGGARWAL*, IRA GUPTA

Question No. 1: Can a general MBBS doctor admit patients under his/her self?

Answer No. 1:

Yes, a general MBBS doctor can admit patient under his/her self.

The provisions of Section 15 of the Indian Medical Council Act, 1956 deals with right of persons possessing qualifications in the schedules to be enrolled which is reproduced hereunder:

"(15) (1) Subject to the other provisions contained in this Act, the medical qualifications included in the Schedules shall be sufficient qualification for enrolment on any State Medical Register.

(2) Save as provided in Section 25, no person other than a medical practitioner enrolled on a State Medical Register:

(a) shall hold office as physician or surgeon or any other office (by whatever designation called) in Government or in any institution maintained by a local or other authority;

(b) shall practice medicine in any State;

(c) shall be entitled to sign or authenticate a medical or fitness certificate or any other certificate required by any law to be signed or authenticated by a duly qualified medical practitioner;

(d) shall be entitled to give evidence at any inquest or in any court of law as an expert under Section 45 of the Indian Evidence Act, 1872 on any matter relating to medicine.

(3) Any person who acts in contravention of any provision of Sub-section (2) shall be punished with imprisonment for a term which may extend to one year or with fine which may extend to one thousand rupees, or with both."

Also, the Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulations, 2002 enumerates the duties and responsibilities of Physician in general. The provisions of Regulation 1 of the Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulations, 2002 are reproduced hereunder:

"B. Duties and responsibilities of the Physician in general:

***1.1: Character of Physician** (Doctors with qualification of MBBS or MBBS with post graduate degree/diploma or with equivalent qualification in any medical discipline):*

***1.1.1** A physician shall uphold the dignity and honour of his profession.*

***1.1.2** The prime object of the medical profession is to render service to humanity; reward or financial gain is a subordinate consideration. Who-so-ever chooses his profession, assumes the obligation to conduct himself in accordance with its ideals. A physician should be an upright man, instructed in the art of healings. He shall keep himself pure in character and be diligent in caring for the sick; he should be modest, sober, patient, prompt in discharging his duty without anxiety; conducting himself with propriety in his profession and in all the actions of his life.*

***1.1.3** No person other than a doctor having qualification recognised by Medical Council of India and registered with Medical Council of India/State Medical Council (s) is allowed to practice Modern System of Medicine or Surgery. A person obtaining qualification in any other system of Medicine is not allowed to practice Modern System of Medicine in any form.*

***1.3:** Maintenance of medical records:*

***1.3.1** Every physician shall maintain the medical records pertaining to his/her indoor patients for a period of 3 years from the date of commencement of the treatment in a standard proforma laid down by the Medical Council of India and attached as Appendix 3.*

***1.3.2** If any request is made for medical records either by the patients/authorised attendant or legal authorities involved, the same may be duly*

*Group Editor-in-Chief, IJCP Group

acknowledged and documents shall be issued within the period of 72 hours.

1.3.3 *A Registered medical practitioner shall maintain a Register of Medical Certificates giving full details of certificates issued. When issuing a medical certificate he/she shall always enter the identification marks of the patient and keep a copy of the certificate. He/She shall not omit to record the signature and/or thumb mark, address and at least one identification mark of the patient on the medical certificates or report. The medical certificate shall be prepared as in Appendix 2.*

1.3.4 *Efforts shall be made to computerize medical records for quick retrieval.*

Further, as per the Schedules of Indian Medical Council Act, 1956 the qualification in MBBS is a recognized qualification and the person who undertakes the MBBS qualification is entitled to be registered as registered medical practitioner practicing modern system of medicine as per the provisions of Indian Medical Council Act, 1956. Further, the provisions of Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulations, 2002 enumerates the code of ethics to be observed by physician who is a doctor with qualification of MBBS or MBBS with post graduate degree/diploma or with equivalent qualification in any medical discipline. Thus, once a person has obtained a degree in MBBS and is registered under the Indian Medical Council Act, 1956, then he/she is entitled to practice the modern system of medicine.

Also, as per the provisions of Section 15 of the Indian Medical Council Act, 1956 the registered medical practitioner has a right to sign, issue and authenticate medical or fitness certificate or other certificates to his/her patient.

Also, as per the provisions of Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulations, 2002, the physical is required to maintain the medical records of his/her indoor patients. The indoor patients are those patients who have been admitted by the physician for treatment.

Hence, a patient can be admitted under the physician who is a qualified MBBS doctor and who has been registered with the Indian Medical Council or any State Medical Council for treatment of the patient as admission of a patient is essential for treatment of the patient which is the paramount duty of the registered medical practitioner.

As per the provisions of Regulation 1.4.2 of Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulation, 2002, the physician shall display as suffix to their names only recognized medical degrees or such certificates/diplomas and memberships/honours which confer professional knowledge or recognizes any exemplary qualifications/achievements. Thus, the MBBS cannot claim himself specialist.

Further, in the matter tilted as "Surinder Kumar (Laddi) versus Dr. Santosh Menon & Others, 2000 (III) CPJ 517 (Punj. SCDRC)", the Hon'ble Punjab State Consumer Disputes Redressal Commission held that MBBS doctor having obtained degree from the University was competent to practice medicines, surgery and obstetrics. Caesarean operation is a part of surgery. It may be that the persons obtaining diploma like D.G.O may be more qualified to conduct Caesarean operation but it cannot be said that such persons who had obtained such training only were eligible to conduct Caesarean operation. Further, doctor was qualified as well as eligible for conducting Caesarean operation, on the basis of her experience also.

Thus, in view of the above, it is opined that the MBBS doctor can admit patients.

Question No. 2: If a patient is admitted under MBBS doctor and having specific complains in that case is it acceptable?

Answer No. 2:

If a patient is admitted under MBBS doctor and having specific complaint, the MBBS doctor should refer the patient to the specialist or any other physician for consultation and treatment. The MBBS doctor cannot practice which is detrimental to his/her patient. Also, in case of serious illness or in doubtful or difficult condition, it is duty of the MBBS doctor to consult the specialist.

The Chapter 2 of the Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulations, 2002 deals with the duties of the physician to their patients.

As per the provisions of Regulation 2.1.1, the physician can advise the patient to seek another physician's advise. Also, if a patient is suffering from any ailment which is not within the range of the physician, then the physician can refuse to treat the patient and refer the patient to another physician.

Further, as per the provisions of Regulation 2.1.2 of the Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulations, 2002, the physician having any incapacity which is detrimental to his/her patient is not entitled to practice.

The provisions of which are reproduced hereunder:

"CHAPTER 2

2. DUTIES OF PHYSICIANS TO THEIR PATIENTS

2.1 Obligations to the Sick

2.1.1 Though a physician is not bound to treat each and every person asking his services, he should not only be ever ready to respond to the calls of the sick and the injured, but should be mindful of the high character of his mission and the responsibility he discharges in the course of his professional duties. In his treatment, he should never forget that the health and the lives of those entrusted to his care depend on his skill and attention. A physician should endeavour to add to the comfort of the sick by making his visits at the hour indicated to the patients. A physician advising a patient to seek service of another physician is acceptable, however, in case of emergency a physician must treat the patient. No physician shall arbitrarily refuse treatment to a patient. However for good reason, when a patient is suffering from an ailment which is not within the range of experience of the treating physician, the physician may refuse treatment and refer the patient to another physician.

2.1.2 Medical practitioner having any incapacity detrimental to the patient or which can affect his performance vis-à-vis the patient is not permitted to practice his profession."

Further, as per the provisions of the Chapter 3 of the Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulations, 2002 deals with the duties of the physician in consultation.

As per the provisions of Regulation 3.1.1 of the Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulations, 2002, it is the duty of the physician to request consultation in case of serious illness and in doubtful or difficult conditions.

"CHAPTER 3

3. DUTIES OF PHYSICIAN IN CONSULTATION

3.1 Unnecessary consultations should be avoided:

3.1.1 However in case of serious illness and in doubtful or difficult conditions, the physician should request consultation, but under any circumstances such consultation should be justifiable and in the interest of the patient only and not for any other consideration."

In the matter titled as "Martin F D'Souza versus Mohd. Ishfaq, Civil Appeal 3541/2002 vide judgement dated 17.2.2009", the Hon'ble Supreme Court of India has held that:

"54.*……Precautions which Doctor/Hospitals/Nursing Homes should take:*

(a) Current practices, infrastructure, paramedical and other staff, hygiene and sterility should be observed strictly. Thus, in Sarwat Ali Khan vs. Prof. R. Gogi and others Original Petition No.181 of 1997, decided on 18.7.2007 by the National Consumer Commission, the facts were that out of 52 cataract operations performed between 26th and 28th September, 1995 in an eye hospital 14 persons lost their vision in the operated eye. An enquiry revealed that in the Operation Theatre two autoclaves were not working properly. This equipment is absolutely necessary to carry out sterilization of instruments, cotton, pads, linen, etc., and the damage occurred because of its absence in working condition. The doctors were held liable.

(b) No prescription should ordinarily be given without actual examination. The tendency to give prescription over the telephone, except in an acute emergency, should be avoided.

(c) A doctor should not merely go by the version of the patient regarding his symptoms, but should also make his own analysis including tests and investigations where necessary.

(d) A doctor should not experiment unless necessary and even then he should ordinarily get a written consent from the patient.

*(e) **An expert should be consulted in case of any doubt**. Thus, in Smt. Indrani Bhattacharjee, Original Petition No. 233 of 1996 decided by the National Consumer Commission on 9.8.2007, the patient was diagnosed as having 'Mild Lateral Wall Ischemia'. The doctor prescribed medicine for gastroenteritis, but he expired. It was held that the doctor was negligent as he should have advised consulting a Cardiologist in writing.*

(f) *Full record of the diagnosis, treatment, etc. should be maintained."*

Question No. 3: As above condition is same (If a patient is admitted under MBBS doctor and having specific complains) but Specialist visits are done 1 or 2 times now in this scenario can treatment is carry on by MBBS doctors (but specialist is not looking or taking round for patient in regular manner)?

Answer No. 3:

Yes, the treatment can be carried on by MBBS doctor, even if the specialist visits the patient 1 or 2 times. Further, as per the provisions of Regulation 3.6 of the Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulation, 2002, it is the duty of the physician to prepare a case summary of the patient while referring the patient to the specialist and then the specialist should communicate his opinion in writing to the attending physician. The relevant provisions of Regulation 3.6 of the Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulations, 2002 are reproduced hereunder:

*"**CHAPTER 3***

3. DUTIES OF PHYSICIAN IN CONSULTATION

***3.6 Patients Referred to Specialists**: When a patient is referred to a specialist by the attending physician, a case summary of the patient should be given to the specialist, who should communicate his opinion in writing to the attending physician."*

Further, there are certain responsibilities of the physician towards each other which are enumerated in Chapter 4 of the Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulations, 2002 which are reproduced hereunder:

*"**CHAPTER 4***

4. RESPONSIBILITIES OF PHYSICIANS TO EACH OTHER

***4.1 Dependence of Physicians on each other:** A physician should consider it as a pleasure and privilege to render gratuitous service to all physicians and their immediate family dependants.*

***4.2 Conduct in consultation**: In consultations, no insincerity, rivalry or envy should be indulged in. All due respect should be observed towards the physician in-charge of the case and no statement or remark be made, which would impair the confidence reposed in him. For this purpose, no discussion should be carried on in the presence of the patient or his representatives.*

***4.3 Consultant not to take charge of the case**: When a physician has been called for consultation, the Consultant should normally not take charge of the case, especially on the solicitation of the patient or friends. The Consultant shall not criticize the referring physician. He/she shall discuss the diagnosis treatment plan with the referring physician.*

***4.4 Appointment of Substitute**: Whenever a physician requests another physician to attend his patients during his temporary absence from his practice, professional courtesy requires the acceptance of such appointment only when he has the capacity to discharge the additional responsibility along with his/her other duties. The physician acting under such an appointment should give the utmost consideration to the interests and reputation of the absent physician and all such patients should be restored to the care of the latter upon his/her return.*

***4.5 Visiting another Physician's Case**: When it becomes the duty of a physician occupying an official position to see and report upon an illness or injury, he should communicate to the physician in attendance so as to give him an option of being present. The medical officer/physician occupying an official position should avoid remarks upon the diagnosis or the treatment that has been adopted."*

Question No. 4: If a patient is admitted under MBBS doctor, so what are the limitations and scope of treatment which are ok or acceptable for MBBS doctor?

Answer No. 4:

The MBBS doctor has to provide treatment to his patient and to practice medical professions as per the Code of Ethics as enshrined in Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulations, 2002 and also as per the provisions of Indian Medical Council Act, 1956.

The Chapter 2 of the Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulations, 2002 enumerates the provisions relating to the duties of the physician towards their patients which are reproduced hereunder:

*"**CHAPTER 2***

2. DUTIES OF PHYSICIANS TO THEIR PATIENTS

2.1 Obligations to the Sick

***2.1.1** Though a physician is not bound to treat each and every person asking his services, he should not only be ever ready to respond to the calls of the sick and the injured, but should be mindful of the high character of his mission and the responsibility he discharges in the course of his professional duties. In his treatment, he should never forget that the health and the lives of those entrusted to his care depend on his skill and attention. A physician should endeavour to add to the comfort of the sick by making his visits at the hour indicated to the patients. A physician advising a patient to seek service of another physician is acceptable,*

however, in case of emergency a physician must treat the patient. No physician shall arbitrarily refuse treatment to a patient. However for good reason, when a patient is suffering from an ailment which is not within the range of experience of the treating physician, the physician may refuse treatment and refer the patient to another physician.

***2.1.2** Medical practitioner having any incapacity detrimental to the patient or which can affect his performance vis-à-vis the patient is not permitted to practice his profession.*

***2.2 Patience, Delicacy and Secrecy**: Patience and delicacy should characterize the physician. Confidences concerning individual or domestic life entrusted by patients to a physician and defects in the disposition or character of patients observed during medical attendance should never be revealed unless their revelation is required by the laws of the State. Sometimes, however, a physician must determine whether his duty to society requires him to employ knowledge, obtained through confidence as a physician, to protect a healthy person against a communicable disease to which he is about to be exposed. In such instance, the physician should act as he would wish another to act toward one of his own family in like circumstances.*

***2.3 Prognosis**: The physician should neither exaggerate nor minimize the gravity of a patient's condition. He should ensure himself that the patient, his relatives or his responsible friends have such knowledge of the patient's condition as will serve the best interests of the patient and the family.*

***2.4 The Patient must not be neglected**: A physician is free to choose whom he will serve. He should, however, respond to any request for his assistance in an emergency. Once having undertaken a case, the physician should not neglect the patient, nor should he withdraw from the case without giving adequate notice to the patient and his family. Provisionally or fully registered medical practitioner shall not willfully commit an act of negligence that may deprive his patient or patients from necessary medical care.*

***2.5 Engagement for an Obstetric case**: When a physician who has been engaged to attend an obstetric case is absent and another is sent for and delivery accomplished, the acting physician is entitled to his professional fees, but should secure the patient's consent to resign on the arrival of the physician engaged."*

Also, the Chapter 3 of the Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulations, 2002 enumerates the provisions relating to the duties of the physician in consultation towards their patients which are reproduced hereunder:

"CHAPTER 3

***3.** DUTIES OF PHYSICIAN IN CONSULTATION*

3.1 Unnecessary consultations should be avoided:

***3.1.1** However in case of serious illness and in doubtful or difficult conditions, the physician should request consultation, but under any circumstances such consultation should be justifiable and in the interest of the patient only and not for any other consideration.*

***3.1.2** Consulting pathologists/radiologists or asking for any other diagnostic Lab investigation should be done judiciously and not in a routine manner.*

***3.2 Consultation for Patient's Benefit**: In every consultation, the benefit to the patient is of foremost importance. All physicians engaged in the case should be frank with the patient and his attendants.*

***3.3 Punctuality in Consultation**: Utmost punctuality should be observed by a physician in making themselves available for consultations.*

3.4 Statement to Patient after Consultation:

***3.4.1** All statements to the patient or his representatives should take place in the presence of the consulting physicians, except as otherwise agreed. The disclosure of the opinion to the patient or his relatives or friends shall rest with the medical attendant.*

***3.4.2** Differences of opinion should not be divulged unnecessarily but when there is irreconcilable difference of opinion the circumstances should be frankly and impartially explained to the patient or his relatives or friends. It would be opened to them to seek further advice as they so desire.*

***3.5 Treatment after Consultation:** No decision should restrain the attending physician from making such subsequent variations in the treatment if any unexpected change occurs, but at the next consultation, reasons for the variations should be discussed/explained. The same privilege, with its obligations, belongs to the consultant when sent for in an emergency during the absence of attending physician. The attending physician may prescribe medicine at any time for the patient, whereas the consultant may prescribe only in case of emergency or as an expert when called for.*

***3.6 Patients Referred to Specialists**: When a patient is referred to a specialist by the attending physician, a case summary of the patient should be given to the specialist, who should communicate his opinion in writing to the attending physician.*

***3.7 Fees and other charges**:*

***3.7.1** A physician shall clearly display his fees and other charges on the board of his chamber and/or the hospitals he is visiting. Prescription should also make clear if the Physician himself dispensed any medicine.*

***3.7.2** A physician shall write his name and designation in full along with registration particulars in his prescription letterhead.*

***Note:** In Government hospital where the patient–load is heavy, the name of the prescribing doctor must be written below his/her signature."*

In the matter titled as "P. B. Desai versus State of Maharashtra, AIR 2014 SC 795", the Hon'ble Supreme Court of India has held that:

*"**(1)** The Doctor-Patient relationship*

***36.** Since ancient times, certain duties and responsibilities have been cast on persons who adopt the sacred profession as exemplified by Charak's Oath (1000 BC) and the Hippocratic Oath (460 BC).*

***37.** It is the responsibilities that emerge from the doctor-patient relationship that forms the cornerstone of the legal implications emerging from medical practice. The existence of a doctor-patient relationship presupposes any obligations and consequent liability of the doctor to the patient.*

***38.** It was Talcott Parsons, a social scientist, who first theorized the doctor-patient relationship. He worked on the hypothesis that illness was a form of dysfunctional deviance that required re-integration with social organism. Maintaining the social order required the development of a legitimized sick role to control this deviance, and make illness a transitional state back to normal role performance. In this process, the physician, who has mastered a body of technical knowledge, on a functional role to control the deviance of sick persons who was to be guided by an egalitarian universalism rather than a personalized particularism. While this basic notion has remained robust, over a period of time there have been numerous qualifications to the theory of Parsons. For instance, physicians and the public consider some illnesses to be the responsibility of the ill, such as lung cancer, AIDS and obesity.*

***39.** It is not necessary for us to divulge this theoretical approach to the doctor-patient relationship, as that may be based on model foundation. Fact remains that when a physician agrees to attend a patient, there is an unwritten contract between the two. The patient entrusts himself to the doctor and that doctor agrees to do his best, at all times, for the patient. Such doctor-patient contract is almost always an implied contract, except when written informed consent is obtained. While a doctor cannot be forced to treat any person, he/she has certain responsibilities for those whom he/she accepts as patients. Some of these responsibilities may be recapitulated, in brief:*

(a) to continue to treat, except under certain circumstances when doctor can abandon his patient;

(b) to take reasonable care of his patient;

(c) to exhibit reasonable skill: The degree of skill a doctor undertakes is the average degree of skill possessed by his professional brethren of the same standing as himself. The best form of treatment may differ when different choices are available. There is an implied contract between the doctor and patient where the patient is told, in effect, "Medicine is not an exact science. I shall use my experience and best judgment and you take the risk that I may be wrong. I guarantee nothing."

(d) Not to undertake any procedure beyond his control: This depends on his qualifications, special training and experience. The doctor must always ensure that he is reasonably skilled before undertaking any special procedure/treating a complicated case.

(e) Professional secrets: A doctor is under a moral and legal obligation not to divulge the information/ knowledge which he comes to learn in confidence from his patient and such a communication is privileged communication.

