put together by Alex Yartsev: Sorry if i used your images or data and forgot to reference you. Tell me who you are. aleksei.igorevich@gmail.com

NEUROLOGICAL EXAMINATION

OBSERVE:

CONSCIOUS?

ENVIRONMENT:

- **Bed against the wall** = maybe stroke hemiparesis
- **Sheep skin on bed**
- **All meds within the reach of one arm**
- **Wheelchair**
- **Walker**
- **Nasogastric tube**
- **Life support machinery**

GENERAL APPEARANCE

- **Age**
- **Ethnicity**
- **Stooped forward?**

WEIRD BEHAVIOUR

- **Chorea**
- **Ballismus**
- **Dystonia**
- **Obvious Tremor**

HANDEDNESS:

Shake their hand, or simply ask
(Lt hemisphere = dominant)

MINI MENTAL STATE EXAM

ORIENTATION

WHAT DATE, DAY, SEASON, MONTH, YEAR
WHERE – WARD, SUBURB, CITY, STATE, COUNTRY

REGISTRATION

REPEAT 3 OBJECTS, REMEMBER THEM

ATTENTION + CALCULATION

COUNT BACK FROM 100 IN 7's
SPELL "WORLD" BACKWARDS

RECALL

WHAT WERE THOSE 3 OBJECTS I POINTED TO?

LANGUAGE

REPEAT "NO ANDS, IFS OR BUTS"
FOLLOW A 3-STAGE COMMAND
WRITE A SENTENCE
COPY AN INTERLOCKING PENTAGON DESIGN

SPECIAL TESTS OF STIFF-NECKEDNESS

Rotate passively:
pain + spasm = increased ICP, Spondylosis, Parkinsons, or cervical spine fusion

Flex passively towards the chest:
pain + spasm = meningitis

KERNIG'S SIGN:

extend knee while hip is flexed
Hamstring spasm = meningitis

HIGHER ORDER FUNCTION

HANDEDNESS FIRST!!

ORIENTATION in person, place, time

SPEECH

PROPOSITIONAL
- **= describe room, clothes**
- = expressive aphasia = non-fluent, aware of deficit

COMPREHENSION
- **= touch chin, nose, ear**
- **= Y/N questions: socks on before shoes?**
- = receptive aphasia =fluent but gibbering

REPETITION
- **= no Ifs, Ands or Buts**
- = conductive aphasia
- = follows command but cannot repeat words

OBJECT IDENTIFICATION
- **= what is this thing I am holding?**
- = nominal aphasia = cant name selective objects not localising (dominant temporo-parietal region)

ARTICULATION
- **= "British constitution"**
- = dysarthria:
  - pseudobulbar = tight squeezing out of lips
  - bulbar = nasal speech
  - CN 7 = slurred drunken speech
  - Extrapyramidal = monotonous bradykinetic
  - Cerebellar = explosive

VOICE QUALITY
- = dysphonia? **Not a higher order problem**

PARIETAL LOBE

DOMINANT:

Arithmetic = acalculia

Gerstmann's Syndrome: AALF

Writing skill = agraphia
Lt-Rt disrientation
Finger agnosia (cannot name them)

NON-DOMINANT

Sensory and visual INATTENTION
ASTEREOGNOSIS = unable to recognise by touch
DRESSING APRAXIA = is it inside-out?…
CONSTRUCTIONAL APRAXIA: cant copy pictures
SPATIAL NEGLECT: draws clockface with all numbers on one side

TEMPORAL LOBE

SHORT TERM MEMORY: 3 objects after 5 minutes
LONG TERM: where do you live? When did WW2 end?
May start to see Korsakoff's confabulation psychosis here

FRONTAL LOBE

Emotion, memory, judgement, inhibition- the seat of the soul
= ALTERNATING IRRITABILITY AND EUPHORIA

PRIMITIVE REFLEXES
- Grasp (contra to lesion)
- Palmomental (ipsi)
= contraction of orbicularis oris when thenar eminence is stroked
- Pout and Snout = tap along upper lip to produce pouting

ASK THE PATIENT TO…
interpret a proverb
test their smell for ANOSMIA
look for GAIT APRAXIA
fundoscope for PAPILLOEDEMA

CRANIAL NERVES

OLFACTORY

Block one nostril, use good coffee
Unilateral loss= meningioma or increased ICP
Bilateral loss= trauma

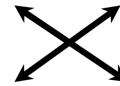
OPTIC

Look at the pupils. Different sizes? = ANISOCORNEA

SCOPE THE FUNDUS: weirdness? Pale disk, hemorrhages etc?…

TEST ACUITY: get their glasses off, use Snellen chart
Normal = able to read line 6 at 6 metres
(1st number = seen by pt)
(2nd number = seen by normal person)

VISUAL FIELDS:
Look into my eyes; see wiggling finger?
(come INTO field, not out of it)



BLIND SPOT:
come from the lateral, its normally @ temporal visual field
…Scotoma?

