Memory Aids for Medical Students

Introduction

Problems with many memory aids:
1. It is often almost as hard to remember many of the memory aids as it is to remember the original facts.
2. Most mnemonics contain excessive information rather than selecting the main facts.
3. The most important/common facts are often found late in a mnemonic with rarer facts featured more prominently because they fit in better with the mnemonic.
4. These mnemonics are often used excessively, including where understanding or logical frameworks are more useful.

An example of a mnemonic that I found useful as an intern is as follows:

The treatment of asthma = ASTHMA
A= Adrenergics
S= Steroids
T= Theophyllines (although not used as much now though)
H= Hydration
M= Mask
A= Antibiotics if necessary.

This type of mnemonic exhibits the following important characteristics.
1. It is simple and easy to remember as the letters represent a word relevant to the issue in question. It is therefore impossible to forget.
2. The mnemonic contains the important details only rather than nuances and trivial items relevant to specific contingencies.
3. The list of therapeutic options follows the sequence normally utilized in treating asthmatic patient's i.e.,
   - Adrenergics (inhaled Salbutamol etc.) are the first line of therapy for mild asthma and also for more severe asthma in the form of nebulisations of IV therapy.
   - A second line choice of therapy is steroids. On an outpatients basis inhaled steroids represent second line therapy and of course systemic steroids are utilized in the emergency situation.
   - Oral theophyllines represent another line of therapy in these patients and, in the emergency situation, intravenous aminophylline is utilized. These drugs are not used much now, but they form part of the original mnemonic, for illustration purposes.
   - Hydration is essential to prevent inspiration of airway mucus in patients with asthma. This is particularly important in the emergency situation where intravenous hydration is crucial.
   - Using the word mask rather than oxygen reminds the attending physician that one should consider chronic CO2 retention and utilize a low flow (24%) oxygen mask in those patients who are at risk of hypoventilation if high flow oxygen is used.
   - Infections commonly precipitate asthma and therefore antibiotics should be utilized if that situation is present.

4. The memory aids utilized here have the following characteristics:
   - The are selected as being easy to remember. They utilize either repetitive letters (e.g. AAA), or simples words (e.g. ASTHMA in the example above or LEAD for lead poisoning), simples poems (e.g. the six major causes of interstitial lung disease in section
   - simple sentences where each word represents part of the relevant disease (e.g. the word "medical" causes of abdominal pain in section
It is essential because of these facts these memory aids are simple and easy to remember, particularly in stressful situations such as exams, emergencies and out of hours consultations at times of busyness and fatigue.

2) These memory aids list only the major causes. No all-inclusive list is ever required to be memorized. In exams you will almost certainly be cut short after you get beyond the first three or four major answers to any question. The major facts are what individual clinicians carry with them and, when they have exhausted this list (which they will by definition do only infrequently) they find it safer to consult the referenced text than to trust the deeper recesses of their memory.

3) In all of these examples of memory aids the most important facts are listed first. Thus whether in an exam situation or a clinical situation you will not be thinking of less common answers first.

4) Memory aids are not listed here in those areas where understanding or logical framework are more useful. There a clear understanding of the process is more helpful, that should be used instead of a memory aid.

How to generate your own memory aids:
Within the constraints listed above, you will no doubt find it useful to generate your own memory aids in different clinical situations. You will find it most helpful to include names, faces and places with which you are familiar in your own memory aids. You should also remember classical cases that you have seen and visualize these cases when you think of the relevant disease. If you create a mental image, make sure it has action - that is proven to make it easier to remember. So visualize an active scene, not a static one, and make it bizarre if possible.
Within this document sufficient space has been allowed for you to make your own notes and diagrams and to add or subtract to each list. This booklet does not include exhaustive lists of causes, treatments etc. Exhaustive lists have been published elsewhere and readers are advised to consult those publications if such lists are required.