***Conclusion:** The formation of a doctor-patient relationship is integral to the formation of a legal relationship and consequent rights and duties, forming the basis of liability of a medical practitioner. Due to the very nature of the medical profession, the degree of responsibility on the practitioner is higher than that of any other service provider. The concept of a doctor - patient relationship forms the foundation of legal obligations between the doctor and the patient.*

In the present case, as already held above, doctor-patient relationship stood established, contractually, between the patient and the appellant.

(2) Duty of Care which a doctor owes towards his patient.

***40.** Once, it is found that there is 'duty to treat' there would be a corresponding 'duty to take care' upon the doctor qua/his patient. In certain context, the duty acquires ethical character and in certain other situations, a legal character. Whenever the principle of 'duty to*

take care' is founded on a contractual relationship, it acquires a legal character. Contextually speaking, legal 'duty to treat' may arise in a contractual relationship or governmental hospital or hospital located in a public sector undertaking. Ethical 'duty to treat' on the part of doctors is clearly covered by Code of Medical Ethics, 1972. Clause 10 of this Code deals with 'Obligation to the Sick' and Clause 13 cast obligation on the part of the doctors with the captioned "Patient must not be neglected". Whenever there is a breach of the aforesaid Code, the aggrieved patient or the party can file a petition before relevant Disciplinary Committee constituted by the concerned State Medical Council."

Question No. 5: What are the criteria or situation in which patients can/should transfer from admission under MBBS doctor to admission under Specialist?

Answer No. 5:

If a patient is admitted under MBBS doctor and having specific complaint, the MBBS doctor should refer the patient to the specialist or any other physician for consultation and treatment. The MBBS doctor cannot practice which is detrimental to his/her patient. Also, in case of serious illness or in doubtful or difficult condition, it is duty of the MBBS doctor to consult the specialist.

The Chapter 2 of the Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulations, 2002 deals with the duties of the physician to their patients.

As per the provisions of Regulation 2.1.1, the physician can advise the patient to seek another physician's advise. Also, if a patient is suffering from any ailment which is not within the range of the physician, then the physician can refuse to treat the patient and refer the patient to another physician.

Further, as per the provisions of Regulation 2.1.2 of the Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulations, 2002, the physician having any incapacity which is detrimental to his/her patient is not entitled to practice.

The provisions of which are reproduced hereunder:

*"**CHAPTER 2***

***2.** DUTIES OF PHYSICIANS TO THEIR PATIENTS*

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***2.1.1** Though a physician is not bound to treat each and every person asking his services, he should not only be ever ready to respond to the calls of the sick and the injured, but should be mindful of the high character of his mission and the responsibility he discharges in the course of his professional duties. In his treatment, he should never forget that the health and the lives of those entrusted to his care depend on his skill and attention. A physician should endeavour to add to the comfort of the sick by making his visits at the hour indicated to the patients. A physician advising a patient to seek service of another physician is acceptable, however, in case of emergency a physician must treat the patient. No physician shall arbitrarily refuse treatment to a patient. However for good reason, when a patient is suffering from an ailment which is not within the range of experience of the treating physician, the physician may refuse treatment and refer the patient to another physician.*

2.1.2 Medical practitioner having any incapacity detrimental to the patient or which can affect his performance vis-à-vis the patient is not permitted to practice his profession"

Further, as per the provisions of the Chapter 3 of the Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulations, 2002 deals with the duties of the physician in consultation.

As per the provisions of Regulation 3.1.1 of the Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulations, 2002, it is the duty of the physician to request consultation in case of serious illness and in doubtful or difficult conditions.

*"**CHAPTER 3***

***3.** DUTIES OF PHYSICIAN IN CONSULTATION*

3.1 Unnecessary consultations should be avoided:

***3.1.1** However in case of serious illness and in doubtful or difficult conditions, the physician should request consultation, but under any circumstances such consultation should be justifiable and in the interest of the patient only and not for any other consideration."*

Question No. 6: If patient is admitted under MBBS doctor and having specific complains but not seen by specialist and happens anything wrong – is it the part of medical negligence? and what are the legal actions can take against Doctor or Hospital?

Answer No. 6:

Yes, it is a part of medical negligence, if the patient is admitted under MBBS doctor and is having specific complaint but is not seem by specialist and something wrong happens to the patient as it is the duty of the MBBS doctor to refer the patient to the specialist or any other physician for consultation and treatment. The MBBS doctor cannot practice which is detrimental

to his/her patient. Also, in case of serious illness or in doubtful or difficult condition, it is duty of the MBBS doctor to consult the specialist.

The Chapter 2 of the Indian Medical Council (Professional Conduct, Etiquette & Ethics) Regulations, 2002 deals with the duties of the physician to their patients.

As per the provisions of Regulation 2.1.1, the physician can advise the patient to seek another physician's advise. Also, if a patient is suffering from any ailment which is not within the range of the physician, then the physician can refuse to treat the patient and refer the patient to another physician.

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In such situation, the patient and/or his/her relatives can take appropriate legal remedy against doctor and hospital for medical negligence by lodging a police complaint, consumer complaint, civil suit for damages, complaint before MCI.

The role of the specialist/consultant has to be very clear and there should be transparency.

Question No. 7: What is the age limit for pediatric patients?

Answer No. 7

As per government hospital, the age is up to 12 years, but the physician and pediatricians can treat the patient between the age group of 12 to 18 years.

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2018

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Every citizen of India should have the right to accessible, affordable, quality and safe heart care irrespective of his/her economical background

HEART CARE FOUNDATION OF INDIA
A Not-For-Profit Organisation

Sameer Malik Heart Care Foundation Fund

An Initiative of Heart Care Foundation of India

E-219, Greater Kailash, Part I, New Delhi - 110048 E-mail: heartcarefoundationfund@gmail.com Helpline Number: +91 - 9958771177

"No one should die of heart disease just because he/she cannot afford it"

About Sameer Malik Heart Care Foundation Fund

"Sameer Malik Heart Care Foundation Fund" it is an initiative of the Heart Care Foundation of India created with an objective to cater to the heart care needs of people.

Objectives

- Assist heart patients belonging to economically weaker sections of the society in getting affordable and quality treatment.
- Raise awareness about the fundamental right of individuals to medical treatment irrespective of their religion or economical background.
- Sensitize the central and state government about the need for a National Cardiovascular Disease Control Program.
- Encourage and involve key stakeholders such as other NGOs, private institutions and individual to help reduce the number of deaths due to heart disease in the country.
- To promote heart care research in India.
- To promote and train hands-only CPR.

Activities of the Fund

Financial Assistance

Financial assistance is given to eligible non emergent heart patients. Apart from its own resources, the fund raises money through donations, aid from individuals, organizations, professional bodies, associations and other philanthropic organizations, etc.

After the sanction of grant, the fund members facilitate the patient in getting his/her heart intervention done at state of art heart hospitals in Delhi NCR like Medanta – The Medicity, National Heart Institute, All India Institute of Medical Sciences (AIIMS), RML Hospital, GB Pant Hospital, Jaipur Golden Hospital, etc. The money is transferred directly to the concerned hospital where surgery is to be done.

Drug Subsidy

The HCFI Fund has tied up with Helpline Pharmacy in Delhi to facilitate patients with medicines at highly discounted rates (up to 50%) post surgery.

The HCFI Fund has also tied up for providing up to 50% discount on imaging (CT, MR, CT angiography, etc.)

Who is Eligible?

All heart patients who need pacemakers, valve replacement, bypass surgery, surgery for congenital heart diseases, etc. are eligible to apply for assistance from the Fund. The Application form can be downloaded from the website of the Fund. http://heartcarefoundationfund.heartcarefoundation.org and submitted in the HCFI Fund office.

Important Notes

- The patient must be a citizen of India with valid Voter ID Card/ Aadhaar Card/Driving License.
- The patient must be needy and underprivileged, to be assessed by Fund Committee.
- The HCFI Fund reserves the right to accept/reject any application for financial assistance without assigning any reasons thereof.
- The review of applications may take 4-6 weeks.
- All applications are judged on merit by a Medical Advisory Board who meet every Tuesday and decide on the acceptance/rejection of applications.
- The HCFI Fund is not responsible for failure of treatment/death of patient during or after the treatment has been rendered to the patient at designated hospitals.
- The HCFI Fund reserves the right to advise/direct the beneficiary to the designated hospital for the treatment.
- The financial assistance granted will be given directly to the treating hospital/medical center.
- The HCFI Fund has the right to print/publish/webcast/web post details of the patient including photos, and other details. (Under taking needs to be given to the HCFI Fund to publish the medical details so that more people can be benefitted).
- The HCFI Fund does not provide assistance for any emergent heart interventions.

Check List of Documents to be Submitted with Application Form

- Passport size photo of the patient and the family
- A copy of medical records
- Identity proof with proof of residence
- Income proof (preferably given by SDM)
- BPL Card (If Card holder)
- Details of financial assistance taken/applied from other sources (Prime Minister's Relief Fund, National Illness Assistance Fund Ministry of Health Govt of India, Rotary Relief Fund, Delhi Arogya Kosh, Delhi Arogya Nidhi), etc., if anyone.

Free Diagnostic Facility

The Fund has installed the latest State-of-the-Art 3 D Color Doppler EPIQ 7C Philips at E – 219, Greater Kailash, Part 1, New Delhi.
This machine is used to screen children and adult patients for any heart disease.

Free Education and Employment Facility

HCFI has tied up with a leading educational institution and an export house in Delhi NCR to adopt and to provide free education and employment opportunities to needy heart patients post surgery. Girls and women will be preferred.

Laboratory Subsidy

HCFI has also tied up with leading laboratories in Delhi to give up to 50% discounts on all pathological lab tests.

Help Us to Save Lives

The Foundation seeks support, donations and contributions from individuals, organizations and establishments both private and governmental in its endeavor to reduce the number of deaths due to heart disease in the country. All donations made towards the Heart Care Foundation Fund are exempted from tax under Section 80 G of the IT Act (1961) within India. The Fund is also eligible for overseas donations under FCRA Registration (Reg. No 231650979). The objectives and activities of the trust are charitable within the meaning of 2 (15) of the IT Act 1961.

Donate Now...

About Heart Care Foundation of India

Heart Care Foundation of India was founded in 1986 as a National Charitable Trust with the basic objective of creating awareness about all aspects of health for people from all walks of life incorporating all pathies using low-cost infotainment modules under one roof.

HCFI is the only NGO in the country on whose community-based health awareness events, the Government of India has released two commemorative national stamps (Rs 1 in 1991 on Run For The Heart and Rs 6.50 in 1993 on Heart Care Festival- First Perfect Health Mela). In February 2012, Government of Rajasthan also released one Cancellation stamp for organizing the first mega health camp at Ajmer.

Objectives

- Preventive Health Care Education
- Perfect Health Mela
- Providing Financial Support for Heart Care Interventions
- Reversal of Sudden Cardiac Death Through CPR-10 Training Workshops
- Research in Heart Care

Heart Care Foundation Blood Donation Camps

The Heart Care Foundation organizes regular blood donation camps. The blood collected is used for patients undergoing heart surgeries in various institutions across Delhi.

Committee Members

Chief Patron

Raghu Kataria

Entrepreneur

President

Dr KK Aggarwal

Padma Shri, Dr BC Roy National & DST National Science Communication Awardee

Governing Council Members

Sumi Malik
Vivek Kumar
Karna Chopra
Dr Veena Aggarwal
Veena Jaju
Naina Aggarwal
Nilesh Aggarwal
H M Bangur

Advisors

Mukul Rohtagi
Ashok Chakradhar

Executive Council Members

Deep Malik
Geeta Anand
Dr Uday Kakroo
Harish Malik
Aarti Upadhyay
Raj Kumar Daga
Shalin Kataria
Anisha Kataria
Vishnu Sureka
Rishab Soni

This Fund is dedicated to the memory of **Sameer Malik** who was an unfortunate victim of sudden cardiac death at a young age.

- HCFI has associated with Shree Cement Ltd. for newspaper and outdoor publicity campaign
- HCFI also provides Free ambulance services for adopted heart patients
- HCFI has also tied up with Manav Ashray to provide free/highly subsidized accommodation to heart patients & their families visiting Delhi for treatment.

http://heartcarefoundationfund.heartcarefoundation.org

Medtalk with Dr KK Aggarwal

Switching to oral antibiotics once an endocarditis patient is stable is safe and noninferior to continued intravenous (IV) antibiotic treatment as shown in the randomized Partial Oral Treatment of Endocarditis (POET) trial.

The group getting oral tablets after at least 10 days of IV antibiotics had a 9.0% rate of all-cause mortality, unplanned cardiac surgery, embolic events or relapse of bacteremia with the primary pathogen by 6 months after completion of treatment. That rate was noninferior to the 12.1% in the IV-only antibiotic group (hazard ratio [HR] 0.72, p = 0.40), Henning Bundgaard, MD, of Rigshospitalet in Copenhagen, reported at the European Society of Cardiology (ESC) meeting in Munich, Germany and simultaneously online in the *New England Journal of Medicine*.

FREED trial shows no cardioprotection with febuxostat: Febuxostat lowered high uric acid levels and reduced kidney injury in at-risk elderly patients compared with other management, but this effect did not translate to cardioprotection. The primary endpoint of the trial included death due to any cause; cerebrovascular disease; nonfatal coronary artery disease; heart failure requiring hospitalization; arteriosclerotic disease requiring treatment; renal impairment and atrial fibrillation. Febuxostat has greater renoprotective effect; however, cardiovascular protection may not be expected compared with renal protection.

Early percutaneous coronary intervention (PCI) in non-ST-segment myocardial infarction (NSTEMI) offers no extra benefit: A strategy of sending patients with suspected NSTEMI for invasive investigation within 12 hours of symptoms did no better than delaying their trip to the cath lab until 24 hours after event onset. During a median follow-up of 4.3 years, a composite endpoint (death from any cause, nonfatal myocardial infarction [MI], hospital admission for refractory ischemia or hospital admission for heart failure) occurred in 27.5% of the very early group versus 29.5% of the deferred group (p = 0.29), reported Thomas Engstrom, DMSci, PhD, of the University of Copenhagen.

Thinning of retina may be an early sign of Parkinson's disease and thinner the retina, the greater the severity of disease. Retinal thinning was most notable in the two inner layers of the five layers of the retina, in those with Parkinson's disease. For example, for those with Parkinson's disease, the inner most layer of the retina in one section of the eye had an average thickness of 35 μm compared to an average thickness of 37 μm for those who did not have the disease. In addition, the thinning of the retina corresponded with the loss of brain cells that produce dopamine (*Neurology. August 15, 2018*).

Irbesartan may reduce rate of aortic dilation in Marfan's: Treatment with the antihypertensive drug irbesartan is well-tolerated and slowed enlargement of the aorta in patients with Marfan syndrome as per the randomized AIMS study. At 5 years, the rate of aorta dilation among irbesartan-treated patients was 0.53 mm per year compared with 0.74 mm in those on placebo, for a 0.22 mm per-year difference (95% confidence interval [CI] 0.02-0.41, p = 0.03) (Michael Mullen, MD, of St. Bartholomew's Hospital in London at a late-breaking trials briefing at the ESC meeting). This study supports the use of irbesartan to reduce the rate of aortic dilation in patients with Marfan syndrome.

A drug-coated balloon (DCB) is on par with second-generation stents for use in native vessels measuring 2-3 mm in diameter. In a 758-person, all-comers population with an indication for PCI, the paclitaxel-eluting DCB was associated with as many major adverse cardiac events at 12 months as drug-eluting stents. The endpoint of cardiac death, nonfatal MI and target vessel revascularization occurred in 7.5% of patients who received DCB compared with 7.3% of patients who received DES (BASKET-SMALL 2 study, *The Lancet*).

US Food and Drug Administration (FDA) takes action against 21 websites illegally marketing potentially dangerous, unapproved and misbranded versions of opioid medications, including tramadol as part of agency's effort to target illegal online sales. The warning letters issued by the FDA to each of the networks state that they must immediately stop illegally selling these products to American consumers.

In an **advisory on Electronic Nicotine Delivery Systems (ENDS**) issued on recently, the Union Health Ministry has advised States/Union Territories, to

ensure that any ENDS are not sold (including online sale), manufactured, distributed, traded, imported and advertised in their jurisdictions, in larger public health interest and in order to prevent the initiation of ENDS by nonsmokers and youth with special attention to vulnerable groups. ENDS include e-Cigarettes, Heat-Not-Burn devices, Vape, e-Sheesha, e-Nicotine Flavored Hookah and the like devices that enable nicotine delivery (*MOHFW, August 28, 2018*)

Sexually transmitted diseases (STDs) are increasing in the US: Researchers from the Centers for Disease Control and Prevention (CDC) have shown that STDs rates have been increasing every year since 2013 with the number of new STD diagnoses the highest ever in 2017. There were 2.3 million cases of chlamydia, gonorrhea and syphilis diagnosed in 2017, with syphilis diagnoses up by 76% and gonorrhea diagnoses up by 67% since 2013. Chlamydia was the most commonly reported condition (*National STD Prevention Conference in Washington*).

Think before you prescribe. Consider a more convenient option when prescribing antiviral drug for herpes zoster: Herpes zoster or shingles is a viral infection characterized by pain followed by a vesicular rash. It is caused by reactivation of the varicella zoster virus (VZV). The aim of treatment is to hasten healing, reduce the severity and duration of pain and also to reduce the chances of complications such as post-herpetic neuralgia. Timely administration of antiviral drugs - acyclovir, valacyclovir and famciclovir - decreases viral shedding and reduces the acute pain in patients with uncomplicated infection. These clinical benefits have been demonstrated in various clinical trials.

Acyclovir has to be administered five times daily, which may hinder patient compliance to prescribed treatment. This is especially of concern in the elderly, in whom herpes zoster is most prevalent.

Valacyclovir, the prodrug of acyclovir is administered thrice-daily as treatment for herpes zoster and the serum levels achieved are 3 to 5 times higher than those obtained with oral acyclovir. Famciclovir is a prodrug of penciclovir and is also administered thrice-daily as treatment for herpes zoster.

Therefore, when compliance is a concern or convenience of dosing is required, valacyclovir and famciclovir are useful and convenient alternatives to acyclovir as treatment for herpes zoster.

No aspirin in diabetes: In the ASCEND trial, aspirin significantly reduced the risk for serious vascular events by 12% but also significantly increased the risk for major bleeding by 29%. No effect on gastrointestinal or any other cancer was seen. Aspirin is not needed in patients with good control of blood sugar, blood pressure and cholesterol and in nonsmokers (ESC 2018 Congress; also published simultaneously in the *New England Journal of Medicine*).

Compounded drugs: The US FDA has proposed excluding three substances from a list of ingredients that could be used to manufacture compounded medications in bulk for use by hospitals and doctors' offices. Compounded medications are custom-made medications that traditionally were formulated by pharmacies for specific patients. Those substances included vasopressin, bumetanide and nicardipine hydrochloride.

Preauthorization for health insurance claims under the Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (PMJAY) will be completed and communicated to the hospital within 30 minutes. The preauthorization stage is a provisional sanction that would keep a check on any false claims where people avail health insurance despite them not being essential because the money will be reimbursed. The PMJAY scheme will have set guidelines for preauthorization and the process will be mandatory for 636 of the 1,350 packages offered.

Medical apathy: A ward boy at a government hospital in Kanpur, Uttar Pradesh was seen treating a woman with head-injury on the floor outside the emergency ward. The doctor in-charge allegedly said that he was tending to other patients at the hospital when the ward boy started to treat to the injured woman. He added that strict action will be taken against the ward boy for starting the treatment in such unhygienic condition as the floor outside the hospital. Anything more than first aid cannot be provided by unqualified persons (*TOI*).