PUPILLARY REFLEX:
shine light into pupil:
watch: what is the OTHER pupil doing?
Should also constrict
SWINGING LAMP SIGN:
Move light to contra pupil:
the ipsi pupil will then DILATE after the light has moved away from it.
This is an AFFERENT PUPILLARY DEFECT
(eye with reduced acuity will dilate abnormally)

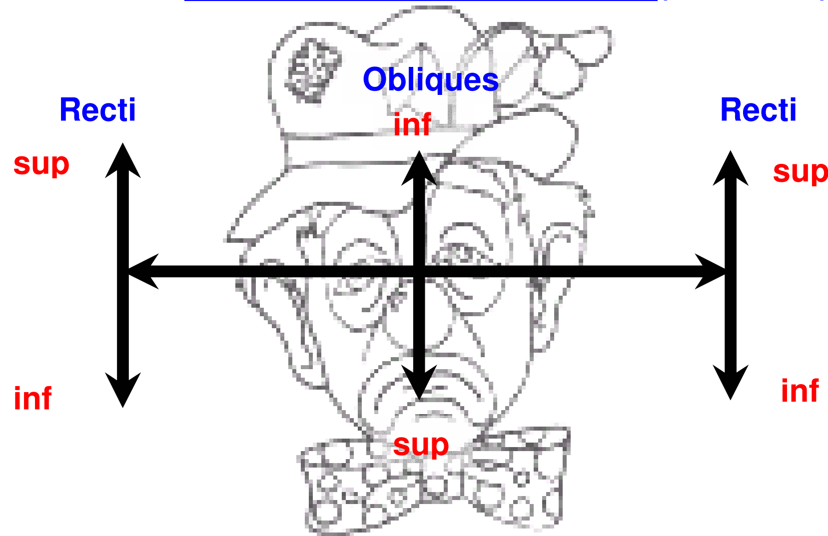
ACCOMODATION:
Near and far focussing

NORMAL ACCOMODATION BUT NO LIGHT REFLEX? = Syphilis pupil

OCULOMOTOR, TROCHLEAR, ABDUCENT

PTOSIS? Oculomotor = opens eyelid;
CONSTRICTED PUPIL? Sympathetic (Horners) dysfunction
DILATED PUPIL? Oculomotor dysfunction

TEST CARDINAL DIRECTIONS (LR 6 SO 4)



DIPLOPIA? = weakness of a muscle;
OUTERMOST IMAGE IS FALSE

NYSTAGMUS? = jerky or pendular
PENDULAR = retinopathy or congenital
Jerky:

↔ = vestibular, cerebellar, toxic (INO@MLF)

Upbeat ↑ = midbrain or floor of 4rth

Downbeat ↓ = foramen magnum

CONVERGENCE
Move finger → patients nose

Supranuclear palsy:
loss of vertical, horisontal or both
Both eyes, fixed unequal pupils, no diplopia!
Progressive Supranuclear palsy:
loss of first vertical, then horisontal gaze
+ monotonous speech
+ dementia
Parinaud's syndrome:
Loss of vertical gaze
Nystagmus on convergeance
Pseudosyphilis pupil: no light response but accommodating fine

TRIGEMINAL

CORNEAL REFLEX: expect both eyes to blink

If only contra eye blinks = ipsi 7th palsy
If touch is still felt, trigeminal nerve is intact

FACIAL SENSATION: forehead, cheek, chin

Total loss = preganglionic, eg. acoustic neuroma
Dissociated = brainstem issue

MASSETERS: clench teeth

ABNORMAL MOVEMENTS

Jaw tremor? =. Parkinsons
Repetitive chewing? = Tardive Dyskinesia
Tetanus clench

JAW JERK REFLEX

Open mouth
Strike lower chin
Normally: NO REFLEX
EXAGGERATED = UMNL or pseudobulbar palsy

FACIAL

LOOK : Facial asymmetry?

Unilateral droop?
Wrinkle smoothing?
Loss of NASOLABIAL FOLD?

MUSCLE POWER:

Wrinkle forehead; try to smooth out
Test facial expressions:

- **SURPRISE**
- **GRIN**
- **SNARL**
- **POUT**
- **PUFF**
- **SQUINT**

TASTE @ Ant 2/3rds

ACOUSTIC

LOOK @ EAR

Pull pinna
Pain =. Otitis externa or TMJ disease

FEEL FOR NODES
OTOSCOPE THE DRUMS
TEST HEARING: 256 Hz fork:

Rinne's Test:

Put struck fork @ mastoid:
When you cant hear anymore:
Put fork in front of ear.
SHOULD BE ABLE TO HEAR IT AGAIN
If not = conductive loss

Weber's Test:

Put struck fork on centre of glabella
Should hear it all @ centre of head
NERVE-DEAF = better @ Normal ear
CONDUCTION-DEAF = better @ Clogged ear

VESTIBULAR

HALLPIKE'S TEST FOR VERTIGO:

Asit patient up in bed
Grab patients head and smoosh it into the bed to ~ 30 degrees below horisontal
At the same time turn patients head towards yours with eyes open.
+ve test: LOOK FOR
NYSTAGMUS
VERTIGO
For 15 sec, then- not reproduceable
= benign positional vertigo

IF REPRODUCABLE = cerebellar or brainstem problem

GLOSSOPHARYNGEAL and VAGUS

OPEN MOUTH AND SAY "AAAH"

Uvula gets pulled to NORMAL side

GAG REFLEX (9th sensory, 10th motor)

Ask if they can feel it;
Feel it but don't gag = vagus issue
No sensation or gag = glossopharyngeal problem

SPEECH: Hoarse?

= unilateral recurrent laryngeal palsy

COUGH: bovine?

= Bilateral recurrent laryngeal lesion

TASTE @ posterior 1/3rd

ACCESSORY

SHRUG versus resistance

TURN HEAD versus resistance

Unilateral = something wrong @ jugular foramen
Bilateral = motor neurone disease

HYPOGLOSSAL

POKE OUT YER TONGUE

Wasting? Fasciculations?
TONGUE WILL DEVIATE TOWARDS LESION

Unilateral UMNL = no deviation
Bilateral UMNL = small immobile tongue
Bilateral LMNL = dysarthria

BULBAR PALSY: LMNL of 9th, 10th, 12th
wasted tongue,
no gag reflex,
nasal speech,
limb fasciculations

PSEUDOBULBAR PALSY : UMNL of 9th, 10th, 12th
=spastic tongue, exaggerated jaw jerk reflex, dysarthria, upper limb UMNL

SENSORY AND MOTOR SYSTEMS

General template:

LOOK :

- scars
- wasting
- fasciculations
- tremor
- symmetry
- abnormal movements

FEEL MUSCLE BULK
TONE
POWER
REFLEXES
COORDINATION
Lower = GAIT
Upper= Fine Functions

PAIN with needle
Temperature with ice cube

Vibration with tuning fork @ bony prominences

Proprioception with eyes closed
Light Touch with cotton bud

UPPER LIMB MOTOR

Shake hands;
Cant relax grip = myoclonus
Fasciculations? Wasting?

CLOSE EYES, HOLD OUT BOTH HANDS WITH PALMS UP:
Drift UP = cerebellum
Drift DOWN = UMNL
Searching drift = pseudoathetosis,
= proprioception loss

TONE
POWER
REFLEXES:
Biceps, Triceps, brachioradialis

COORDINATION
Close eyes, touch own nose
Open eyes, touch my finger
DYSDIADOCHOKINESIS

LOWER LIMB MOTOR

GAIT:

1. **Walk normally**
2. **Walk heel-to-toe** = cerebellum
3. **Walk on toes** = S1-S2
4. **Walk on heels** = L4, L5
5. **Romberg's test**

Fasciculations?
Wasting? LOOK AT THE QUADS
TONE
POWER
REFLEXES:
Knee jerk, Achilles tendon,
Babinsky (Normal = scrunch)

COORDINATION
touch my finger with your toe
foot tapping
Heel along shin

CEREBELLUM

INTRODUCE SELF, ASK PATIENT HOW THEY FEEL:

Mr. Cerebello will reply EXPLOSIVELY + MONOSYLLABICALLY

Stand the patient up.

STANDING

GAIT:

walk back and forth,
walk heel-to-toe
Cerebello will stagger → affected side

CLOSE EYES + STAND WITH FEET TOGETHER
(Romberg's test)
Cerebello will sway + collapse

OPEN EYES, FOLD ARMS
Swaying = trunkal ataxia

SITTING

SIT DOWN, PUT ARMS OUT + HOLD
Cerebello will OSCILLATE

CLOSE EYES, PUT ARMS OUT
Cerebello will OVERSHOOT (rebound)

CLOSE EYES, TOUCH NOSE
Cerebello will MISS HIS NOSE

OPEN EYES, TOUCH MY FINGER
Cerebello will have an **INTENTION TREMOR**

PRONATE + SUPINATE HAND, QUICKLY
Cerebello will have DYSDIADOCHOKINESIS

NYSTAGMUS
Cerebello will have
JERKY HORISONTAL NYSTAGMUS

SIT ON EDGE OF BED, SWING LEG LIKE PENDULUM
Cerebello's leg WILL NOT STOP SWINGING

SUPINE

LIE DOWN, RUN HEEL ALONG ANT. TIBIA
Cerebello WILL NOT BE ABLE TO DO THIS PROPERLY

TOUCH MY FINGER WITH YOUR BIG TOE
Cerebello will have an **INTENTION TREMOR**