It will be very unrewarding for you to try to read this booklet from beginning to end at one sitting and expect to assimilate more than a fraction of the information. Each section contains relevant memory aids, descriptions of processes and logical frameworks for understanding medicine which should be consulted in the context of clinical case material plus relevant textbooks. The student is then in a position to commit the information to memory in the best possible way.
The following memory aids were either generated by myself or given to me by others. You will find some more useful than others, feel free to take and use those that are helpful. They are not re-checked and updated, so the responsibility for doing that is yours.

**GASTROENTEROLOGY:**
**HISTORY AND EXAMINATION**
Causes of a massive spleen = MMM
Myelofibrosis
Myeloid leukaemia (chronic)
Malaria

Causes of abdominal distension = FFFFF
Fat
Fluid
Faeces
Foetus
Flatus
Causes of weigh loss with a normal appetite
Thin Can Still Die
TH = thyrotoxicosis
IN = Infections e.g. parasitic
CAN = cancer
STILL = steatorrhoea
DIE = diabetes mellitus

Causes of atrophic glossitis = AAA
Anaemia (iron, B12, folate)
Antibiotics
Avitaminosis (B2, B3, B12)

MALABSORPTION
Bacterial reasons for malabsorption = BB
B12 is consumed
Bile salts are deconjugated

What is absorbed in the terminal ileum? = BB
B12
Bile Salts

Bruising in flanks = AA
Acute pancreatitis
Aortic aneurysmal rupture (retroperitoneally)

Whipples disease = malabsorption plus a PLAN
Pigmentation
Lymphadenopathy
Arthritis
Neurological changes

DIARRHOEA
Infectious diarrhoeas to consider in a patient who has been overseas = ABCDEFG
Amoebic dysentery
Bacilliary dysentery
Cholera
‘D’yphoid
E Coli (eg. traveller’s diarrhoea)
Food poisoning
Giardia

Inflammatory bowel disease

<table>
<thead>
<tr>
<th></th>
<th>Pain</th>
<th>Blood</th>
</tr>
</thead>
<tbody>
<tr>
<td>U. Colitis</td>
<td>X</td>
<td>P</td>
</tr>
<tr>
<td>Crohns</td>
<td>P</td>
<td>X</td>
</tr>
<tr>
<td>Ischaemic Colitis</td>
<td>P</td>
<td>P</td>
</tr>
</tbody>
</table>

Treatment of ulcerative colitis = SSSS
Supportive (eg. fluids etc.)
Steroids (local initially)
Salazopyrine
Surgery

Small bowel obstruction with no scars = CLAN
Crohn's disease
Lymphoma
Acid fast bacilli
Neoplasia

"Medical" causes of abdominal pain (to be considered after the "surgical" causes have been excluded).
Angie's Addicted Family Cat Let Her Poor Sick Hen Die on the Kitchen Table.
Angioedema (familial)
Addison's disease
Familial Mediterranean fever
Calcium disturbances (e.g. hyperparathyroidism)
Lead poisoning
Herpes zoster (pre-rash)
Porphyria
Sickle cell crisis
Henoch-Schonlein purpura
Diabetes mellitus (e.g. hypoglycaemic episodes)
Kidney failure (uraemia)
Tabes (tabetic crisis)

HEPATOBIILIARY DISEASE
Causes of gallstones = SSSS
Solute
Stasis
Seeding

Causes of hepatitis = ABC (hep virus) then DIAL for help
Drugs (alcohol, toxins, drugs)
Infection (I mononucleosis, amebic)
Autoimmune
Leptospirosis (has also meningoencephalitis, renal dysfunction)

Incubation periods
Hepatitis A = 2-6 weeks
Hepatitis B = 2-6 months

Worsening ascities = TTT
Tumour (eg. hepatoma)
Thrombosis of portal vein
Tuberculosis

Primary biliary cirrhosis associations = MMM
Middle aged female
antiMitochondrial antibody
M antibody (IgM)