India's first biojet fuel flight: SpiceJet operated India's first test flight powered by biojet fuel, according to the airline. A Bombardier Q400 aircraft, partially using biojet fuel, took off from Dehradun and landed at the airport in the national capital. The airline said it successfully operated "India's first ever biojet fuel flight". The flight was powered with a blend of 75% air turbine fuel (ATF) and 25% biojet fuel, it said. Made from Jatropha crop, the fuel has been developed by the CSIR-Indian Institute of Petroleum (IIP), Dehradun, SpiceJet said. Around 20 people, including officials from aviation regulator DGCA and SpiceJet, were in the test flight. The duration of the flight was around 25 minutes, according to an airline executive (*PTI, August 27, 2018*).

FDA update: The FDA is warning consumers not to purchase a sexual enhancement product promoted as FDA-approved and sold on social media. Deputy Secretary-general Surachoke Tangwiwat said the product labeled as "Girly Sex" had never been examined or approved for use, and customers are strongly advised not to use it.

Is your gut inflamed? The following may be the symptoms.

- *Food sensitivities:* If you feel bloated, gassy and just downright blah after you eat certain foods, it might be a sign that you have gut inflammation, also known as leaky gut syndrome. The most common food sensitivities are to gluten and dairy, but you can develop sensitivities to other foods as well.
- *Migraines:* There is a link between gut and brain health. Inability to concentrate, attention deficit disorder (ADD), migraine and attention deficit hyperactivity disorder (ADHD) might actually be linked to what's going on in your gut.
- *Chronic fatigue syndrome or fibromyalgia:* Gluten intolerance is a contributing factor.
- *Autoimmune diseases*
- *Persistent skin problems:* Acne, rosacea or eczema. A disruption in your gut bacteria can also allow yeast, commonly called Candida, to thrive. Candida colonizes the gut, causing it to become leaky, which in turn allows the yeast to escape via the bloodstream. Once escaped, this yeast can affect your mood, hair, nails and skin.
- *Anxiety and depression:* Inflammation in your gut can negatively affect your mood. Markers of inflammation are elevated in depressed patients.
- *Gastrointestinal issues:* Gas, bloating, diarrhea or irritable bowel syndrome it's likely that your gut is inflamed due to stress, food intolerances, infection or environmental toxins.

Remove all inflammatory foods that can damage the gut such as gluten, dairy, corn, soy and eggs, as well as toxic foods, including sugar, caffeine and alcohol. Restore the beneficial bacteria in the gut with high-quality, high-potency probiotics.

Are pacemakers and defibrillators affected by electric cars? Electromagnetic interference from increasingly popular electric cars presents no risk to people with cardiac implantable electronic devices (CIEDs), including pacemakers and implantable cardioverter defibrillators, new research suggests. The cross-sectional study evaluating electric cars and electromagnetic interference with cardiac implantable electronic devices was published online April 24 in the *Annals of Internal Medicine*.

Labeling for fluoroquinolones to include more side effects: In a written reply to Lok Sabha, Anupriya Patel, Minister of State for Health and Family Welfare, stated that "in view of the action of US FDA on labeling changes of fluoroquinolones, the Drug Controller General of India is examining the issue in consultation with subject expert committee of CDSCO".

A recent FDA review found instances of hypoglycemic coma where users of fluoroquinolones experienced hypoglycemia. In the US, the Blood Glucose Disturbances subsection of the labeling for all systemic fluoroquinolones will be required to explicitly reflect the potential risk of coma with hypoglycemia. The FDA first added a Boxed Warning to fluoroquinolones in July 2008 for the increased risk of tendinitis and tendon rupture.

Indoor pollution and ventilation (Dr KK Aggarwal and Mr JK Jain): Ventilation is the process of exchanging indoor air with outdoor air to create a comfortable indoor environment for humans. Ventilation-related problems account for as much as 60% of indoor air quality problems.

Complaints related to poor ventilation may be due to high concentrations of indoor pollutants with inadequate air exchange, inadequate distribution of ventilated air and ventilation of polluted outdoor air as primary issues. Improper maintenance of heating, ventilation and air-conditioning can cause lung symptoms and Legionellosis.

In a meta-analysis of six studies comparing symptoms in workers in mechanically ventilated air-conditioned buildings with workers in naturally ventilated buildings, there was a 2- to 3-fold increase in the prevalence of work-related headaches, lethargy and upper respiratory/mucous membrane symptoms in those working in mechanically ventilated buildings. These symptoms include lethargy and headache in >50% of workers and breathlessness and chest tightness in about 20%. Other common symptoms included dry or itchy eyes and stuffy or runny nose. There is an association between empirically increased ventilation rates and decreased symptoms, including headaches, respiratory symptoms, nose and throat symptoms and skin complaints

Four doctors booked under the Indian Penal Code (IPC) 337 and 338 but where is the grievous hurt? Missing a diagnosis is not grievous hurt: In Pune, a baby born with deformity, missed on ultrasound.

Patient's prenatal check-ups were done at Ashwamegh Nursing Home. None of the doctors notified that the baby had a deformity. They instead said that the baby was fine and their reports, too, claimed that the child was fit. When the baby was born on November 4, 2016, the baby was born with deformities in his right leg, left hand and had no passage for urine. The father went to the then Commissioner of police Rashmi Shukla.

Section 337 in the IPC: Causing hurt by act endangering life or personal safety of others.—Whoever causes hurt to any person by doing any act so rashly or negligently as to endanger human life, or the personal safety of others, shall be punished with imprisonment of either description for a term which may extend to six months, or with fine which may extend to five hundred rupees, or with both.

Section 338 in the IPC: Causing grievous hurt by act endangering life or personal safety of others.—Whoever causes grievous hurt to any person by doing any act so rashly or negligently as to endanger human life, or the personal safety of others, shall be punished with imprisonment of either description for a term which may extend to two years, or with fine which may extend to one thousand rupees, or with both.

Stent only in culprit vessel: The early benefit of treating the culprit lesion only in patients with acute MI complicated by cardiogenic shock was maintained at 1 year in the CULPRIT-SHOCK trial, although with a surprising uptick in rehospitalizations for congestive heart failure. Compared with immediate multivessel PCI, culprit-lesion-only PCI with the possibility for staged revascularization of nonculprit lesions lowered the risk for the primary composite endpoint of death from any cause or renal replacement therapy by 13% at 1 year (p = 0. 048).

Go for CT angio in cases of stable angina: Adding CT coronary angiography (CTCA) to standard care in patients with stable chest pain significantly reduces mortality rates from coronary heart disease (CHD) or nonfatal MI after 5 years, without increasing coronary intervention rates as per Scottish COmputed Tomography of the HEART Trial (SCOT-HEART) presented at the ESC Congress 2018 in Munich, Germany and published simultaneously August 25 in the *New England Journal of Medicine.* Performing CTCA during diagnostic testing was associated with a 41% reduction in the combined primary endpoint: rates of death from CHD and nonfatal MI.

Study raises question on the role of aspirin in primary prevention: In the Aspirin to Reduce Risk of Initial Vascular Events (ARRIVE) trial, aspirin at a daily dose of 100 mg was not seen to reduce the long-term risk for cardiovascular or cerebrovascular events in a trial that randomly assigned more than 12,000 nondiabetic adults with multiple cardiovascular (CV) risk factors but no history of CV events. Nor was the risk for stroke reduced. But daily aspirin was associated with more gastrointestinal bleeding. The ARRIVE trial was initiated a decade ago to find out answers to long-standing questions about whether aspirin is cardioprotective in a primary prevention setting, in this case in patients thought to be at moderate CV risk.

How should doctors discuss treatment options with older kidney failure patients? A study appearing in published online July 26, 2018 in the *Clinical Journal of the American Society of Nephrology* identified 4 different approaches to discussing the option of dialysis versus conservative management for older patients with kidney failure for decision-making: Paternalist, informative (patient-led), interpretive (with doctors as guides steering patients towards an optional treatment) and institutionalist (guided by institutional culture and incentives).

Five themes characterized differences between these approaches regarding how nephrologists prioritized the following:

- Patient autonomy
- Patient engagement and deliberation (disclosing all options, presenting options neutrally, eliciting patient values, explicit treatment recommendation)
- The influence of institutional norm
- The importance of clinical outcomes (such as survival, dialysis initiation)
- Role of the physician (educating patients, making decisions, pursuing active therapies, managing symptoms).

Two arteries graft better than one artery and one vein, says ART study: After 10 years of follow-up, outcomes were better in patients receiving two arterial grafts in performing coronary artery bypass graft (CABG) surgery than in those receiving a combination of artery and veins as per Arterial Revascularization Trial (ART) study. In the primary endpoint of the study (10-year mortality), 329 CABG patients who were treated randomized to the single arterial graft died during the study period compared with 315 patients who died who were originally assigned to receive two arterial grafts (HR 0.96, 95% CI 0.82-1.12), reported David Taggart, MD, PhD, of the University of Oxford in the United Kingdom.

Intra-arterial phenargan is a known complication in 2 in 57,575 cases: In a 2001 case, Delhi's VIMHANS Hospital and a doctor have been asked to pay Rs. 20 lakh as compensation on grounds of treatment offered to a 12-year-old boy, which led to the amputation of four fingers of his right hand on grounds of giving an intra-arterial injection of phenargan instead of an IV route.

What should have been the argument? According to the package insert, aspiration of dark blood does not preclude intra-arterial placement of the needle because blood can become discolored upon contact with promethazine.

Review of literature: Promethazine (phenergan) injection is a commonly used product that possesses antihistamine, sedative, antimotion sickness and antiemetic effects. The drug is also a known vesicant which is highly caustic to the intima of blood vessels and surrounding tissue.

Formulated with phenol, promethazine has a pH between 4 and 5.5. Although deep intramuscular injection into a large muscle is the preferred parenteral route of administration, product labeling states that the drug may be given by slow IV push, which is how it is typically given in most hospitals.

However, due to the frequency of severe, tragic, local injuries after infiltration or inadvertent intra-arterial injection, Institute of Safe Medical Practices recommends that the FDA re-examine the product labeling and consider eliminating the IV route of administration.

Severe tissue damage can occur regardless of the route of parenteral administration, although IV and inadvertent intra-arterial or subcutaneous administration results in more significant complications, including: burning, erythema, pain, swelling, severe spasm of vessels, thrombophlebitis, venous thrombosis, phlebitis, nerve damage, paralysis, abscess, tissue necrosis and gangrene. Sometimes surgical intervention has been required, including fasciotomy, skin graft and even amputation.

The true extent of this problem may be unknown. However, scores of reports suggest that patient harm may be occurring more frequently than recognized.

According to the package insert, "Proper IV administration of this product is well-tolerated, but use of this route is not without some hazards." To reduce the risk of these hazards, manufacturer labeling recommends to: give the drug in concentrations no >25 mg/mL; administer the drug at a rate no >25 mg/min; inject the drug through the tubing of an infusion set that is running and known to be functioning satisfactorily and to stop the injection immediately if the patient reports burning to evaluate possible arterial placement or perivascular extravasation.

How to use

- Since 25 mg/mL is the highest concentration of promethazine that can be given IV, stock only this concentration (not the 50 mg/mL concentration).
- Consider 6.25-12.5 mg of promethazine as the starting IV dose, especially for elderly patients.
- Dilute the drug in 10-20 mL of normal saline if it will be administered via a running IV, or prepare the medication in minibags containing normal saline. Extravasation can also be recognized more quickly when promethazine is diluted than if the drug is given in a smaller volume.
- Give the medication only through a large-bore vein (preferably via a central venous access site, but absolutely no hand or wrist veins). Check patency of the access site before administration. ***Note:*** *according to the package insert, aspiration of dark blood does not preclude intra-arterial placement of the needle because blood can become discolored upon contact with promethazine. Use of syringes with rigid plungers or small bore needles might obscure typical arterial backflow if this is relied upon alone.*
- Administer IV promethazine through a running IV line at the port furthest from the patient's vein.
- Administer IV promethazine over 10-15 minutes.
- Before administration of the drug, tell patients to let you know immediately if burning or pain occurs during or after the injection.
- Take consent.
- Build an alert that the drug is a vesicant and should be diluted and administered slowly through a running IV.
- Consider safer alternatives like ondansetron.

Some cases

- Necrosis caused by intra-arterial injection of promethazine: *case report:* Promethazine injections have led to necrosis and gangrene of the distal upper extremity when inadvertently injected into an artery. There have been few case reports of this alarming complication in the literature. We report on 2 cases of intra-arterial promethazine injection that led to amputation (Foret AL, et al. *J Hand Surg Am.* 2009;34(5):919-23).

- Accidental intra-arterial injection of promethazine HCI during general anesthesia: Report of a case (Mostafavi H. *Anesthesiology*. 1971;35:645).
- Accidental intra-arterial injection: A case report, new treatment modalities, and a review of the literature (Keene JR, et al. *J Oral Maxillofac Surg*. 2006;64(6):965-8).
- An unusual adverse event with the use of IV bolus of promethazine (phenergan): The earlier used sedatives like promethazine, pethidine and pentazocine (fortwin) are not commonly used these days but at times they are used especially in periphery for postoperative sedation and in gynecological surgeries and wards. We hereby report an unusual adverse event associated with the use of IV bolus of promethazine. With this case report we want to highlight that if promethazine is to be used for any purpose it should be given preferably intramuscular and if given IV, should be diluted and given slowly in a good running cannula. (However, patient inspite of receiving 20 mg pethidine was anxious. For that 12.5 mg of promethazine was given as slow IV push. Same dose of promethazine is repeated after 1 hour intraoperatively. Rest of the intraoperative period was uneventful. No other drug was injected after promethazine. In the postoperative period, a bluish discoloration was noted on the dorsum of the hand in which the cannula was secured. And on touch the dorsum of the hand was cold) (Singh A, et al. *Int J Res Med Sci.* 2018;6(1):347-8).

The Delhi High Court has ruled that unsuccessful sterilization operation does not mean medical negligence, if the patient and her relatives were informed about chances of its failure: In the matter titled as **"Lok Nayak Hospital versus Prema, RFA No. 56/2006"** the Hon'ble High Court of Delhi vide judgment dated 06.08.2018 has held that medical negligence is not proved in case of unsuccessful sterilization operation, if the doctor/hospital has duly got the consent form and other forms signed by the patient and counter signed by her relatives in which it was specifically mentioned by the doctor/hospital that the operation need not be always successful and there are always some chances of failure, and if the operation is not successful the hospital or the concerned Doctor will not be held responsible.

Facts of the Case

The respondent/plaintiff filed the subject suit by pleading that she was operated upon on 15.5.2001 in the appellant's/defendant's hospital by the concerned doctor namely Dr Deepa. Respondent/plaintiff pleaded that she took all postoperative care including taking all prescribed medicines as also precaution but after a few months of the operation, she suspected that she had conceived and therefore when she went to the Physical Health Centre at Dayalpur, Delhi, on 21.10.2002 and has got herself examined on 23.10.2002, it was discovered that respondent/plaintiff was pregnant as the tubectomy operation performed on her had failed. Respondent/plaintiff pleaded that Dr. Deepa (Defendant No. 1 in the suit) fell short in taking reasonable and due care while performing the sterilization operation, resulting in defect and deficiency in the operation, therefore respondent/plaintiff became pregnant again to have her 7th child. After serving a legal notice/Ex. P-3 and which was replied to by the appellant/defendant no. 2 vide reply dated 24.1.2003, Ex. P-2, the subject suit was filed.

The suit was contested by the appellant/defendant and it was denied that there was any negligence while performing the sterilization operation. The appellant/defendant pleaded that the respondent/plaintiff before performing her operation had signed two forms on 14.5.2001, and which forms were also counter-signed by the sister-in-law/Bhabhi of the respondent/plaintiff namely Ms. Suman, and that in these forms Ex. PW-1/D-1 and Ex. PW-1/D-2, it was specifically mentioned by the appellant/defendant that the operation need not be always successful and there are always some chances of failure, and if the operation is not successful the appellant/defendant or the concerned Doctor will not be held responsible. The contents of these documents were explained to the respondent/plaintiff in Hindi in the presence of her sister-in-law/Bhabhi, namely Ms. Suman. It was denied that the appellant's/defendant's doctors had given an assurance that the operation would be 100% successful. Appellant/defendant contended that the respondent/plaintiff was herself responsible because she could have got done the abortion in time, but she did not get such abortion done. The suit was therefore prayed to be dismissed.

The only relevant issue was issue no. 1 and the trial court has decided this issue in favor the respondent/plaintiff. Trial court has held that the respondent/plaintiff had not signed the forms Ex. PW1/D-1 and Ex. PW-1/D-2 inasmuch as she has specifically denied the signing of these forms by her and her sister-in-law/Bhabhi/Ms. Suman, and consequently, the trial court believed such stand of the respondent/plaintiff. Trial court has also held that since the concerned doctor namely Dr Deepa, defendant no. 1 in the suit, did not depose and

adverse inference has to be drawn against the appellant/defendant. Trial court has also observed that the signing of the forms Ex. PW1/D-1 and Ex. PW-1/D-2 by the respondent/plaintiff were not believable because the forms are dated 14.5.2001 and the operation was conducted on 15.5.2001. Trial court therefore held that the appellant/defendant was guilty of negligence in performing tubectomy operation which resulted in the birth of the respondent's/plaintiff's 7th child, and therefore the suit was decreed for the sum of Rs. 2,20,000/-

Issue before the Hon'ble High Court

The only issue to be decided by the Hon'ble High Court was whether the trial court has rightly held that the appellant/defendant was guilty of negligence on account of the sterilization operation conducted on the respondent/plaintiff being unsuccessful.

Judgment of the Hon'ble High Court

8. Firstly, it is to be noted that the only allegation of negligence alleged by the respondent/plaintiff against the appellant/defendant is that the tubectomy/sterilization operation failed. Since medically there is never a 100% chance of success in sterilization operations, the mere fact that the operation was not successful, that by itself cannot be a reason to hold the appellant/defendant and its doctors guilty of negligence. This aspect is no longer res integra and is so held by a Division Bench of this Court in the case of Smt. Madhubala Vs. Govt. of NCT of Delhi, 118 (2005) DLT 515 (DB).

13. At this stage, I may note that the trial court has arrived at a completely perverse and illegal finding that the forms Ex. PW-1/D-1 and Ex. PW-1/D-2 do not bear the signatures of the respondent/plaintiff and her sister-in-law/Bhabhi/Ms. Suman and inasmuch simple denial by the respondent/plaintiff of her thumb impression on forms Ex. PW-1/D-1 and Ex. PW-1/D-2 and the signatures of her sister-in-law/Bhabhi/Ms. Suman is not enough because of various reasons. Firstly, signing of such forms is always and invariably got done by any private or public hospital before a tubectomy/sterilization operation. Secondly, the documents Ex. PW1/D-1 and Ex. PW-1/D-2 contain the thumb impressions of the respondent/plaintiff and whereas a signature can be forged but thumb impressions can never be forged. Thirdly, admittedly, the name of the sister-in-law/Bhabhi of the respondent/plaintiff is Ms. Suman and how would the appellant/defendant have known the name of the sister-in-law/Bhabhi of the respondent/plaintiff as Ms. Suman and who has signed as her full name Suman on the two forms. Trial court therefore ought not to have believed the self-serving denial of the respondent/plaintiff of her thumb impression and signatures of her sister-in-law/Bhabhi/Ms. Suman on the forms Ex. PW-1/D-1 and Ex. PW-1/D-2.

14. In my opinion, the trial court has also unnecessarily laid emphasis on the defendant no. 1/Dr Deepa in the suit for not appearing and deposing and therefore adverse inference has been drawn against the appellant/defendant, inasmuch as in my opinion there was no need of the defendant no. 1/Dr Deepa to appear and depose inasmuch there was no specific case of negligence against the defendant no. 1/Dr Deepa except that the operation was unsuccessful. Once the forms Ex. PW-1/D-1 and Ex. PW-1/D-2 are proved it cannot be argued by the respondent/plaintiff that there was 100% assurance given of the operation of being successful and which medically also is never 100% success.

Advisory

Dr KK Aggarwal and Ira Gupta

Before performing tubectomy/sterilization operation, every doctor and hospital should specifically inform the patient and her relatives that medically the said operation is not 100% successful. There should be an informed consent form, which specifically mentions that sterilization operations are not 100% successful and the same should be signed by the patient and her relatives (with their name). The thumb impressions of the patient and her relatives should also be taken as the same cannot be forged along with their signatures.

Alcohol consumption is responsible for 2.8 million deaths per year across the globe, with cancer the leading cause of alcohol-related death among people aged 50 years and older. There is no safe level of alcohol consumption. The findings come from the latest version of the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD), which analyzed data on 28 million people from 195 countries to estimate the prevalence of alcohol consumption, the amounts consumed, and the associated harms and published in the *Lancet* on August 23.

Rivaroxaban dosages for primary venous thromboembolism (VTE) prevention are lower (7.5 mg) than the currently recommended levels for reducing the post-discharge risk for recurrent VTE based on the EINSTEIN CHOICE trial.

A monoclonal antibody, previously known by its chemical name lanadelumab, has been FDA

approved to treat patients with types I and II hereditary angioedema, a disease that affects about 1 in 50,000.

Faulty J&J hip implant, patients to get compensation: The Union health ministry will establish committees at the Central and State levels to track and compensate patients who received a faulty artificial hip implant that was recalled worldwide by the manufacturer Johnson & Johnson (J&J), in 2010. Close to 4,700 people with damaged hip joints in India received the implant before 2010, when it was recalled, of which only 1,080 were tracked and compensated. Of them, 275 underwent revision surgeries and the remaining are being closely monitored by their surgeons for side effects.

Following complaints from patients, the Health Ministry set up an 11-member committee on February 7, 2017, to investigate patient complaints of adverse events against J&J's metal-on-metal Articular Surface Replacement (ASR) hip implant devices - XL Acetabular Hip System and Hip Resurfacing System. The committee was chaired by Dr Arun K Agarwal, former Dean of Maulana Azad Medical College, and submitted its report on February 19, 2018. It said specialists must assess cases individually for treatment and compensation of at least Rs. 20 lakh. Metal-on-metal hip implants have been largely discontinued because of the associated complications. With other implants, the revision surgery rate would be around 3-5%, but with this particular brand, it was a higher 10-12% (HT).

In view of extraordinary rise in prices of raw materials pushing up formulation prices significantly, pharmaceutical industry associations have urged the Central government to increase ceiling prices of drugs under National List of Essential Medicines (NLEM).

Medical device margins set to be capped at 65% in India: Prime Minister Narendra Modi is likely to accept government think tank NITI Aayog's recommendation to cap trade margin at 65% for medical devices. According to NITI Aayog's formula, the MRP of a device will be decided by adding the trade margin to the price at the first point of sale (stockist). The trade margin is the difference between the price at which the manufacturers/importers sell to stockists and the price charged to consumers.

This will give flexibility to the company to make any amount of margin before they bill it to the stockist. As per the companies many expenditures are incurred by the importing companies, including clinical education on deployment, and therefore trade margins should start from the first point of sale that is the stockist. High margins with the company will not able to correct the so-called companies' distribution of money to the end users and the hospitals.

The National Diabetes Education Program (NDEP) has revised its "Guiding Principles" for management of diabetes and prediabetes: Supported by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) and CDC, though not official guidelines, it emphasizes the importance of diabetes self-management education and support, and of providing patient-centered care using shared decision-making and individualized care and include 10 guiding principles. A new guiding principle 6 "Address Overweight and Obesity in the Management of Diabetes" has been also added to the existing guiding principles.

Always wear your seat belt when you drive, the prime minister does: Press Information Bureau has shared an inspiring video on Twitter to promote road safety awareness, which shows Prime Minister Narendra Modi putting on his seat belt as soon as he enters his car.

A1c measurement during the first trimester of pregnancy may aid in early detection of women at risk for gestational diabetes as per a study in August 16 in *Scientific Reports*. Among participants, the risk for gestational diabetes increased linearly with first-trimester A1c. Also, the addition of first-trimester A1c to conventional risk factors enhanced gestational diabetes predictive capability.

Noninvasive brain stimulation technology delivered during sleep may improve memory: Investigators found closed-loop transcranial alternating-current stimulation delivered overnight to augment endogenous slow-wave oscillations in humans improves generalized memory. The study was published online July 23, 2018 in the *Journal of Neuroscience*.

Prehabilitation prior to cardiac surgery can improve postoperative outcomes for frail older adults. A three-pronged approach called NEW, a component of the enhanced recovery protocols targets nutritional status (N), exercise capacity (E) and worry reduction (W) to support the growing number of older patients undergoing complex cardiac procedures. The article was published in the July 2018 issue of the *Canadian Journal of Cardiology*.

A new study at the McMaster University, Ontario, Canada has shown that **an average salt consumption, between one and half teaspoons daily, will not constitute a health risk.** But it adds that a quantity that exceeds 5 g, or 2½, of salt may be quite dangerous

for the heart. It also showed that even for those who consumed too much salt, the health risk would be eliminated if people improved the quality of their diets by eating fruits, vegetables, dairy foods, potatoes and other potassium-rich foods.

Congress MP Shashi Tharoor has suggested that the Kerala government request the World Health Organization (WHO) to supply 2 million anti-cholera vaccines to minimize the risk of water-borne diseases in the flood-ravaged state.

Two new user friendly initiatives launched by the ESIC (Employees' State Insurance Corporation) "IVR (Interactive Voice Response)/Help Desk" for ESIC Toll Free No. - 1XXX-XX-2526 and production of "seven Audio-Visual clips on ESI Benefits" aim to empower insured persons and their beneficiaries and create awareness among other stakeholder, as per a press release from Ministry of Labour & Employment. The audiovisuals are available on You Tube (ESIC HQ You Tube Channel).

Breath tests to detect cancer have a relatively high level of sensitivity and specificity as per a new meta-analysis of early trials of the concept published online August 16 in *JAMA Oncology*. A breath test detects and quantifies preidentified, named volatile organic compounds (VOCs) within exhaled breath in order to diagnose cancer, explain the study authors, led by George Hanna, MD, PhD, a surgeon at the Imperial College London in the United Kingdom. The concept is already in use in other areas of clinical practice, including breathalyser devices for ethanol detection, carbon 13 urea breath testing for *Helicobacter pylori* and exhaled nitric oxide testing in asthma.

Adding blood sugar and estimated glomerular filtration rate (eGFR) to high-sensitivity cardiac troponin level testing in the emergency department is more sensitive and specific for determining risk for MI and death in patients with MI symptoms than hs-cTn testing alone as perPeter A. Kavsak, PhD, an associate professor from the Department of Pathology and Molecular Medicine at McMaster University in Hamilton, Ontario, Canada in August 20 issue of *Canadian Medical Association Journal*. Elevated blood sugar in patients with ST-segment elevation MI can indicate the patient is hemodynamically unstable, has a larger infarct size, and has increased risk for death within 30 days. Also, eGFR independently predicts major adverse cardiac outcomes in those with acute coronary syndrome.

The Supreme Court of India has said that the **right to healthcare prevails over right to voluntary retirement by doctors** in the larger public interestas medical services are part and parcel of right to life itself. Right to retire as a fundamental right can't be supreme then the right to life, said the bench of Justice Arun Mishra and Justice S. Abdul Nazeer in their judgment pronounced recently. "When services are required, denial of voluntary retirement is permissible under the rules applicable in the State of Uttar Pradesh", the court said.

Moderation and variety are the answer when it comes to the use of edible oils: But when it comes to coconut oil it has been called as a "pure poison". Last year, the American Heart Association (AHA) released a report advising against using coconut oil. Existing data showed the fat increased bad cholesterol in seven out of seven trials, just as butter, beef fat and palm oil. The fat in coconut oil is far more saturated (82%) than butter (63%) and beef fat (50%). Coconut oil is almost all saturated fat and if consumed alongside a diet high in saturated fats, you may be consuming well over the government recommended 20 g/day for women and 30 g/day for men. People are turning to coconuts as a guilt-free fat amongst a trend of low carb/high fat diets.

United we stand, divided we fall is a phrase well-known to us all. The power of unity is tremendous. Emphasizing this, Dr. Vera Luiza da Costa e Silva, the Head of the WHO Framework Convention on Tobacco Control Secretariat has said, **"Combat against devastating effects of tobacco can only be won 'if the UN stands united".** United Nations agencies must join forces at the policy level and refuse interference from tobacco companies in their programs, so the destructive impact of tobacco can be effectively addressed and lives can be saved. According to a report by WHO and the UN Development Programme (UNDP) "The Who Framework Convention on Tobacco Control An Accelerator for Sustainable Development", it is estimated that up to 1 billion people could die from tobacco-related diseases this century. Currently, over 7 million people die every year due to tobacco use. Tobacco costs, the global economy over a trillion dollars annually in medical expenses and lost productivity. It also has environmental impacts-deforestation and soil degradation for tobacco cultures, as well as water and soil pollution from cigarette littering.

Back to the basics: Hand wash is the best: *Clostridium difficile* is a rising problem and is most often found in hospitals. It is responsible for 20% of antibiotic-associated diarrhea and causes 29,000 annual deaths in

the US alone. *C. difficile* survives alcohol-based sanitizers because of its hard shell. The only way to get rid of it is vigorous hand washing using soap, which flushes the bacteria down the drain.

"United to end tuberculosis: an urgent global response to a global epidemic" The first high-level UN meeting on TB seeks to accelerate the end of the disease. Heads of State will gather in New York on 26 September this year at the United Nations General Assembly first-ever high-level meeting on TB to accelerate efforts in ending TB and reach all affected people with prevention and care. The theme of the meeting is "United to end tuberculosis: an urgent global response to a global epidemic".

It follows on from a very successful Ministerial Conference on Ending TB in Moscow on 16-17 November, 2017 which resulted in high-level commitments from Ministers and other leaders from 120 countries to accelerate progress to end TB.

National Vector Borne Disease Control Programme (NVBDCP): Observe one dry day in a week: NVBDCP has appealed to the public to observe "one dry day in a week where water in all the containers around the house like flower pot bases, empty vessels, coolers, tyres, buckets, etc. are emptied out into a dry area because dengue mosquitoes breed in stagnant clean water and the eggs hatch in a week. All water filled vessels and tanks should be kept tightly covered and any rubbish lying around like plastic cups, old containers, tyres, coconut shells, etc. should be thrown out and check around the compound every week.

NVBDCP asked the people to ensure that that everybody sleeps under mosquito nets, especially pregnant women and children, both during the day and night.

Tobacco Quit-line on packs from 1st September: The Union Health and Family Welfare Ministry has issued a notification to print 'Quit-line' number on tobacco packets. The notification has been issued on April 03. Along with the Quit-line – a helpline number to quit smoking, the government has asked the tobacco manufacturers to put two set of pictorial warnings on the tobacco products as well.

- The Health Ministry has amended the "Cigarettes and other Tobacco Products (Packaging and Labelling) Rules, 2008"
- During the rotation period, there shall be two images of specified health warning which shall appear consecutively on the package with an interregnum period of 12 months.
- 'Tobacco causes cancer' and the word 'Tobacco causes painful death' shall appear in white font color on a red background.
- The helpline number reading – 'Quit today call 1800-11-2356' shall appear in white font colour on a black background.

Global Adult Tobacco Survey (GATS 2) Findings

- Prevalence of tobacco use has reduced by 6% points.
- The number of tobacco users has reduced by about 81 lakhs.
- 28.6% of adults aged between 15 and above (26.7 crore) use tobacco in any form.
- 19.9 crore adults in rural areas and 6.8 crore adults in urban areas use tobacco.
- Every fifth adult (19.9 crore) uses smokeless tobacco and every tenth adult (10.0 crore) uses smokeless tobacco.
- 3.2 crore adults resort to dual use of tobacco.
- 19.0% of men, 2.0% of women and 10.7% (99.5 million) of all adults currently smoke tobacco.
- 29.6% of men, 12.8% of women and 21.4% (199.4 million) of all adults currently use smokeless tobacco.
- 42.4% of men, 14.2% of women and 28.6% (266.8 million) of all adults currently use tobacco (smoked and/or smokeless tobacco).
- 55.4% of current smokers are planning or thinking of quitting smoking and 49.6% of current smokeless tobacco users are planning or thinking of quitting smokeless tobacco use.
- 48.8% of current smokers were advised by healthcare provider to quit smoking and 31.7% of current smokeless tobacco users were advised by healthcare provider to quit use of smokeless tobacco.

Prince Aly Khan Hospital's Health Service Aga Khan survey of schoolgoing children on cigarette smoking

- 27% children are addicted to cigarette smoking.
- 6.3% children consume hookah.
- 24% children are addicted to tobacco products.
- 9% children smoke cigarette currently.
- 16% children mix tobacco in supari and consume it.
- 71% boys and 20% of girls are addicted to smoking.
- 54% children of class 10 smoke.
- 94% were aware of the consequences. Yet still, continue to smoke.

(Source: mymedicalmantra.com, December 2017)

World Health Organization Model List of Essential In Vitro Diagnostics, First Edition (2018)

PREFACE

Introduction

The World Health Organization (WHO) published the first edition of the Model List of Essential In Vitro Diagnostics (EDL) in May 2018, in recognition that IVDs are an essential component to advance universal health coverage, address health emergencies, and promote healthier populations, which are the three strategic priorities of the WHO Thirteenth General Programme of Work (2019–2023) (GPW). The EDL is also intended to complement the WHO Model List of Essential Medicines (EML) and enhance its impact.

Objectives of the Model List of Essential In Vitro Diagnostics (EDL)

The EDL outlines a group of IVDs that are recommended by WHO for use at various levels of a tiered national health care system. The EDL is not intended to be prescriptive with respect to the IVDs listed or the levels at which such IVDs can/should be used; rather country programmes should make the ultimate decisions about which IVDs are selected and where they are implemented, based on national or regional burden of disease, unmet needs and priorities.

It is expected that the EDL will provide guidance and serve as a reference to Member States (including ministries of health, programme managers, end users such as laboratory managers, procurement officers and reimbursement systems), who are developing and/or updating lists of national essential IVDs for defining universal health coverage interventions, as well as selecting and implementing such IVDs. It will also inform United Nations agencies and nongovernmental organizations that support selection, procurement, supply, donations or provision of IVDs. Finally, it will inform and guide the medical technology private sector on IVD priorities and the IVDs needed to address global health issues.

While the EDL provides a list of important tests required at various levels of the health care system, it is important to note that the EDL itself cannot have an impact without an integrated, connected, tiered laboratory system, with adequate human resources, training, laboratory infrastructure, and regulatory/quality assurance systems. Impact also requires Member States to adopt and adapt the EDL and develop national and regional EDLs, as well as to implement the selection and supply mechanisms necessary to ensure access to the IVDs.

Scope of the First Edition of the EDL

Based on the EDL selection criteria described below, the EDL consists:

- A group of general laboratory tests that can be used for routine patient care as well as for the detection and diagnosis of a wide array of disease conditions – communicable and NCDs. These IVDs are grouped by test discipline (e.g. clinical chemistry, serology, haematology, microbiology and mycology) and specific test type (e.g. bilirubin, complete blood count, etc.).
- IVDs designed for the detection, diagnosis and monitoring of each of the following WHO key disease areas: HIV, TB, malaria, HBV/HCV, and HPV and syphilis. These IVDs are grouped by disease area and analyte tested.

The EDL does not list specific test brands, but rather consists of IVDs described according to their biological targets. Where specific products in categories of tests contained in the EDL have been prequalified by WHO or are recommended by a WHO disease programme, a link is provided to that information, which is updated regularly.

EDL Content and Format

For each specific test listed in the first edition of the EDL, the following are described:

- Test purpose: Purpose for which the test can be utilized.
- Assay format: The assay format or formats in which the test is generally available, e.g. enzyme immunoassay, nucleic acid testing.
- Specimen type: The types of specimens that can be used for the test.
- Facility level: The level of the tiered health care delivery system for which the test is suggested, as described below.

- Link to WHO guidance: If there is existing WHO guidance available on the test or category of testing, a link is provided to the appropriate location on the WHO website.
- WHO PQ or endorsed products: For each specific test for which there are brands of products either prequalified by WHO or otherwise endorsed by WHO, a link is provided.

The EDL is presented by health care facility level in two tiers:

- I IVDs for Primary health care;
- II IVDs for Health care facilities with clinical laboratories.

Recommended Use of the EDL

In order to effectively use the EDL and adapt it to national needs, WHO recognizes that Member States will need to consider a variety of factors. These include, among others: local demographics and burden of disease; local disease elimination priorities; local availability of treatments; training and experience of available personnel; local unmet needs and testing gaps; supply chain and transport links; quality assurance capacity; financial resources; information technology capabilities; and environmental factors.

To that end, information that supports the selection and use of IVDs on the EDL, such as relevant WHO clinical guidelines, selected systematic reviews, key references, lists of prequalified IVDs and IVDs recommended by WHO disease control departments, as well as other relevant resources on quality assurance, basic techniques, procurement and maintenance guidance, will be collated and maintained on the WHO website on an IVD-specific webpage linked to the EDL.

The EDL should not be used in isolation, but in the context of the scope of testing services that meet the clinical needs and expectations in each country through their own particular laboratory networks. An illustrative example of a tiered health care delivery and laboratory network in resource-limited countries is set out in Figure 1. The pyramid of testing reflects that there are generally a large number of primary care facilities and that they serve most patients directly for primary care needs. As one goes up the levels of the system, there are a smaller number of centralized facilities serving fewer patients directly. In the case of national reference laboratories and some provincial laboratories, they may not serve patients directly or they may offer a broad set of specialist consultative services, and act more as referral centres for quality assurance and training or for conducting complex tests (either using samples drawn at facilities lower in the system and transported or by receiving patients referred directly from other facilities).

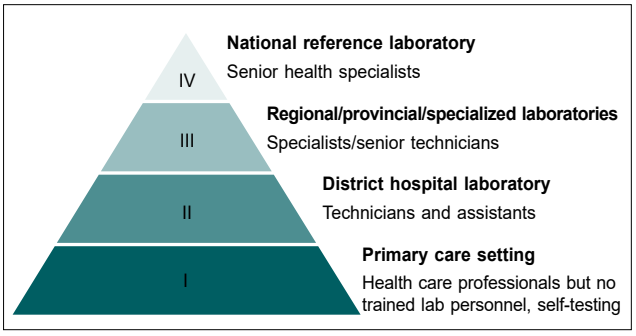

Figure 1. The types of testing that are appropriate at each tier will be country-specific and will include, among others, factors such as access to electricity, reagent grade water, phlebotomy and specialized human resources.[1]

For purposes of the first edition of the EDL and to simplify its presentation and use, IVDs are listed for two tiers: primary care settings where no or minimal laboratories are available (Level I in Figure 1) or for laboratory-based facilities (Levels II, III, and IV in Figure 1).

Process of Development of the First Edition of the EDL

In March 2017, the WHO Expert Committee on Selection and Use of Essential Medicines recommended that an EDL be developed. In support of that recommendation, WHO created an EDL Secretariat, which drafted the first edition of the EDL in consultation with colleagues in the various WHO disease programmes. It was then posted online for open consultation. WHO also created a Strategic Advisory Group of Experts on In Vitro Diagnostics (SAGE-IVD) to support the development of the EDL and to advise on other IVD policies and initiatives. SAGE-IVD held its first meeting from 16–20 April 2018 at WHO headquarters, Geneva, where it made recommendations for the content, format and implementation of the first edition of the EDL, as well as its processes moving forward.

Selection of IVDs for Inclusion in the First Edition of the EDL

The selection of the diagnostics tests for the EDL took into account the following priorities:

- IVDs for primary care settings, providing an essential diagnostics package that can form the basis for screening and case management of patients at entry-level health care facilities.
- Public health approach, providing information on access to affordable, quality-assured IVDs,

targeting high burden diseases, both communicable diseases and NCDs, and diseases of public health importance.

- IVDs for priority diseases such as HIV, TB, malaria, hepatitis HBV/HCV, and HPV and syphilis infections.

Specifically, the general laboratory diagnostics in the first edition of the EDL were compiled based on existing WHO guidance, guidelines and technical manuals and priority medical devices lists, which are referenced at the end of the list.