Chronic pancreatitis – associations = ABCD
Abdominal pain
B//ooze
Calcification on x-ray
Diabetes mellitus
Post-operative jaundice = ABCD
Anaesthetic (halothane)
Bile duct tied off / obstructed
Calculus left behind
Drugs

Relapsing jaundice = RAID
Relapsing hepatitis
Alcoholic
Intermittent
Drugs

Persistent hepatitis antigen = CCCC
Carrier
Congenital Disease
Chronic active hepatitis
Cirrhosis

Results of portal hypertension = HHH
Haemorrhage
Hypersplenism
Hepatic fetor and hand flap (portosystemic encephalopathy)

NEUROLOGICAL
Causes of coma - cerebral or extracerebral

CEREBRAL = FETCH
Fit (convulsion)
Encephalitis
Trauma
Cancer
Haemorrhage or other cerebrovascular accident

EXTRACEREBRAL = SUGARS
Septicaemia
Uraemia or other major organ failure
Glucose low
Risky drugs
Sodium low or other metabolic change

Alternative = AEIOU
Accident (trauma, cerebrovascular)
Epilepsy
Infection (intra and extracranial)
Overdose (self-induced)
Uraemia and other metabolic causes (diabetes, Addison's disease, hypothyroidism, hypoxia, and other organ failures)

Fainting on neck turning = CC
Carotid sinus hypersensitivity
Cervical spondylosis

Global brain disease = PUPS
Perseveration
Upward gaze failure
Palmo-mental reflex
Synkinesia

**CRANIAL NERVES**
Unilateral Ptosis
Pupil dilated = third nerve
Pupil constricted = Horner's syndrome
Brain stem diagram
Courses of the second, third and seventh cranial nerves

Features of bulbar disease = DD
Dysarthria
Dysphagia

**MOTOR CHANGES**
Side effects of Levodopa = LEVODOPA
Liver dysfunction
Extra – blood (positive Coombes) gout, flushes
Vomiting, nausea, diarrhoea
Ocular – glaucoma
Dyskinesia
On – off phenomenon
Personality changes
Arrhythmias and hypertension

Causes of peripheral neuropathy = ABCDE
Alcohol and other drugs
B1, B12 deficiency
Cancer
Diabetes
Exotic (lead, dyptheria, leprosy)

Raised intracranial pressure triad =
Headache
Vomiting
Papilloedema

**ENDOCRINE**
Causes of galactorrhea = PPP
Physiological
Pituitary (tumours or stalk rupture)
Pharmacological (alpha methyl dopa, maxolon/stemetil, phenothiazines, oestrogens)

**DIABETES MELLITUS**
Symptoms of hypoglycaemia = SCAR
Sweating
Confused
Abdominal pain
Respiratory rate increases

Diabetic vascular disease = AA
Angiopathy
Atheroma
Unusual causes of diabetes = ABCDE
Acromegaly
Bronze diabetes (haemochromatosis)
Cushings disease
Drugs (steroids, thiazides)
Esoteric

Failure to control diabetes = III
Infection
Insulin resistance
Incidental disease (A to E as above)

Treatment of hypersosmolar non-ketotic diabetic state
- half strength saline
- half strength insulin

Symptoms of Addison's disease = “The 4 Ps”
Pooped
Pewking
Pigmented
Posturally hypotensive

Features that precipitate Addison's disease - SSS
Stress
Septicaemia (eg. meningococcal)
Surgery of the adrenal gland

Multiple endocrine adenomatosis syndrome = PPPPP
Parathyroid
Pituitary
Pancreatic islets (ZE)
Pheochromocytoma
Phyroid (medullary carcinoma)

Hand features in hyperthyroidism = CATS
Clubbing
Acropachy
Tremor
Sweaty and hot

Medullary carcinoma of the thyroid = CCC
C-Cells
Calcitonin
CEA

Features of hypothyroidism = CCC
Clinical
Cholesterol increased
CPK

Features of hypercalcaemia = Stones, Bones, Moans, Groans, Thrones and Psychological Overtones
Stones = renal or biliary
Bones = bone pain due to osteodystrophy
Moans = peripheral pain (eg. muscle pain, pseudogout)
Groans = abdominal pains to due pancreatitis, peptic ulcer, pancreatic adenoma (…..etc)
Thrones = polyuria [using the 'throne' ie. toilet]