The disease-specific IVDs were selected from WHO evidence-based guidelines, which are referred to in the EDL with links to the respective documents. An additional factor considered by WHO was the availability of evidence from the WHO Prequalification of In Vitro Diagnostics Programme (PQ), or from other WHO IVD assessment processes, as applicable, which further support the choice of certain diagnostic test categories. Links to relevant documents are provided in the EDL by type of test.

Process for Updating the EDL Going Forward

The EDL will be expanded and updated annually with the intention to ultimately cover a broad, comprehensive spectrum of disease. WHO will issue a call for applications to add IVD test categories to the next edition of the EDL in mid-2018. The call will request applicants to provide information on clinical accuracy or impact of the proposed IVDs. The first EDL will be expanded significantly over the next few years, incorporating tests for other important areas such as antimicrobial resistance, additional NCDs, emerging pathogens, emergencies and outbreaks, and neglected tropical diseases. It is foreseen that the EDL will be an important tool to increase access to appropriate, affordable, and quality-assured IVDs, particularly where they are most needed to address health priorities.

Relationship Between the EDL and List of Prequalified In Vitro Diagnostics

It should be noted that the EDL and PQ List are complementary and distinct. The PQ lists include priority IVDs which have been assessed by WHO and are identified by brand (in contrast to the EDL which lists categories of IVDs). Currently the PQL has a narrower scope than the EDL. Having IVDs on the PQ list is not a requirement for a category of tests to be considered for inclusion in the EDL. In the context of the EDL, the PQ list should be viewed as a resource as it lists specific prequalified brands of products that correspond to certain categories of tests in the EDL. Relevant links are provided in the EDL.

Implementation of the EDL by Countries

It will be important that Member States adopt and adapt the EDL to develop their own national EDLs. These national EDLs will then need to be implemented to ensure impact. Implementation requires countries to invest in integrated, connected, tiered laboratory systems, with adequate human resources, training, laboratory infrastructure, and regulatory and quality assurance systems.

I LIST OF ESSENTIAL IN VITRO DIAGNOSTICS (EDL): FOR PRIMARY HEALTH CARE

Includes IVDs for health posts, community health centres, doctors' offices, outreach clinics and ambulatory care.

Typically, self-testing and rapid diagnostics tests are available, but there are either no laboratories, or only small laboratories with trained health care personnel but no trained laboratory technicians.

In case laboratory facilities are available in a primary health care facility, please refer to the IVDs described in the next tier. It should be noted that in some cases sampling can take place where there are no laboratories, and then processed in the next tier.

I.a General IVDs for Primary Health Care

Note: See list of WHO supporting documents at the end.

	Diagnostic test	Test purpose	Assay format	Specimen type
Haematology	Haemoglobin (Hb)	Diagnosis and monitoring of anaemia	Haemoglobinometer	Capillary whole blood
		Key clinical marker for severe infections (i.e. malaria, dengue, VHFs)		Venous whole blood
				Serum
		Safety monitoring when using certain drugs (e.g. Zidovudine for HIV)		Plasma
			Dipstick	Urine
	White blood cell count	Surrogate marker for certain infections, inflammation or certain cancers (e.g. leukaemia)	Haematology analyser	Capillary whole blood
				Venous whole blood

I.a General IVDs for Primary Health Care

Note: See list of WHO supporting documents at the end.

	Diagnostic test	Test purpose	Assay format	Specimen type
	CBC manual (only as back-up to automated method)	To detect anaemia, infections and leukaemia	Haemocytometer (to measure WBC) and Wright, May-Grünwald or Giemsa stain (for differential detection of parasites, malignant cells)	Capillary whole blood Venous whole blood
			Peripheral blood film examination	Capillary whole blood Venous whole blood
Clinical chemistry and immunoassays	Albumin	To detect/monitor malnutrition, liver or kidney disease	Dipstick	Urine
	Bilirubin	To detect/monitor liver disease, liver/pancreas and bile duct disorders, and red cell destruction	Dipstick	Urine
	Glucose	To diagnose and screen for diabetes and intermediate hypoglycaemia	Dipstick	Capillary whole blood Urine
			Glucometer	Capillary whole blood
	Haemoglobin A1c (HbA1c)	Diagnosis and monitoring of diabetes mellitus	Handheld and small analyser	Capillary whole blood
	Whole blood lactate	To assess metabolic acidosis, diabetic ketoacidosis, sepsis and dehydration	Electro-analytical method Handheld analyser	Arterial whole blood Venous whole blood
Blood transfusion	Blood typing	To determine blood compatibility for blood transfusions; Rh typing for pregnant women	Antisera for agglutination	Capillary whole blood Venous whole blood
Serology	Human chorionic gonadotropin (hCG)	Pregnancy	Dipstick	Urine
Microbiology, mycology and parasitology	Urine dipstick and urine microscopy	Detection of UTIs (dipstick) and identification of red and white blood cells, casts, squamous epithelial cells, bacteria, yeast, *Schistosoma haematobium* and other cellular components (microscopy)	Multi-parameter strips (dipstick) and light microscopy	Urine
	Microscopy	Microbial morphology, presence/absence of white blood cells versus squamous epithelial cells for presumptive identification	Microscopic examination of slides as wet preparations or which have been treated with a variety of organism-specific chemical stains (e.g. Gram stain)	Disease appropriate specimens (e.g. venous whole blood, urine, stool, etc.)

I.b Disease-specific IVDs for Primary Health Care

	Diagnostic test	Test purpose	Assay format	Specimen type	WHO prequalified or endorsed products	WHO supporting documents
Hepatitis B	Hepatitis B surface antigen (HBsAg)	Screening for acute and chronic hepatitis B (HBV) infection: infants over 12 months of age, children, adolescents, adults	RDT	Oral fluid Capillary whole blood	http://www.who.int/diagnostics_laboratory/evaluations/pq-list/hbsag/public_report/en/	Guidelines on hepatitis B and C testing (February 2017): http://apps.who.int/iris/bitstream/handle/10665/254621/9789241549981-eng.pdf?sequence=1

I.b Disease-specific IVDs for Primary Health Care

	Diagnostic test	Test purpose	Assay format	Specimen type	WHO prequalified or endorsed products	WHO supporting documents
	Hepatitis B e antigen (HBeAg)	Staging to assess the need for HBV treatment in chronic HBV infection	RDT	Capillary whole blood	N/A	
Hepatitis C	Antibodies to HCV (anti-HCV)	Screening for HCV infection: infants over 18 months of age, children, adolescents, adults	RDT	Oral fluid Capillary whole blood	http://www.who.int/diagnostics_laboratory/evaluations/pq-list/hcv/public_report/en/	Guidelines on hepatitis B and C testing (February 2017): http://apps.who.int/iris/bitstream/handle/10665/254621/9789241549981-eng.pdf?sequence=1
HIV	Antibodies to HIV 1/2 (anti-HIV) test	HIV self-testing	RDT	Oral fluid Capillary whole blood	http://www.who.int/diagnostics_laboratory/evaluations/pq-list/self-testing_public-report/en/	Guidelines on HIV self-testing and partner notification (2016) http://apps.who.int/iris/bitstream/handle/10665/251655/9789241549868-eng.pdf?sequence=1
		For the diagnosis of HIV infection: adults, adolescents, children and infants over 18 months of age	RDT	Oral fluid Capillary whole blood		Consolidated guidelines on HIV testing services (July 2015) http://www.who.int/hiv/pub/guidelines/hiv-testing-services/en/ WHO implementation tool for pre-exposure prophylaxis (PrEP) of HIV infection, module 10 for testing providers (2017) http://www.who.int/hiv/pub/prep/prep-implementation-tool/en/
	Combined HIV antibody/p24 antigen (anti-HIV/p24 Ag) test	For the diagnosis of HIV infection: adults, adolescents, children and infants over 18 months of age	RDT	Oral fluid Capillary whole blood	http://www.who.int/diagnostics_laboratory/evaluations/pq-list/hiv-rdts/public_report/en/	Consolidated guidelines on HIV testing services (2015) http://www.who.int/hiv/pub/guidelines/hiv-testing-services/en/
Malaria	*Plasmodium* spp. antigens; species specific (e.g. HRP2) and/or pan-species specific (e.g. pan-pLDH)	For diagnosis of one or more human malaria species (*P. falciparum, P. vivax, P. malariae, P. ovale*)	RDT	Capillary whole blood	http://www.who.int/diagnostics_laboratory/evaluations/pq-list/malaria/public_report/en/	WHO guidelines for the treatment of malaria, third edition (2015) http://apps.who.int/iris/bitstream/10665/162441/1/9789241549127_eng.pdf Malaria rapid diagnostic test performance. Results of WHO product testing of malaria RDTs: Round 7 (2015–2016)

I.b Disease-specific IVDs for Primary Health Care						
	Diagnostic test	**Test purpose**	**Assay format**	**Specimen type**	**WHO prequalified or endorsed products**	**WHO supporting documents**
						http://www.who.int/malaria/publications/atoz/978924151268/en/ WHO good practices for selecting and procuring rapid diagnostic tests for malaria (2011) http://apps.who.int/iris/bitstream/handle/10665/44530/9789241501125_eng.pdf?sequence=1
	Plasmodium spp.	For diagnosis of one or more human malaria species (*P. falciparum, P. vivax*, *P. malariae, P. ovale* and *P. knowlesi*) and monitoring response to treatment	Light microscopy (if good quality microscopy available)	Capillary whole blood	N/A	WHO guidelines for the treatment of malaria, third edition (2015) http://apps.who.int/iris/bitstream/10665/162441/1/9789241549127_eng.pdf Basic malaria microscopy Part I: Learner's guide (2010) http://apps.who.int/iris/bitstream/handle/10665/44208/9789241547826_eng.pdf?sequence=1 Malaria microscopy standard operating procedures (2015) http://www.wpro.who.int/mvp/lab_quality/mm_sop/en/

I.b Disease-specific IVDs for Primary Health Care						
	Diagnostic test	**Test purpose**	**Assay format**	**Specimen type**	**WHO prequalified or endorsed products** (all TB tests are evaluated and guidelines developed through the WHO Global TB Programme)	**WHO supporting documents**
Tuberculosis	*Mycobacterium tuberculosis* bacteria	For the diagnosis and treatment monitoring of active TB	Microscopy	Sputum	Implementing tuberculosis diagnostics: Policy framework (2015) http://apps.who.int/iris/bitstream/10665/162712/1/9789241508612_eng.pdf	Compendium of WHO guidelines and associated standards: Ensuring optimum delivery of the cascade of care for patients with tuberculosis (2017)
		For the diagnosis of active TB	LAMP	Sputum	The use of loop-mediated isothermal amplification (TB-LAMP) for the diagnosis of pulmonary tuberculosis: Policy guidance (2016)	http://apps.who.int/iris/bitstream/handle/10665/259180/9789241512572-eng.pdf?sequence=1

I.b Disease-specific IVDs for Primary Health Care						
	Diagnostic test	**Test purpose**	**Assay format**	**Specimen type**	**WHO prequalified or endorsed products** (all TB tests are evaluated and guidelines developed through the WHO Global TB Programme)	**WHO supporting documents**
					http://apps.who.int/iris/bitstream/10665/249154/1/9789241511186-eng.pdf?ua=1	Implementing tuberculosis diagnostics: Policy framework (2015) http://apps.who.int/iris/bitstream/10665/162712/1/9789241508612_eng.pdf
	Immune response	For the diagnosis of latent TB infection	Intradermal skin test (TST)	N/A	Latent TB infection: Updated and consolidated guidelines for programmatic management (2018) http://apps.who.int/iris/bitstream/handle/10665/260233/9789241550239-eng.pdf;jsessionid=6D1BB246312B378ACFEBF9BFFAFEB0ED?sequence=1	

I.b Disease-specific IVDs for Primary Health Care						
	Diagnostic test	**Test purpose**	**Assay format**	**Specimen type**	**WHO prequalified or endorsed products**	**WHO supporting documents**
Syphilis	Antibodies to *Treponema pallidum*	For the diagnosis or as an aid in the diagnosis of *T. pallidum*	RDT	Capillary whole blood	http://www.who.int/diagnostics_laboratory/evaluations/PQ_list/en/	WHO laboratory diagnosis of sexually transmitted infections, including human immunodeficiency virus (2013) http://apps.who.int/iris/bitstream/handle/10665/85343/9789241505840_eng.pdf?sequence=1
	Combined antibodies to *T. pallidum* and to HIV-1/2 (anti-HIV)	For diagnosis or as an aid in the diagnosis of HIV-1/2 and/or *T. pallidum*	RDT	Capillary whole blood	http://www.who.int/diagnostics_laboratory/evaluations/pq-list/hiv-rdts/public_report/en/	WHO Information note on the use of dual HIV/syphilis rapid diagnostic tests (RDT) (2017) http://apps.who.int/iris/bitstream/handle/10665/252849/WHO-RHR-17.01-eng.pdf?sequence=1

II LIST OF ESSENTIAL IN VITRO DIAGNOSTICS (EDL): FOR HEALTH CARE FACILITIES WITH CLINICAL LABORATORIES

This list includes district, regional, provincial or specialized hospitals or laboratories and national reference laboratories. Trained laboratory technicians, specialist expertise and laboratory infrastructure/ equipment are available at the appropriate level.

Note: All diagnostic tests available at the primary care level are assumed to be available at higher levels as appropriate.

The list includes: section a for general laboratory equipment; and section b tests for specific diseases.

II.a General IVDs for Health Care Facilities with Clinical Laboratories
Note: See list of WHO supporting documents at the end.

	Diagnostic test	Test purpose	Assay format	Specimen type
Clinical chemistry and immunoassays	Alanine amino-transferase (ALT)	To assess liver function (often done with AST)	Optical and electro-analytical methods	Serum Plasma
	Albumin	To detect/monitor malnutrition, liver or kidney disease	Photometric, turbidimetric and nephelometric testing	Urine Serum Plasma
	Alkaline phosphatase	To detect/monitor malnutrition, Paget's disease or certain malignancies, including liver cancer	Colorimetric testing	Serum Plasma
	Aspartate amino-transaminase (AST)	To assess of liver function (often done with ALT)	Optical and electro-analytical methods	Serum Plasma
	Bilirubin	To detect/monitor liver disease, liver/pancreas and bile duct disorders, and red cell destruction	Optical and electro-analytical methods	Serum Plasma
	Blood pH and gases	To assess lung function, metabolic or kidney disorders, and monitor oxygen therapy Measurement of blood pH, oxygen and carbon dioxide	Electro-analytical methods, including portable analysers	Arterial whole blood Venous whole blood
	Blood urea nitrogen (BUN)	To assess kidney function and disease	Optical and electro-analytical methods	Serum Plasma
	Creatinine	To estimate glomerular filtration rate (eGFR) and urine albumin/creatinine ratio Key clinical marker for management of severe infections (i.e. sepsis, Lassa fever), as well as antimicrobial regimen adjustment	Optical and electro-analytical methods	Serum Urine
	Electrolytes	To monitor organ damage and electrolyte alterations	Optical and electro-analytical methods	Serum Plasma
Clinical chemistry and immunoassays	Glucose	To diagnose and screen for diabetes and intermediate hypoglycaemia	Automated analyser	Serum Plasma
	Haemoglobin A1c (HbA1c)	Diagnosis and monitoring of diabetes mellitus	ELISA Automated analyser	Capillary venous blood Venous whole blood
	C-reactive protein (CRP)	To detect inflammation as an indicator of various conditions (e.g. cardiovascular disease [CVD] – high sensitivity CRP required, sepsis)	RDT EIA	Venous whole blood Serum Plasma

II.a General IVDs for Health Care Facilities with Clinical Laboratories

Note: See list of WHO supporting documents at the end.

	Diagnostic test	Test purpose	Assay format	Specimen type
	Lipid profile	To assess risk of developing type 2 diabetes and CVD by measuring cholesterol, triglycerides and lipoproteins	Colourimetry Spectrophotometry	Plasma Serum
	Basic metabolic panel (BMP)	Includes glucose, sodium chloride, carbon dioxide, BUN, BUN/ creatinine ratio and may include calcium	Photometric and colourimetric testing, ion-selective potentiometry (8-parameter automated clinical chemistry analyser)	Venous whole blood Serum Plasma
	Comprehensive metabolic panel	BMP plus magnesium, protein, albumin, globulin, alb/glob ratio, bilirubin (direct or total), alkaline phosphatase, ALT/AST, eGFR	As with BMP (14 or more parameter automated clinical chemistry analyser)	Venous whole blood Serum Plasma
	Amylase and lipase	To assess acute pancreatitis	Colourimetric and photometric analysers	Serum Urine Peritoneal fluid (Amylase)
	Troponin T/I	For the diagnosis of myocardial infarction	Enzyme immunoassay (handheld or large automated instrument)	Venous whole blood Plasma
	Urinalysis	Detection of substances or cellular material in the urine associated with metabolic disorders, renal dysfunction or UTIs	Automated chemical analyser	Urine
Blood transfusion	Blood cross-matching	To determine blood compatibility for blood transfusions; Rh typing for pregnant women	Antisera for agglutination	Venous whole blood
	Transfusion transmitted infections	To screen for Chagas, HTLV in the blood supply etc. (see also EDL sections on HIV, hepatitis C, hepatitis B, syphilis)	EIA (microplate) Manual method CLIA/ECL (automated instrument)	Serum Plasma Serum Plasma
Serology	Human chorionic gonadotropin (hCG)	Pregnancy	Optical method	Serum
Microbiology, mycology and parasitology	Urine dipstick and urine microscopy	Detection of UTIs (dipstick) and identification of red and white blood cells, casts, squamous epithelial cells, bacteria, yeast, *Schistosoma haematobium* and other cellular components (microscopy)	Multi-parameter strips (dipstick) and light microscopy	Urine
	Culture	Initial step in the process of bacterial species detection and identification to support selection of appropriate antibiotic treatment regimens	Culture on growth media plates and incubator followed by recovery of isolates and speciation (traditional manual techniques or automated equipment)	Disease appropriate specimens (e.g. venous whole blood, urine, stool, etc.)

II.a General IVDs for Health Care Facilities with Clinical Laboratories

Note: See list of WHO supporting documents at the end.

	Diagnostic test	Test purpose	Assay format	Specimen type
	Blood culture	For the diagnosis of bacterial and fungal blood stream infections (sepsis)	Blood culture bottle and incubator followed by recovery of isolates and speciation (traditional manual techniques or automated equipment)	Venous whole blood
	Antimicrobial susceptibility testing	Final step in the process of selection of appropriate antibiotic treatment regimens after species identification	Antimicrobial susceptibility testing of isolates – may be done manually using disc diffusion technique or using automated platforms	Microbial isolates
Haematology	Haematocrit (Ht)	Diagnosis and monitoring of anaemia Volume of red blood cells as a percentage of total blood volume	Microhaematocrit centrifuge	Capillary or venous whole blood
	Prothrombin time test and international normalized ratio (PT/INR)	To detect/diagnose a bleeding disorder or excessive clotting disorder (PT); monitor performance of anticoagulant medications (INR)	Handheld or automated coagulation analyser	Citrate plasma
	Platelet count	Diagnosis of thrombocytopenia Marker to manage severe infections associated with bleeding and sepsis (i.e. VHF, meningococcemia) and certain haematological disorders	Haemocytometer	Capillary whole blood
			Haematology analyser	Venous whole blood
			Flow cytometer	Venous whole blood
	Complete blood count (CBC) Automated, differential	Evaluation of patient's overall health and to detect a wide range of disorders, including anaemia, infection and leukaemia	Automated haematology analyser (WBC, RBC, platelets, Hb and Ht) includes lymphocytes, monocytes and granulocytes (for three-part differential)	Venous whole blood

II.b Disease-specific IVDs for Health Care Facilities with Clinical Laboratories

	Diagnostic test	Test purpose	Assay format	Specimen type	WHO prequalified or endorsed products	WHO supporting documents
Hepatitis B	Hepatitis B surface antigen (HBsAg)	Screening for acute and chronic hepatitis B (HBV) infection: infants over 12 months of age, children, adolescents, adults	RDT	Venous whole blood Plasma Serum	http://www.who.int/diagnostics_laboratory/evaluations/pq-list/hbsag/public_report/en/	Guidelines on hepatitis B and C testing (February 2017) http://apps.who.int/iris/bitstream/handle/10665/254621/9789241549981-eng.pdf?sequence=1
	Virological (HBV DNA – quantitative)	Staging to assess the need for HBV treatment in chronic HBV infection and monitoring of response to treatment	NAT	Serum Plasma		

II.b Disease-specific IVDs for Health Care Facilities with Clinical Laboratories

	Diagnostic test	Test purpose	Assay format	Specimen type	WHO prequalified or endorsed products	WHO supporting documents
	Hepatitis B e antigen (HBeAg)	Staging to assess the need for HBV treatment in chronic HBV infection	EIA	Serum Plasma	N/A	
			CLIA	Serum Plasma	N/A	
	IgM-specific antibodies to hepatitis B core antigen (IgM anti-HBc)	For the diagnosis of acute HBV infection – used for outbreak investigation	EIA (microplate) Manual method	Serum Plasma	N/A	
			CLIA/ECL (automated instrument)	Serum Plasma	N/A	
	Antibodies to hepatitis B surface antigen (anti-HBs)	Determining effectiveness of HBV immunization at patient and at a population level Also used as a marker for recovery from HBV infection	EIA (microplate) Manual method	Serum Plasma	N/A	
			CLIA/ECL (automated instrument)	Serum Plasma	N/A	
Hepatitis C	Antibodies to HCV (anti-HCV)	Screening for HCV infection: infants over 18 months of age, children, adolescents, adults	RDT	Venous whole blood Plasma Serum	http://www.who.int/diagnostics_laboratory/evaluations/pq-list/hcv/public_report/en/	Guidelines on hepatitis B and C testing (February 2017) http://apps.who.int/iris/bitstream/handle/10665/254621/9789241549981-eng.pdf?sequence=1
			EIA (microplate) Manual method	Serum Plasma		
			CLIA/ECL (automated instrument)	Serum Plasma		
	Antibodies to HCV (anti-HCV) and HCV core antigen (HCV cAg)	Screening for HCV past or present infection: infants over 18 months of age, children, adolescents, adults	EIA (microplate) Manual method	Serum Plasma		
			CLIA/ECL (automated instrument)	Serum Plasma		
	HCV core antigen (HCV cAg)	For the diagnosis of viraemic HCV infection	CLIA/ECL (automated instrument)	Serum Plasma		
	HCV RNA (qualitative or quantitative)	For the diagnosis of viraemic HCV infection and monitoring of response to treatment as a test of cure	NAT	Serum Plasma		

II.b Disease-specific IVDs for Health Care Facilities with Clinical Laboratories

	Diagnostic test	Test purpose	Assay format	Specimen type	WHO prequalified or endorsed products	WHO supporting documents
HIV	Antibodies to HIV-1/2 (anti-HIV) test	For the diagnosis of HIV infection: adults, adolescents, children and infants over 18 months of age	RDT	Venous whole blood Plasma Serum	http://www.who.int/diagnostics_laboratory/evaluations/pq-list/self-testing_public-report/en/	Guidelines on HIV self-testing and partner notification (2016) http://apps.who.int/iris/bitstream/handle/10665/251655/9789241549868-eng.pdf?sequence=1
			EIA (microplate) Manual method	Serum Plasma		Consolidated guidelines on HIV testing services (July 2015) http://www.who.int/hiv/pub/guidelines/hiv-testing-services/en/ WHO implementation tool for pre-exposure prophylaxis (PrEP) of HIV infection, module 10 for testing providers (2017) http://www.who.int/hiv/pub/prep/prep-implementation-tool/en/
			CLIA/ECL (automated instrument)	Serum Plasma		
		For screening for HIV in the blood supply and in blood products	EIA (microplate) Manual method	Serum Plasma	N/A	Screening donated blood for transfusion transmissible infections: Recommendations (2009) http://apps.who.int/iris/bitstream/handle/10665/44202/9789241547888_eng.pdf?sequence=1&isAllowed=y
			CLIA/ECL (automated instrument)	Serum Plasma		
	Combined HIV antibody/p24 antigen (anti-HIV/p24 Ag) test	For the diagnosis of HIV infection: adults, adolescents, children and infants over 18 months of age	RDT	Venous whole blood Plasma Serum	http://www.who.int/diagnostics_laboratory/evaluations/pq-list/hiv-rdts/public_report/en/	Consolidated guidelines on HIV testing services (2015) http://apps.who.int/iris/bitstream/handle/10665/179870/9789241508926_eng.pdf?sequence=1
			EIA (microplate) Manual method	Serum Plasma		
			CLIA/ECL (automated instrument)	Serum Plasma		
		For screening for HIV in the blood supply and in blood products	EIA (microplate) Manual method	Serum Plasma	N/A	Screening donated blood for transfusion transmissible infections: Recommendations (2009)

II.b Disease-specific IVDs for Health Care Facilities with Clinical Laboratories

	Diagnostic test	Test purpose	Assay format	Specimen type	WHO prequalified or endorsed products	WHO supporting documents
			CLIA/ECL (automated instrument)	Serum Plasma		http://apps.who.int/iris/bitstream/handle/10665/44202/9789241547888_eng.pdf?sequence=1&isAllowed=y
HIV	HIV qualitative virological or quantitative virological	For the diagnosis of HIV infection in infants under 18 months of age	NAT	Capillary whole blood Venous whole blood Dried blood spot Serum Plasma	http://www.who.int/diagnostics_laboratory/evaluations/pq-list/hiv-vrl/public_report/en/	Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection (2016) http://www.who.int/hiv/pub/arv/arv-2016/en/
	HIV quantitative virological	Monitoring of response to antiviral treatment	NAT	Dried blood spot Serum Plasma	http://www.who.int/diagnostics_laboratory/evaluations/pq-list/hiv-vrl/public_report/en/	
	CD4 cell enumeration (quantitative)	For staging of advanced HIV disease	Flow cytometry	Capillary whole blood Venous whole blood	http://www.who.int/diagnostics_laboratory/evaluations/pq-list/hiv-vrl/public_report/en/	
	Cryptococcal antigen test	For screening and diagnosis of cryptococcal meningitis in people living with advanced HIV disease	RDT	CSF Venous whole blood Serum Plasma		Guidelines for the diagnosis, prevention, and management of cryptococcal disease in HIV-infected adults, adolescents and children (2018) http://apps.who.int/iris/bitstream/handle/10665/260399/9789241550277-eng.pdf? sequence=1
			EIA	CSF Serum Plasma		
Malaria	*Plasmodium* spp. antigens; species specific (e.g. HRP2) and/or pan-species specific (e.g. pan-pLDH)	For diagnosis of one or more human malaria species (*P. falciparum, P. vivax, P. malariae, P. ovale*)	RDT	Capillary whole blood Venous whole blood	http://www.who.int/diagnostics_laboratory/evaluations/pq-list/malaria/public_report/en/	WHO guidelines for the treatment of malaria, third edition (2015) http://apps.who.int/iris/bitstream/10665/162441/1/9789241549127_eng.pdf Malaria rapid diagnostic test performance: Results of WHO product testing of malaria RDTs: Round 7 (2015–2016) http://www.who.int/malaria/publications/atoz/978924151268/en/

II.b Disease-specific IVDs for Health Care Facilities with Clinical Laboratories					
Diagnostic test	**Test purpose**	**Assay format**	**Specimen type**	**WHO prequalified or endorsed products**	**WHO supporting documents**
					WHO good practices for selecting and procuring rapid diagnostic tests for malaria (2011) http://apps.who.int/iris/bitstream/handle/10665/44530/9789241501125_eng.pdf?sequence=1
Plasmodium spp.	For diagnosis of one or more human malaria species (*P. falciparum, P. vivax, P. malariae, P. ovale and P. knowlesi*) and monitoring response to treatment	Light microscopy	Capillary whole blood Venous whole blood	N/A	WHO guidelines for the treatment of malaria, third edition (2015) http://apps.who.int/iris/bitstream/10665/162441/1/9789241549127_eng.pdf Basic malaria microscopy Part I: Learner's guide (2010) http://apps.who.int/iris/bitstream/handle/10665/44208/9789241547826_eng.pdf?sequence=1 Malaria microscopy standard operating procedures (2015) http://www.wpro.who.int/mvp/lab_quality/mm_sop/en/
Glucose-6-phosphate dehydrogenase activity (G6PD)	To determine G6PD activity (normal, intermediate, deficient) and specifically to inform decision to administer 8-aminoquinoline group drugs for radical cure of *P. vivax* For screening newborns for G6PD deficiency	Semi quantitative fluorescent spot test	Venous whole blood	http://www.who.int/diagnostics_laboratory/evaluations/pq-list/malaria/public_report/en/	Beutler E, Blume KG, Kaplan JC, Lohr GW, Ramot B, Valentine WN. International Committee for Standardization in Haematology: Recommended screening test for glucose-6-phosphate dehydrogenase deficiency. Br J Haematol 1979;43:469–477 WHO guidelines for the treatment of malaria, third edition (2015) http://apps.who.int/iris/bitstream/10665/162441/1/9789241549127_eng.pdf

II.b Disease-specific IVDs for Health Care Facilities with Clinical Laboratories

	Diagnostic test	Test purpose	Assay format	Specimen type	WHO prequalified or endorsed products (all TB tests are evaluated and guidelines developed through the WHO Global TB Programme)	WHO supporting documents
Tuberculosis	*Mycobacterium tuberculosis* bacteria	For the diagnosis and treatment monitoring of active TB	Microscopy	Other specimen types	Implementing tuberculosis diagnostics: Policy framework (2015) http://apps.who.int/iris/bitstream/10665/162712/1/9789241508612_eng.pdf	Compendium of WHO guidelines and associated standards: Ensuring optimum delivery of the cascade of care for patients with tuberculosis (2017) http://apps.who.int/iris/bitstream/handle/10665/259180/9789241512572-eng.pdf?sequence=1 Implementing tuberculosis diagnostics: Policy framework (2015) http://apps.who.int/iris/bitstream/10665/162712/1/9789241508612_eng.pdf
		For the diagnosis and treatment monitoring of active TB including drug-resistant TB	Bacterial culture	Sputum or other specimen types		
	M. tuberculosis DNA	For the diagnosis of active TB and simultaneous detection of rifampicin resistance	Cartridge-based NAT	Sputum or EPTB specimen types	WHO Meeting report of a technical expert consultation: Non-inferiority analysis of Xpert MTB/RIF Ultra compared to Xpert MTB/RIF (2017) http://apps.who.int/iris/bitstream/handle/10665/254792/WHO-HTM-TB-2017.04-eng.pdf;jsessionid=E02D0994930EDBD9A4BC5BB3D3A28568?sequence=1 Automated real-time nucleic acid amplification technology for rapid and simultaneous detection of tuberculosis and rifampicin resistance: Policy update (2013) http://apps.who.int/iris/bitstream/10665/112472/1/9789241506335_eng.pdf	
	M. tuberculosis DNA mutations associated with resistance	For the detection of resistance for first-line anti-TB medicines	Molecular LPA	Sputum	The use of molecular line probe assays for the detection of resistance to isoniazid and rifampicin: Policy update (2016) http://apps.who.int/iris/bitstream/10665/250586/1/9789241511261-eng.pdf?ua=1	
	M. tuberculosis DNA mutations associated with resistance	For the detection of resistance for second-line anti-TB medicines	Molecular LPA	Sputum	The use of molecular line probe assays for the detection of resistance to second-line anti-tuberculosis drugs: Policy update (2016) http://apps.who.int/iris/bitstream/handle/10665/246131/9789241510561-eng.pdf?sequence=1	

II.b Disease-specific IVDs for Health Care Facilities with Clinical Laboratories						
	Diagnostic test	**Test purpose**	**Assay format**	**Specimen type**	**WHO prequalified or endorsed products** (all TB tests are evaluated and guidelines developed through the WHO Global TB Programme)	**WHO supporting documents**
Tuberculosis	*M. tuberculosis* culture-based DST	To detect resistance to first-line and/or second-line anti-TB medicines	DST	Bacterial culture of *M. tuberculosis*	Technical report on critical concentrations for drug susceptibility testing of medicines used in the treatment of drug-resistant tuberculosis (2018) http://www.who.int/tb/publications/2018/WHO_technical_report_concentrations_TB_drug_susceptibility/en/	
	Lipoarabino-mannan (LAM) antigen	To aid in the diagnosis of TB in seriously ill HIV-positive inpatients	RDT	Urine	The use of lateral flow urine lipoarabinomannan assay (LF-LAM) for the diagnosis and screening of active tuberculosis in people living with HIV: Policy update (2015) http://apps.who.int/iris/bitstream/handle/10665/193633/9789241509633_eng.pdf;jsessionid=9A9EB886DC17658BF7FDF86758D7A9F9?sequence=1	
	Immune response	For the diagnosis of latent TB infection	IGRA	Venous whole blood	Latent TB Infection: Updated and consolidated guidelines for programmatic management (2018) http://apps.who.int/iris/bitstream/handle/10665/260233/9789241550239-eng.pdf;jsessionid=6D1BB246312B378ACFEBF9BFFAFEB0ED?sequence=1	

II.b Disease-specific IVDs for Health Care Facilities with Clinical Laboratories						
	Diagnostic test	**Test purpose**	**Assay format**	**Specimen type**	**WHO prequalified or endorsed products**	**WHO supporting documents**
HPV	Human papillomavirus (HPV) DNA	For cervical cancer screening	Nucleic acid test	Cervical cells collected in test specific transport fluid	http://www.who.int/diagnostics_laboratory/evaluations/pq-list/public_report_hpv/en/	WHO human papillomavirus laboratory manual, first edition (2009) http://apps.who.int/iris/bitstream/handle/10665/70505/WHO_IVB_10.12_eng.pdf?sequence=1

II.b Disease-specific IVDs for Health Care Facilities with Clinical Laboratories

	Diagnostic test	Test purpose	Assay format	Specimen type	WHO prequalified or endorsed products	WHO supporting documents
Syphilis	Antibodies to *Treponema pallidum*	For diagnosis or as an aid in the diagnosis of *T. pallidum*	RDT	Venous whole blood Plasma Serum	http://www.who.int/diagnostics_laboratory/evaluations/PQ_list/en/	WHO laboratory diagnosis of sexually transmitted infections, including human immunodeficiency virus (2013) http://apps.who.int/iris/bitstream/handle/10665/85343/9789241505840_eng.pdf?sequence=1
			EIA (Microplate) Manual method	Serum Plasma		
			CLIA/ECL (automated instrument)	Serum Plasma		
		For screening blood and blood products	EIA (Microplate) Manual method	Serum Plasma	N/A	Screening donated blood for transfusion transmissible infections (2009) http://apps.who.int/iris/bitstream/handle/10665/44202/9789241547888_eng.pdf?sequence=1&isAllowed=y
	Combined antibodies to *T. pallidum* and to HIV-1/2 (anti-HIV)	For the diagnosis or as an aid in the diagnosis of HIV-1/2 and/or *T. pallidum*	RDT	Venous whole blood Plasma Serum	http://www.who.int/diagnostics_laboratory/evaluations/pq-list/hiv-rdts/public_report/en/	WHO Information note on the use of dual HIV/syphilis rapid diagnostic tests (RDT) (2017) http://apps.who.int/iris/bitstream/handle/10665/252849/WHO-RHR-17.01-eng.pdf?sequence=1

Acronyms

ALT	Alanine aminotransferase
AMR	Antimicrobial resistance
AST	Aspartate aminotransferase
BMP	Basic metabolic panel
BUN	Blood urea nitrogen
CBC	Complete blood count
CLIA	Chemiluminescence immunoassay
CRP	C-reactive protein
CSF	Cerebrospinal fluid
CVD	Cardiovascular disease
DST	Drug susceptibility testing
ECL	Electrochemiluminescence
EDL	World Health Organization Model List of Essential In Vitro Diagnostics
eGFR	Estimated glomerular filtration rate
EIA	Enzyme immunoassay
ELISA	Enzyme-linked immunosorbent assay
EML	World Health Organization Model List of Essential Medicines
EPTB	Extrapulmonary tuberculosis
GPW	WHO General Programme of Work
Hb	Haemoglobin
HbA1c	Haemoglobin A1c
hCG	Human chorionic gonadotropin
Ht	Haematocrit
HTLV	Human T-lymphotropic virus
IGRA	Interferon gamma release assay
INR	International normalized ratio
IVDs	In vitro diagnostics
LAMP	Loop mediated isothermal amplification
LPA	Line probe assay
NAT	Nucleic acid test
NCDs	Noncommunicable diseases
PQ	WHO Prequalification
PT	Prothrombin time
RBC	Red blood cell count
RDT	Rapid diagnostic test
SAGE-IVD	Strategic Advisory Group of Experts on In Vitro Diagnostics
TB	Tuberculosis
TST	Tuberculin skin test
UTI	Urinary tract infection
VHF	Viral haemorrhagic fever
WBC	White blood cell count
WHO	World Health Organization

Note: *For complete document visit: http://www.who.int/medical_devices/diagnostics/WHO_EDL_2018.pdf*

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UPSURGE IN APPLICATION TO SALVAGE LIVER DISORDERS IN INDIA

Dr Neelam Mohan, Gurugram

- Neonatal cholestasis (NC) constitutes 30% of hepatobiliary disorders in India. First step in approach is to differentiate between neonatal hepatitis, paucity of intrahepatic bile duct and biliary atresia.
- One in 3 causes of NC is biliary atresia.
- Biliary atresia is best diagnosed by liver biopsy and so is paucity of bile ducts.
- Excretory HIDA rules out biliary atresia, but non-excretory HIDA does not mean that it is only biliary atresia. Metabolic liver disease forms a major component of hepatocellular causes of NC.
- Early referral is the key as success of surgery in biliary atresia is best at <60 days in an expert hand.
- Newer conditions like progressive familial intrahepatic cholestasis (PFIC) are more aggressively diagnosed now.
- A previous Kasai portoenterostomy (Kasai-PE) increases post-liver transplantation (LT) surgical complications such as sepsis, bowel perforations and re-exploration though there may be no significant difference in survival.
- Surgery in PFIC - Partial biliary diversion for non-cirrhotic patients; ameliorates pruritus, improves LFT and histology; liver transplantation is indicated for end stage liver disease.
- PFIC in Indian children - PFIC accounts for 8% neonatal cholestasis and 34% of cholestasis in older children with PFIC 2 being the commonest subtype. Medical therapy is successful in majority of patients. Partial internal BD should be offered to noncirrhotic low gamma-glutamyl transferase PFIC with intractable pruritus.
- Rare etiologies for liver failure in children are being diagnosed in India, such as mitochondrial DNA depletion syndrome.
- First swap donor liver transplantation in India was done in June 2009. We have achieved a lot in viral hepatitis management - Hepatitis B vaccine coverage has improved in India; we have conquered hepatitis C cure with drugs like ledipasvir, sofosbuvir and ribavirin.
- Future directions - Spread of knowledge Pan India; increased awareness for early diagnosis of treatable disorders (Galactosemia, Wilson's disease); strengthen our molecular and metabolic research for etiology and targeted management.