Causes of short stature =
(achondroplasia, Down's syndrome, vitamin D-resistant Ricketts)

Non-drug causes of SIADH = TTT
Tumours (intrathoracic)
Trauma to brain (trauma, stroke, infection)
Tuberculosis

Abnormal hirsutism = ABCD
Acromegaly
Birth tendency
Cushing's disease
Dilantin and other drugs

Virulism = congenital, ovarian, adrenal, drugs

MUSCULOSKELETAL
Causes of acute arthritis = pus, blood, crystals, crud
Pus = septic arthritis
Blood = haemarthrosis
Crystals = gout or pseudogout
Crud = all the connective tissue diseases

Connective tissue diseases = seropositive (rheumatoid arthritis or seronegative (RAPE)
Reiters-reactive
Ankylosing spondylitis
Psoriasis
Enteropathic (Crohn's ulcerative colitis)
Ie. ask about bowels, back, skin, clap

Causes of a false positive rheumatoid factor = SSSSSS
Sarcoidosis
Still's disease
SLE
Scleroderma
SBE
Septic

Difference between Still's disease and adult rheumatoid arthritis = SMARTS
Systemic features
Mono-oligarticular
Anterior uveitis
Rheumatoid factor negative
Two years old (median age)
Salmon pink rash

Features of Reiter's syndrome = DACS
Discharge or diarrhoea
Arthritis
Conjunctivitis
Skin disease
Temporal arteritis
Muscle aches
Eye changes
Jaw claudication
ESR

Associations with dermatomyositis = CCC
Carcinoma
Cardiac disease
Connective tissue disease features eg. Raynaud's

HAEMATOLOGY
General Values
Normal MCV = 75-100
Normal Blood differential = 60/30/6/3/1
60% neutrophils
30% lymphocytes
6% monocytes
3% eosinophils
1% basophils

Causes of an ESR over 100 = MM, CA, TB, TA
MM = Multiple myeloma
CA = Carcinoma
TA = Tuberculosis
TA = Temporal arteritis

Blood groups to know
Individuals have antibodies against the groups that they do not have themselves
Universal donor = O negative
Universal recipient = AB

Causes of eosinophilia = APPLES
Allergies (eczema, allergic rhinitis, asthma)
Parasites
Pulmonary disease (eg. eosinophilic pneumonia)
Lymphoma
Eosinophilic leukaemia and other leukaemias
Secondary carcinoma

Causes of non-megaloblastic macrocytosis = HHHHH
Hepatic disease
Hypothyroidism
Hodgkin's disease
Haemolytic anaemia
Hydantoin

Causes of anaemia = reduced production or increased loss
Reduced production =
A) THE FACTORS (iron, B12, folate, vitamin C, protein)
B) THE FACTORY (Marrow -leukaemia, lymphoma, myelofibrosis, carcinoma, myeloma)
Increased loss
A) OUTSIDE THE BODY (haemorrhage)
B) INSIDE THE BODY (HHH) Haemorrhage, Haemolysis, Hypersplenism
Causes of target cells = SLIT
Splenectomy
Liver disease
Iron Deficiency
Thalassemia

Causes of pancytopoenia
Same as anaemia
Abnormal findings in polycythaemia

Ascites in hepatomegaly (cor pulmonale)
Palpable kidney (renal carcinoma)
Splenomegaly (polycythaemia rubra vera)
Others

Complications of busulphan therapy = PPP
Pigmentation
Platelet count falls
Pulmonary fibrosis

RENAL / ELECTROLYTES ETC
Low sodium = observe potassium
If low or normal = SIADH
If high = Addison's disease

Chronic renal failure is a syndrome of uraemia, anaemia and hypertension.