MYOCLONUS - PRACTICAL APPROACH "ALL MYOCLONUS ARE NOT EPILEPTIC"

Dr PAM Kunju, Trivandrum

- Myoclonus is a sudden, shock-like contraction of a muscle or group of muscles.
- Myoclonus can be divided into cortical, subcortical, spinal or peripheral, based on the presumed source of its generation.
- Based on etiology, myoclonus may be classified as epileptic or nonepileptic (physiological, essential, or psychogenic).
- It is caused by abrupt muscle contraction, in the case of positive myoclonus, or by sudden cessation of ongoing muscular activity, in the case of negative myoclonus (NM). NM results from toxic-metabolic causes.
- In a given patient, more than one form of myoclonus may occur. For instance, in posthypoxic myoclonus (Lance-Adams syndrome), cortical myoclonus may coexist with brainstem myoclonus.
- Cortical myoclonus mainly affects the distal upper limbs and face. It can be stimulus sensitive, typically to touch. If prolonged, it is called as epilepsia partialis continua.
- Subcortical myoclonus originates between the cortex and the spinal cord and is divided into nonsegmental and segmental types. Nonsegmental subcortical myoclonus - Startle/hyperekplexia and reticular reflex myoclonus.
- Brainstem myoclonus is manifested by generalized jerks and its most striking clinical feature is

sensitivity to auditory stimuli. Two main types are (i) startle response, which may be physiologic or pathologic (hyperekplexia), and (ii) reticular reflex myoclonus.

- Segmental subcortical myoclonus e.g., palatal myoclonus - caused by a lesion in the Guillain-Mollaret triangle - (dentate nucleus, red nucleus and inferior olivary nucleus).
- Spinal segmental myoclonus is usually symptomatic of an underlying structural lesion such as syringomyelia, myelitis, spinal cord trauma, vascular lesion or malignancy.
- Epileptic myoclonus is accompanied by generalized epileptiform discharges on EEG, but the myoclonus itself may be focal, segmental or generalized.
- Generalized myoclonus can occur in the syndromes of primary (idiopathic) generalized epilepsy (e.g., juvenile myoclonic epilepsy) or in the secondary (symptomatic) generalized epilepsies (e.g., progressive myoclonic epilepsy [PME]).
- Focal myoclonus can occur in symptomatic epilepsy, in the setting of infection, inflammation, vascular disease, trauma or tumors.
- Among PMEs, slow myoclonus is a feature of SSPE. In addition to myoclonus, PMEs have dementia and cerebellar ataxia.
- Early infantile myoclonic epilepsies can be benign depending on age (neonatal, infantile or childhood). Early infantile epileptic encephalopathies (EIEE) are characterized by myoclonus and other types of seizures and EEG feature called as suppression burst pattern.
- The treatment of myoclonus depends on the underlying disorder.
- Antiepileptic drugs such as valproate, levetiracetam and piracetam are effective in cortical myoclonus. Clonazepam may be helpful in all types of myoclonus.

LEGAL ISSUES IN QUALITY CARE AND CRITICAL CARE

Dr Sudhir Mishra, Jamshedpur

- The practice as a specialist should be backed by degree and not mere experience of working in a particular specialty.
- A doctor has a right to refuse a patient, especially if the patient does not belong to his specialty, doctor may not be available for full duration of treatment, or patient has a history of misbehavior. However, it is advisable to tactfully refer the patient to a higher center, rather than outright refusal.
- A doctor cannot refuse initial care in an emergency situation.
- It is advisable to equip the PICU setup in accordance with the skill available and not treat a patient beyond one's skill level.
- It is advisable to employ trained nurses rather than trying to train them at your own setup, especially if you are catering to the seriously ill patients.
- The age of viability for preterm babies varies depending on facilities available. The resuscitation in babies born between 24-28 weeks gestation should be carefully handled in consultation with parents.
- Delegation of duty does not absolve you completely from responsibility. You are liable for the acts of trainees working under you. While traveling out of station, it is desirable to hand over the patient formally to a qualified person and inform the same to parents.
- Practice in crosspathy and cross specialty is unacceptable.

ENURESIS IN CHILDREN

Dr C Suresh Kumar, Hyderabad

- Voiding of urine in bed after 5 years of age for more than 2 times a week for 3 months is called nocturnal enuresis.
- By 5 years of age, 90-95% are dry during the day and 80-85% are continent at night.
- Enuresis may be primary (85%) or secondary (15%).
- Family history is positive in 50% of cases.
- If one parent was enuretic, each child has a 44% risk of enuresis.
- If both parents were enuretic, each child has a 77% likelihood of enuresis.
- The best approach to treatment is to reassure parents that the condition is self-limited.
- The simplest initial measure is motivational.
- Initial management - General and motivational.
- First-line management includes alarm and desmopressin.
- Further treatment - Anticholinergics and tricyclics.
- Nearly 98% will have dry nights on their own.

LIVER TRANSPLANTATION IN INDIAN SCENARIO: CHALLENGES AND WAY FORWARD

- Liver transplantation is an established modality for acute liver failure, chronic liver failure and metabolic disorders.
- The first successful liver transplantation was performed in India in Apollo, Delhi in 1998.
- Challenges in India are: Lack of cadaveric donors; late referral; low socioeconomic status; too complex.
- Solutions: a) Lack of cadaveric donors - Cadaver donation has increased over the last 3 years; ABO incompatible transplants are being increasingly performed; SWAP transplants can offer hope to some families. b) Referral - Patients are being referred earlier allowing optimizing care before transplantation. c) Low socioeconomic status - Lower costs, fixed packages and support from charities and individual donors have enhanced access. d) Too complex - Better post-op care, standardization of protocols and excellent surgical expertise have resulted in outcomes comparable to the more established centers in the West.
- More than 850 pediatric liver transplants have been performed in India. Of these, 239 have been at Apollo. The Apollo Transplant Program has now performed 2,990 liver transplants. Sanjay, the first recipient of a liver transplant in India at Apollo, Delhi at the age of 18 months, is now leading a normal life 19 years later as a medical student.

HEALTH EVALUATION OF A NEWLY ADOPTED CHILD

Dr Avinash Bhosale, Jalgaon

- There have been 16,181 adoptions in the last 4 years. Therefore, it is important to discuss health evaluation of a newly adopted child.
- Initial evaluation may require several visits to the pediatrician. It involves comprehensive health planning encompassing medical history; developmental assessment; unclothed examination; laboratory investigations; referrals to medical, developmental, mental health and dental specialists.
- Special issues to be addressed at preadoption visit - Nutrition, lactation, available community support services.
- Complete history is rarely available.
- Components of comprehensive physical examination pertinent to adoption - General appearance; vital signs; growth parameters; skin examination (infectious diseases, rashes, infestations, congenital skin abnormalities, bruises or scars); genitalia examination (testing for STD to be performed with any suspicion of abuse or sexually active); neurological examination (developmental and neurologic abnormalities).
- Assess immunization status: If the status is known, document date and age; check for serum immunity for major antigens; if the status is unknown, reimmunize the child.
- Help families to promote strong, healthy attachments within family unit.
- Role of Indian Academy of Pediatrics (IAP) - IAP should formulate a chapter and guidelines to provide information and training. Adoption and foster care medicine is an evolving subspecialty in the field of pediatrics.

CHOOSING THE RIGHT AED - DIFFERENT SEIZURES, DIFFERENT DRUGS

Dr Sudhindra Aroor, Bengaluru

- **Before starting any AED**: Confirmation of seizure(s), classify the epilepsy (seizure type, syndrome), rule out other etiologies, appropriate AED - start low, go slow.
- **Starting of AEDs:** Start first-line drug at low dose and gradually optimize until seizures stop; if seizures persist, review the diagnosis and etiology; if there is definite seizure, then plan second monotherapy or go for rational polytherapy.
- **AED consideration:** *Numerous variables should be considered including* - AED specific variables (seizure- or epilepsy-syndrome, efficacy, adverse effects, pharmacokinetics, formulations, and so on), patient-specific variables (genetic background, sex, age, comorbidities, socioeconomic status), nation-specific variables (AED availability, AED cost); AEDs as a clinical test for confirming a diagnosis of epilepsy has no justification.

■■■■

News and Views

Central Sector and Centrally Sponsored Health Schemes in India

Central Sector Schemes

- Pradhan Mantri Swasthya Suraksha Yojana
- National AIDS and STD Control Programme
- Family Welfare Schemes
- Establishment and strengthening of NCDC Branches and Health Initiatives, Inter Sectoral co-ordination for preparation and control of Zoonotic Diseases and other neglected tropical diseases, Surveillance of Viral Hepatitis, Antimicrobial Resistance
- National Pharmacovigilance Programme
- Development of Nursing Services
- Health Sector Disaster Preparedness and Response and Human Resources Development for Emergency Medical Services
- National Organ Transplant Programme
- Impacting Research Innovation and Technology (IMPRINT) Scheme.
- Swachhta Action Plan (SAP)

Centrally Sponsored Schemes

- National Health Mission (NHM)
- Rashtriya Swasthya Bima Yojana

National Health Mission

- National Rural Health Mission (NRHM)
  - RCH Flexible Pool including Routine Immunization Program, Pulse Polio Immunization Program, National Iodine Deficiency Disorders Control Program, etc.
  - Health Systems Strengthening under NRHM
  - Flexible Pool for Communicable Diseases
  - Flexible Pool for Non-Communicable Diseases, Injury and Trauma
  - Infrastructure Maintenance
  - Forward linkages to NRHM
  - Strengthening of State Drug Regulatory System
  - Pilot Schemes (Sports medicine, Deafness, Leptospirosis Control, Control of Human Rabies, Medical Rehabilitation, Oral Health, Fluorosis)
  - Human Resources for Health
  - Prime Minister's Development Plan for Jammu & Kashmir
  - Strengthening National Programme Management of the NRHM
- National Urban Health Mission
- Tertiary care Programmes
  - National Mental Health Programme
  - Capacity Building for Trauma Centres
  - National Programme for prevention and control of Cancer, Diabetes, Cardiovascular Diseases and Stroke
  - National Programme for Health Care for the Elderly
  - National Programme for Control of Blindness
  - Telemedicine
  - Tobacco Control Programme and Drug De-addiction Programme
- Human Resources for Health and Medical Education
  - Upgradation/Strengthening of Nursing Services (ANM/GNM)
  - Strengthening/Upgradation of Pharmacy School/College
  - District Hospital - Upgradation of State Government Medical Colleges (PG seats)
  - Strengthening Government Medical Colleges (UG seats) and Central Government Health Institutions
  - Establishing New Medical Colleges (upgrading District Hospitals)
  - Setting up of State Institutions of Paramedical Sciences in States and Setting up of College of Paramedical Education.

(PIB, August 10, 2018)

A New Vaginal Ring for 1 Year of Birth Control

The US Food and Drug Administration (FDA) has approved Annovera (segesterone acetate and ethinyl estradiol vaginal system), which is a combined hormonal contraceptive for women of reproductive

age used to prevent pregnancy and is the first vaginal ring contraceptive that can be used for an entire year. Annovera is a reusable donut-shaped (ring), non-biodegradable, flexible vaginal system that is placed in the vagina for 3 weeks followed by 1 week out of the vagina, at which time women may experience a period (a withdrawal bleed). This schedule is repeated every 4 weeks for 1 year (thirteen 28-day menstrual cycles).

Older Adults Undergoing Dialysis at Risk of Dementia

Older adults who initiate dialysis for kidney failure are at a greater risk of being diagnosed with dementia and Alzheimer's disease. Age ≥86 years, Black race, female sex and institutionalization were found to be the strongest risk factors for dementia and Alzheimer's disease. The study is published in the *Clinical Journal of the American Society of Nephrology*.

Monitoring Work Emails During Non-work Hours is a Significant Stressor Beyond Actual Workload

Organizational expectations to monitor work-related electronic communication during non-work hours, affects personal relationships and home life suffer for those tied to their work emails round-the-clock, according to a new study published in the Academy of Management Best Paper Proceedings. According to the authors, organization expectations is an insidious stressor beyond actual workload that not only increases employee anxiety, decreases their relationship satisfaction and has detrimental effects on employee health, including partner health.

FDA Approves First-of-its Kind Targeted RNA-based Therapy to Treat a Rare Disease

Onpattro (patisiran) infusion for the treatment of polyneuropathy caused by hereditary transthyretin-mediated amyloidosis (hATTR) in adult patients has been approved by the US FDA. It is also the first FDA approval of a new class of drugs called small interfering ribonucleic acid (siRNA) treatment.

Glaucoma may be an Autoimmune Disease, Says Study

A new study from MIT and Massachusetts Eye and Ear has found that glaucoma may in fact be an autoimmune disorder. In a study of mice, it was shown that the body's own T cells are responsible for the progressive retinal degeneration seen in glaucoma. Furthermore, these T cells appear to be primed to attack retinal neurons as the result of previous interactions with bacteria that normally live in our body.

Steps taken by the Govt. to Maintain the Polio-free Status of the Country

India has been certified Polio free by the Regional Polio Certification Commission on the 27th March 2014. Last case of Wild poliovirus in the country was reported on 13th January, 2011 from Howrah, West Bengal and no wild poliovirus case have been reported thereafter from any State/Union Territory of the country. To maintain the polio-free status of the country, government is taking following measures:

- Population immunity against polio is being maintained by observing polio campaigns every year. In the year 2018, two National Immunization Days (NID) have been conducted and two sub-national polio immunization rounds (SNID) are planned, in addition to polio vaccination through routine immunization. Inactivated Polio Vaccine (IPV) has also been introduced across the country to further boost the population immunity as additional protection against polio.
- Vaccination to international travelers to and from 8 other countries and continuous vaccination at the international borders of India are being carried out throughout the year to mitigate risk of importation.
- Sensitivity of polio surveillance is maintained through Acute Flaccid Paralysis (AFP) surveillance in human and environment surveillance to detect any polio threat as early as possible and respond quickly to mitigate the risk of circulation

(Source: PIB, MOHFW, August 10, 2018)

Age of Onset of Type 1 Diabetes Influences Survival

According to a large nationwide cohort study reported in *The Lancet*, women who had been diagnosed with type 1 diabetes by the age of 10 lost an average of 17.7 years off their life, while men lost around 14.2 life-years.

Enteric Infections are Common in Patients with IBD Flares

Non-*Clostridium difficile* enteric infections were identified in 17% of symptomatic patients with IBD. Endoscopic and histologic findings may not differentiate flare from infection. The study is published August 3, 2018 in the *American Journal of Gastroenterology*.

FDA Panel Recommends Omadacycline for ABSSSI and CABP

The US FDA's Antimicrobial Drug Advisory Committee has recommended omadacycline (Paratek) for acute

bacterial skin and skin structure infections (ABSSSI) and community-acquired bacterial pneumonia (CABP).

Nocturnal Oximetry can Identify Children with sleep-disordered Breathing Who would Benefit from Adenotonsillectomy

Nocturnal oximetry results can be used to identify children with sleep-disordered breathing who are most likely to benefit from adenotonsillectomy, as reported online August 7, 2018 in *Pediatrics*. The median decline in the number of episodes per hour of oxygen desaturation of 3% or greater by nocturnal oximetry between baseline and follow-up was significantly greater in the adenotonsillectomy group (3.2) than in the control group (1.7).

Catch-up HPV Vaccination Effective for Women Under 21 years

Catch-up quadrivalent HPV vaccination with three doses was effective against CIN2+ and CIN3+ in girls and women aged 14-20 years at time of first vaccine dose but not for women aged 21 years and older at first dose, as per a study published online August 7, 2018 in *The Lancet Child & Adolescent Health*.

Paraguay Interrupts Vector Transmission of Chagas Disease

Paraguay has succeeded in interrupting the vector transmission of *Trypanosoma cruzi* in the home, the parasite that causes Chagas disease. This was verified last week by a group of international independent experts convened by the Pan American Health Organization (PAHO).

There are now 18 countries in the region, including Paraguay, that have achieved this on a national level or in part of their national territory where the disease is endemic. In the Region of the Americas, there are 21 endemic countries. There are around 30,000 new cases of Chagas each year, and 14,000 people die as a result. In addition to this, there are more than 70,000 million people who live in areas where they are at risk of contracting the disease… (*PAHO/ WHO, August 7, 2018.*)

Prenatal Tdap Vaccination not Associated with Autism Spectrum Disorder

A study of women who received a Tdap vaccination during pregnancy found no increase in risk that their children would later be diagnosed with autism spectrum disorder. The study is published online August 13, 2018 in the journal *Pediatrics*. The incidence rate of autism spectrum disorder was 3.78 per 1,000 people in the Tdap-vaccinated group. The rate of autism spectrum disorder was 4.05 per 1,000 in the unvaccinated group.

Enteric Infections may Coexist with Disease Flares in Patients with IBD

Non-*C. difficile* enteric infections were present in almost 1 in 5 patients with symptomatic IBD, as per a cross-sectional analysis of 9,403 patients reported in *The American Journal of Gastroenterology*.

Chikungunya Fever may Lead to Chronic Articular Pain

According to a systematic review and meta-analysis published in the journal *Joint Bone Spine*, 52% of the patients with Chikungunya virus infection may have persistent chronic articular pain or arthritis after acute infection.

Study Identifies Risk Factors that Predict MACE 1-year Post-MI

A study reported online August 10, 2018 in *JAMA Open Network* has identified 19 risk factors that are associated with major adverse cardiovascular events (MACE) 1 year after acute myocardial infarction (AMI) and help to identify high-risk patients who would benefit most from intensive follow-up and aggressive risk factor reduction. These risk factors include 15 unique variables of age, education, prior AMI, prior ventricular tachycardia or fibrillation, hypertension, angina, pre-arrival medical assistance, >4 hours from onset of symptoms to admission, ejection fraction, renal dysfunction, heart rate, systolic blood pressure, white blood cell count, blood glucose and in-hospital complications.

Risankizumab Increases Clinical Response and Remission Rates in Moderate-to-severe Crohn's Disease

Extended induction treatment with open-label intravenous risankizumab was effective in increasing clinical response and remission rates at Week 26 in patients with moderate-to-severe Crohn's disease. Open-label subcutaneous risankizumab maintained remission until Week 52 in most patients who were in clinical remission at Week 26, according to data from an extended phase 2 trial published online July 25, 2018 in *The Lancet Gastroenterology & Hepatology*.

World Must 'Scale-up' Soil Health to Beat Hunger and Combat Climate Change

Healthy soils are essential to achieve 'Zero Hunger' and other Sustainable Development Goals (SDGs) - peace

and prosperity, the United Nations agriculture agency chief underscored in Brazil at the World Congress of Soil Science.

Recently, more than 2,000 scientists gathered in Rio de Janeiro under the theme "Soil Science: Beyond Food and Fuel," for a week of exploring the increasingly complex, diverse role of soils; grappling with resilient agriculture practices to address environmental and climatic changes; and confronting threats to food security and sovereignty.

"Soil degradation affects food production, causing hunger and malnutrition, amplifying food-price volatility, forcing land abandonment and involuntary migration-leading millions into poverty," said José Graziano da Silva, the Director-General of the Food and Agriculture Organization (FAO), in a video message noting that approximately one-third of the Earth's soil is degraded.

The FAO "The Status of the World's Soil Resources" report had identified 10 major threats to soil functions, including soil erosion, soil organic carbon loss, nutrient imbalance, soil acidification, soil contamination, waterlogging, soil compaction, soil sealing, salinization and loss of soil biodiversity.

Mr. Graziano da Silva stressed the importance of sustainable soil management as an "essential part of the Zero Hunger equation" in a world where more than 815 million people are suffering from hunger and malnutrition… (*UN, August 13, 2018*)

Vitamin D Supplementation During Pregnancy does not Benefit Fetal or Infant Growth

In women with prenatal vitamin D deficiency and fetal and infant growth restriction, maternal vitamin D supplementation from mid-pregnancy until birth or until 6 months postpartum did not improve fetal or infant growth in a study published in the August 9 issue of the *New England Journal of Medicine*.

Notification of Patient Overdose Deaths Reduces Clinician Opioid Prescriptions

Clinicians were more likely to reduce the number and dose of opioid drugs they prescribed after learning that one of their patients had died from an overdose from a controlled substance than those not notified, according to a recent study appearing in the August 10 issue of Science

Regular Exercise for 45 Minutes 3-4 Times in a Week Benefits Mental Health

A study of 1.2 million US adults found that regularly exercising for 45 minutes 3-5 times a week is associated with superior mental health compared to those who do not exercise. Team sports, cycling, aerobics and going to the gym had the largest reductions. The study was published online August 8, 2018 in *Lancet Psychiatry*. More exercise was not always better.