Skin changes in uraemia = PPPP
Pruritis
Pallor
Petechiae
Pigmentation

Causes of polyuria = DDDD
Diabetes Mellitus
Diabetes insipidus (including psychogenic polydipsia)
Dialysis list (chronic renal failure)
D - vitamins (hypercalcaemia)

Causes of jaundice with acute renal failure (excluding haemolysis ) = HIT
Hepato-renal syndrome (especially cirrhosis)
Infections (eg leptospirosis)
Toxins (eg. CCL4, paracetemol)

Treatment of chronic renal failure prior to dialysis
Antihypertensives
Antacids
Allopurinol
Antibiotics
Appropriate organ therapy (eg. joints, parathyroids, blood etc.)

Causes of chronic renal failure = CHOPIN TWINS
Chronic gromerulonephritis
Hypertension
Obstruction
Podagra
Ischaemia
Nephritis
Chronic pyelonephritis
Hypercalcaemia
Organ disease (eg. hepato-renal)
Phenacetin
Iatrogenic
Nephrotic syndrome

Complications of peritoneal dialysis = PPP
Peritonitis
Pneumonia (Diaphragmatic splinting)
Protein loss

Haemolytic-uraemic syndrome = PPP
Paediatrics
Pregnancy
Pill (contraceptive)

Causes of renal stones = SSS
Solute concentration
Seeding
Stasis

Abnormalities in the eyes in a patient with polyuria
Diabetic fundus, cataracts
Pituitary disease (visual fields, exophthalmos)
Calcium changes (band keratopathy)
Chronic renal failure (hypertension, anaemia)

METABOLIC DISORDERS
Hyperlipidemia = 2ABC
2A = beta lipoprotein = cholesterol

MISCELLANEOUS

SHOCK
Is either....
a) hypovolemic
(loss of blood outside the body, eg GI bleed, or inside, eg intraabdominal bleed or big fracture,
tor loss of fluids eg. diarrhoea, burns)
b) normovolemic
A - anaphylactic
B - bacterial eg. septic shock
C - cardiogenic.

Causes of vascular instability leading to purpura = SSS
Senile
Steroids
Scurvy

Causes of erythema multiforme
Simplex
Nail changes in psoriasis = PSO
Pitting
Subungual hyperkeratosis
Oil drop

Causes of unnatural pigmentation =
Addison's disease
Haemochromatosis
Porphyria
Black and white skin = vitiligo with Addison's disease

Photosensitivity = SAND
SLE
Albinos
Niacin deficiency (pellagra)
Drugs (eg. Tetracyclines, phenothiazines, thiazides, sulphonamides

Pemphigoid = older (legs larger_
Pemphigus = usually younger (mouth, minisize)

Causes of leg ulcers = VINEGAR
Venus
Ischaemia
Neoplasia
Esoteric (eg. neuropathies)
Gumma
Anaemia
Rare (eg. Pyoderma gangrenosum)

Eye examination = CAPER
Confrontation
Acuity
Pupil and corneal reflexes
Extraocular movements
Retina

Conjunctival sludging = Sick Ribs Die Crying
Sickle cell disease
Riboflavin deficiency
Diabetes Mellitus
Cryoglobulinaemia

Causes of night blindness = retinitis pigmentosa and vitamin A deficiency
Causes of scotomas

Bilateral = TT
Tobacco - alcohol
Toxic (methyl alcohol, other drugs)
Unilateral = VD
Vascular (haemorrhage, obstruction)
Demyelination

Steroid side effects
"I was hopping mad"
Infection
Wasting
Adrenal insufficiency
Sugar disturbances (diabetes)
Hypotension
Osteoporosis
Peptic ulcer and pancreatitis
Proximal myopathy
Incidental (fat face, hirsutism)
Necrosis of the femoral head
Glaucema / cataracts
Mad (psychological changes)

Tricyclic antidepressant overdose = CRASH
Coma
Respiratory depression
Arrhythmias
Seizures
Hyperpyrexia