Low Normalized Grip Strength may be Indicative of Cardiometabolic Risk

A study published online July 30, 2018 in the *Journal of Pediatrics* has suggested low normalized grip strength as a prognostic indicator of cardiometabolic risk and to identify adolescents who would benefit most from lifestyle interventions to improve muscular fitness. Adolescents who had low normalized grip strength had a significantly greater prevalence of health decline or poor health persistence than those who had strong normalized grip strength.

New WPSI Guidelines Recommend Screening Women Annually for Urinary Incontinence

The Women's Preventive Services Initiative (WPSI) has recommended "screening women for urinary incontinence annually beginning in adolescence and continuing across the lifespan. Screening ideally should assess whether women experience urinary incontinence and whether it affects their activities and quality-of-life. The WPSI recommends referring women for further evaluation and treatment if indicated" in new guidelines published August 14, 2018 in the *Annals of Internal Medicine*.

AYUSH Ministry Introduces Scheme for Monitoring Drugs Safety Aspects

The AYUSH Ministry introduced a new central sector scheme for monitoring of the safety aspects of Ayurveda, Siddha, Unani and Homoeopathy drugs and documenting their adverse effects. The ministry introduced the scheme for promoting pharmacovigilance of these drugs.

"The prime objective of the scheme is to develop the culture of documenting adverse effects and undertake safety monitoring of Ayurveda, Siddha, Unani and Homoeopathy drugs and surveillance of misleading advertisements appearing in the print and electronic media," it said. The scheme intends to facilitate the establishment of three-tier network of National Pharmacovigilance Centre (NPvCC), Intermediary Pharmacovigilance Centres (IPvCCs) and Peripheral Pharmacovigilance Centres (PPvCC), an official statement said. All India Institute of Ayurveda, New Delhi, an autonomous body under the AYUSH Ministry,

was designated as the NPvCC for coordinating various activities under the initiative.

In the initial phase of implementation, five national institutes of AYUSH are designated as the IPvCCs and 42 institutions of AYUSH having clinical facilities as peripheral pharmacovigilance centers to take up the work of reporting, documentation, analysis, causality assessment of the adverse reactions and events associated with the consumption of such drugs.

Overweight and Obesity Impair LV Systolic Function

According to a study published August 14, 2018 in *Cardiovascular Diabetology*, overweight and obesity impair left ventricular ejection fraction and global longitudinal strain in both patients with type 2 diabetes mellitus and nondiabetic persons. Patients who gained weight from baseline to follow-up changed left ventricular ejection fraction (median and interquartile range) by −1.0 (9.0) % and patients who lost weight changed left ventricular ejection fraction by 1.0 (10.0) %.

Most Sudden Cardiac Deaths in Adolescent Soccer Players are Due to Cardiomyopathies

A study examining the incidence and causes of sudden cardiac death among adolescent soccer players in the UK identified diseases that are associated with sudden cardiac death in 0.38% of adolescent soccer players who underwent cardiovascular screening. The incidence of sudden cardiac death was 1 per 14,794 person-years, or 6.8 per 100,000 athletes. Cardiomyopathy accounted for 7 of 8 sudden cardiac deaths (88%) that had not been detected on screening. These findings are reported online August 9, 2018 in the *New England Journal of Medicine*.

New NIH Reference Book on Diabetes

Researchers at the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), part of the National Institutes of Health along with leading diabetes experts from around the country and world have developed the third edition of a reference designed to be a one-stop source for crucial scientific information on diabetes and its complication titled "Diabetes in America."

Guidelines for Medical Management of Perianal Fistulizing Crohn's Disease

Clinical practice guidelines for the medical management of perianal fistulizing Crohn's disease published August 6, 2018 in the journal *Inflammatory Bowel Diseases* recommend imaging and surgical consultations in the initial assessment of patients with active fistulizing Crohn's disease, particularly those with complicated disease. Antibiotics are also recommended for initial symptom control and antitumor necrosis factor (anti-TNF) therapy to induce symptomatic response, which was continued to achieve and maintain complete remission.

The First Direct-to-consumer Birth Control App

The first direct-to-consumer mobile medical app, called Natural Cycles, which can be used for birth control by women aged 18 years or older has been approved by the FDA. The algorithm in the App calculates the days of the month a woman is likely to be fertile based on daily body temperature readings and menstrual cycle information.

Improving Influenza Virus Detection in Latin America and the Caribbean

Laboratory specialists from 11 countries across Latin America and the Caribbean have received training from the US Centers for Disease Control (CDC) and the PAHO in a bid to improve the detection of influenza viruses circulating in the region. The international course on molecular diagnostics of influenza is part of "a joint effort to better prepare ourselves to deal with the flu," said José Narro Robles, Secretary of Health of Mexico during the inauguration ceremony for the training, which took place in Mexico City from August 6 to 10, in partnership with Mexico's Institute of Epidemiological Diagnosis and Reference (InDRE)… (*WHO/PAHO, August 10, 2018*).

AHA Advisory on Low-calorie Sweetened Beverages and Cardiometabolic Health

The first ever advisory on low-calorie sweetened beverages from the American Heart Association (AHA) recommends against prolonged consumption of low-calorie sweetened beverages by children, but says that for adults who are habitually high consumers of sugar sweetened beverages, the low-calorie sweetened beverages may be a useful replacement strategy to reduce intake of sugar-sweetened beverages. The report is published online July 30, 2018 in *Circulation*. The advisory suggests that the use of other alternatives to sugar-sweetened beverages, with a focus on water (plain, carbonated, and unsweetened flavored), should be encouraged.

Restoring Blood Flow may be Best Option to Save Your Life and Limb

Treatments that restore blood flow to the lower limbs of people with critical limb ischemia may be cheaper

and associated with longer survival, than amputation according to new research published August 15, 2018 in *Journal of the American Heart Association*. Over the 4 years of the study, survival was 38% with endovascular revascularization, 40% with surgical revascularization and 23% among patients who underwent major amputation.

Extended-release Methylphenidate Capsules Approved for ADHD in Children

The FDA approved extended-release methylphenidate capsules (JORNAY PM) taken in the evening for the treatment of attention-deficit/hyperactivity disorder (ADHD) in children age 6 and older.

Cetuximab with Radiation Inferior to Standard Treatment in HPV-positive Oropharyngeal Cancer

An interim analysis of data from a randomized clinical trial of patients with human papillomavirus (HPV)-positive oropharyngeal cancer found that treatment with radiation therapy and cetuximab is associated with worse overall and progression-free survival compared to the current standard treatment with radiation and cisplatin.

These results from the phase 3 trial will be presented at the upcoming American Society for Radiation Oncology (ASTRO) Annual Meeting in San Antonio, Texas.

Study Links Evening Preference and Lack of Sleep with Higher BMI in People with Prediabetes

People with prediabetes who go to bed later, eat meals later and are more active and alert later in the day i.e., those who have an "evening preference" have a higher body mass index (BMI) than people with prediabetes who do things earlier in the day, or exhibit morning preference.

The higher BMI among people with evening preference is related to their lack of sufficient sleep, according to a study published August 15, 2018 in the journal *Frontiers in Endocrinology*.

One in 4 Adults in the US Live with a Disability, Says CDC

One in 4 US adults - 61 million Americans - have a disability that impacts major life activities, according to a report in CDC's Morbidity and Mortality Weekly Report. Using data from the 2016 Behavioral Risk Factor Surveillance System (BRFSS), this is the first CDC report of the percentage of adults across six disability types:

- Mobility (serious difficulty walking or climbing stairs)
- Cognition (serious difficulty concentrating, remembering or making decisions)
- Hearing (serious difficulty hearing)
- Vision (serious difficulty seeing)
- Independent living (difficulty doing errands alone)
- Self-care (difficulty dressing or bathing).

Mobility disability is the most common disability type followed by disability of cognition, independent living, hearing, vision and self-care. With age, disability becomes more common, affecting about 2 in 5 adults age 65 and older. The percentage of adults with disability increased as income decreased … (*CDC, August 16, 2018*).

ACC/AHA Release Updated Guideline for Treatment of Adults with Congenital Heart Disease

The American College of Cardiology (ACC) and the AHA have released an updated guideline for the management of adult congenital heart disease (ACHD) patients, which are published online August 16, 2018 in the *Journal of the American College of Cardiology and Circulation*.

The updated guideline presents a new classification system for ACHD patients that retains the traditional classification based on the structural complexity of the disease while taking into account the patient's functional status and other factors, including the presence of cardiovascular and non-cardiovascular problems. This classification system provides the basis for making lesion-specific recommendations for interval clinical follow-up and testing modalities such as ECG, transthoracic echocardiography, cardiovascular magnetic resonance and exercise testing.

Retinal Thinning may be an Early Sign of Early Parkinson's Disease

A new study published in the August 15, 2018, online issue of *Neurology* has found that the thinning of the retina, most notably in the two inner layers of the five layers of the retina, is associated with the loss of such brain cells in patients with early Parkinson's disease much before the problems with movement begin. The thinner the retina, the greater the severity of disease. Also, the thinning of the retina corresponded with the loss of brain cells that produce dopamine.

■■■■

What is the Importance of Silence?

KK AGGARWAL

True silence is the silence between the thoughts and represents the true self, consciousness or the soul. It is a web of energized information ready to take all provided there is a right intent. Meditation is the process of achieving silence. Observing silence is another way of deriving benefits of meditation. Many yogis in the past have recommended and observed silence now and then. Mahatma Gandhi spent one day in silence every week. He believed that abstaining from speaking brought him inner peace and happiness. On all such days he communicated with others only by writing on paper.

Hindu principles also talk about a correlation between mauna (silence) and shanti (harmony). Mauna Ekadashi is a ritual followed traditionally in our country. On this day, the person is not supposed to speak at all and observes complete silence all through the day and night. It gives immense peace to the mind and strength to the body. In Jainism, this ritual has a lot of importance. Nimith was a great saint in Jainism who long ago asked all Jains to observe this vrata. Some people recommend that on every ekadashi one should observe silence for few hours, if not the whole day.

In his book, The Seven Spiritual Laws of Success, Deepak Chopra talks in great detail about the importance of observing silence in day-to-day life. He recommends that everyone should observe silence for 20 minutes every day. Silence helps to redirect our imagination towards self. Even Swami Sivananda in his teachings recommends observation of mauna daily for 2 hours. For ekadashi, take milk and fruits every day, study one chapter of Bhagwad Gita daily, do regular charity and donate one-tenth of your income in the welfare of the society. Ekadashi is the 11th day of Hindu lunar fortnight. It is the day of celebration, occurring twice a month, meant for meditation and increasing soul consciousness.

Vinoba Bhave was a great sage of our country known for his Bhoodaan movement. He was a great advocator and practical preacher of mauna vrata.

Mauna means silence and vrata means vow; hence, mauna vrata means a vow of silence. Mauna was practiced by saints to end enmity and recoup their enmity. Prolonged silence as the form of silence is observed by the rishi munis involved for prolonged periods of silence. Silence is a source of all that exists. Silence is where consciousness dwells. There is no religious tradition that does not talk about silence. It breaks the outward communication and forces a dialogue towards inner communication. This is one reason why all prayers, meditation and worship or any other practice whether we attune our mind to the spiritual consciousness within are done in silence. After the death of a person it is a practice to observe silence for 2 minutes. The immediate benefit is that it saves a tremendous amount of energy.

Silence is cessation of both sensory and mental activity. It is like having a still mind and listening to the inner mind. Behind this screen of our internal dialogue is the silence of spirit. Meditation is the combination of observing silence and the art of observation.

(Disclaimer: The views expressed in this write up are my own).

Group Editor-in-Chief, IJCP Group

■■■■

Assessment of Cognitive Functions

- Immediate memory.
- Reasoning (e.g., unable to cope with unexpected events).
- Calculations: 100-7 (Impairment in handling complex tasks, balancing a check book).
- Language: Reading and speaking (e.g., impaired word finding, seven).
- Spatial ability and orientation (e.g., getting lost in familiar places).

INSPIRATIONAL STORY

No Regrets About Today

If I knew it would be the last time that I'd see you fall asleep, I would tuck you in more tightly, and pray the Lord, your soul to keep.

If I knew it would be the last time that I see you walk out the door, I would give you a hug and kiss, and call you back for one more.

If I knew it would be the last time I'd hear your voice lifted up in praise, I would video tape each word, so I could play them back day after day.

If I knew it would be the last time, I could spare an extra minute or two to stop and say "I love you," instead of assuming you would KNOW I do.

If I knew it would be the last time, I would be there to share your day, well I'm sure you'll have so many more, so I can let just this one slip away. For surely there's always tomorrow to make up for an oversight, and we always get a second chance to make everything right.

There will always be another day to say our "I love you," And certainly there's another chance to say our "Anything I can do?"

But just in case I might be wrong, and today is all I get, I'd like to say how much I love you and I hope we never forget.

Tomorrow is not promised to anyone, young or old alike And today may be the last chance you get to hold your loved one tight... So, if you're waiting for tomorrow, why not do it today? For if tomorrow never comes, you'll surely regret the day.

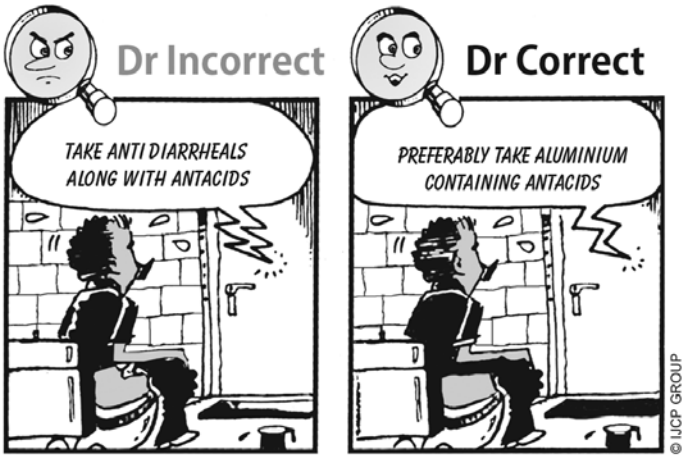
That you didn't take that extra time for a smile, a hug, or a kiss and you were too busy to grant someone, what turned out to be their one last wish.

So hold your loved ones close today, whisper in their ear, tell them how much you love them and that you'll always hold them dear. Take time to say "I'm sorry," "please forgive me." "Thank you" or "It's okay." And if tomorrow never comes, you'll have no regrets about today.

■■■■

Dr Correct & Dr Incorrect

SITUATION : A 40-year-old male suffering from acid peptic disease developed loose motions whenever he used antacids.



LESSON : Magnesium-containing antacids can cause loose motions and therefore should be replaced by antidiarrheal medicines along with aluminium containing antacids.

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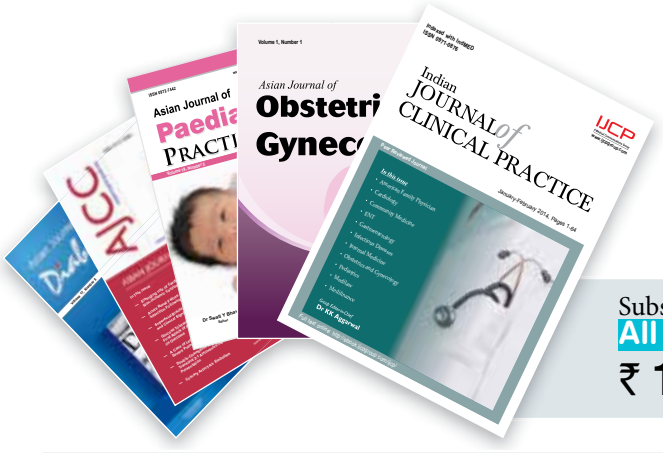

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Lighter Side of Medicine

HUMOR

MEDICAL TERMS

Artery – Study of painting

Bacteria – Back door of cafeteria

Bowel – Letter like A.E.I.O.U.

Cesarean section – District in Rome

Cat scan – Searching for kitty

RICE PREFERENCE

The young woman really thought she'd been very patient, through a protracted period of dating with no talk of marriage. One night her steady boyfriend took her to a Chinese restaurant. As he perused the menu, he casually asked her, "So . . . how do you like your rice? Boiled? Steamed? Or fried?" Without missing a beat, she looked over her menu at him and replied clearly, "Thrown."

A MATHEMATICIAN, A PHYSICIST AND AN ENGINEER

A mathematician, a physicist and an engineer were traveling through Scotland when they saw a black sheep through the window of the train.

"Aha," says the engineer, "I see that Scottish sheep are black."

"Hmm," says the physicist, "You mean that some Scottish sheep are black."

"No," says the mathematician, "All we know is that there is at least one sheep in Scotland, and that at least one side of that one sheep is black!"

DIET RULES FOR CHEATERS

- Movie related foods do not have additional calories because they are part of the entertainment package and not part of one's personal fuel.
- Cookie pieces contain no fat—the process of breaking causes fat leakage.
- Things licked off knives and spoons have no calories if you are in the process of preparing something. Examples are peanut butter on a knife making a sandwich and ice cream on a spoon making a sundae.
- Foods that have the same color have the same number of calories. Examples are: spinach and pistachio ice cream; mushrooms and white chocolate. *Note*: Chocolate is a universal color and may be substituted for any other food color.
- Foods that are frozen have no calories because calories are units of heat. Examples are ice cream, frozen pies and Popsicles.

I THOUGHT I WAS

A certain little girl, when asked her name, would reply, "I'm Mr. Sugarbrown's daughter."

Her mother told her this was wrong, she must say, "I'm Jane Sugarbrown."

The Vicar spoke to her in Sunday school and said, "Aren't you Mr. Sugarbrown's daughter?"

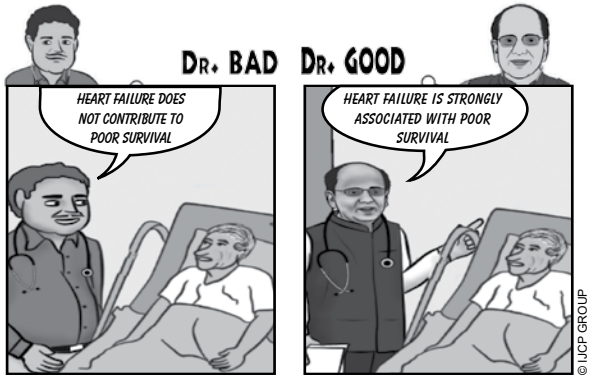
She replied, "I thought I was, but mother says I'm not."

STUPID

One day there were a couple of kids in a psychology class. The teacher stands up and says to the class "stand up if you think you're stupid!" after about 5 minutes Little Johnny stood up and the teacher says "Do you think you're stupid Johnny?"

Dr. Good and Dr. Bad

SITUATION: A 72-year-old male with type 2 diabetes who suffered from heart failure few weeks ago was told that he has a bad prognosis.



LESSON: The GERODIAB study indicates that cardiovascular complications are associated with poor survival in elderly patients with type 2 diabetes, particularly heart failure.

Diabetes Care. 2018;41(1):156-62.

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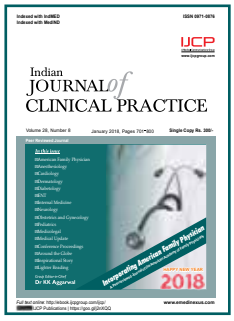

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Paintal AS. Impulses in vagal afferent fibres from specific pulmonary deflation receptors. The response of those receptors to phenylguanide, potato S-hydroxytryptamine and their role in respiratory and cardiovascular reflexes. Q. J. Expt. Physiol. 1955;40:89-111.

Books

Stansfield AG. Lymph Node Biopsy Interpretation Churchill Livingstone, New York 1985.

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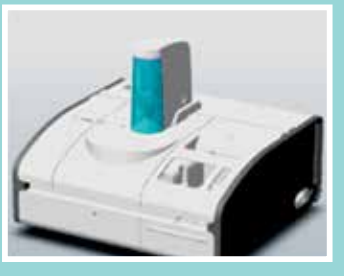

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