Medical Reference Cards

github.com/alping/medical-reference-cards

Adrenal Venous Sampling

Introduction: Primary aldosteronism (PA) is more common than previously thought. Up to 15% of all hypertension is due to PA. PA can be caused by bilateral or unilateral hyperplasia, an adenoma, or by mutations in genes coding for enzymes involved in aldosterone (AS) synthesis. **Adrenal venous sampling (AVS)** is a procedure used to diagnose the **source** of the excess aldosterone (i.e. whether it is uni- or bilateral). Why is this important? Because unilateral PA is treated surgically, whereas bilateral PA is managed medically. AVS is, by far, the most reliable way of establishing the source of excess AS.

The procedure: With AVS, the difference between left and right adrenal AS excretion is measured by sampling blood from each **adrenal vein (AV)**. This is more complicated than it sounds, mostly for anatomical reasons. The **right adrenal vein** is very short and originates directly from the **inferior vena cava (IVC)**, making it very difficult to cannulate. The **left AV** originates from a common trunk with the inferior phrenic vein (IPV), which, in turn, originates from the left renal vein. The common trunk is easier to cannulate than the left AV itself, but dilution from the IPV must then be compensated for when interpreting the AS level (in the common trunk, left AV blood is mixed with IPV blood, which obviously has a lower AS concentration).

- Endocrinology -

Adrenal Venous Sampling

Execution: The **right AV**, **IVC**, and **left AV** are cannulated, and blood is sampled for analysis of **AS** and **cortisol** levels. The AVs are catheterized through the percutaneous femoral vein approach. Gentle contrast injections are used to verify the position of the catheter tip.

- Why is blood sampled from the IVC? Why is the cortisol level analyzed? Aren't we only interested in the AS levels? These questions are answered in the interpretation section.

Interpretation: Ultimately, we're interested in whether there's a significant difference between AS levels in the two adrenal veins. So why cannulate the IVC? Because comparing the right AV and IVC cortisol levels tells us whether or not the difficult cannulation was successful – the cortisol level should be **≥3 higher** in the right AV. If this is the case, we can trust subsequent measurements.

Before AS levels are compared, we must account for dilution. This is done by dividing the AS level with the cortisol level in each AV – the ratio will be the same regardless of dilution. These **corrected** values (A/C ratios) are the ones used in the final comparison.

If the A/C ratio of one adrenal vein is ≥4 times higher than that of the other, the source of AS is unilateral and should be treated **surgically**.

- General -

C-ABCDE

C Catastrophic bleeding / Cardiac arrest

A Airways

Check airway	1. Chin lift/Jaw thrust
Thorax movement	2. Naso/Oropharyngeal airway
See, listen, feel	3. Suction
Paradox. breathing?	4. Laryngeal mask airway
Stridor?	5. Intubation
	6. Coniotomy

B Breathing

Respiratory rate	1. Oxygen
Thorax movement	2. Ventilation
Auscultation	3. Decompression
Cyanosis	4. Chest tube

C Circulation

Colour (Pale)	1. Tilt bed
Cold/Sweaty	2. Fluids (PVC, IO, CVC)
Pulse (Rad / Fem / Car)	3. Vasoactive drugs
Abdomen/Pelvis	(Adrenalin IM)

D Disability

AVPU/GCS	1. Support ABC
Pupils	2. Glucose
Movement of extrem.	3. Antidote

E Exposure

Check whole body	1. Log roll
Prevent hypothermia	2. Warm blankets
Prevent further injury	3. Warm fluids

- General -

SBAR

S Situation

Own name, title, and unit
Patients name, sex, and age
Patients social security / identification number
Describe situation briefly
I'm contacting you to...

B Background

Previous and current illness
Relevant medical history
Allergies
Contagiousness

A Assessment

A: Airway
B: Breathing, saturation
C: Heart rate, blood pressure
D: Consciousness, pain, oriented to time / place / person
E: Temperature, skin, colour, abdomen, urine production
Brief assessment

R Recommendation

Immediate action (Care, monitoring, transfer, treatment)
Further examinations (Radiology)
Time frame (How often...? How long...? Next contact...?)

Confirmation of communication
Questions / Agreement

- Laboratory -

Lab reference (Swe)

Sys.	Component	Subgroup	Ref. interval	Unit
P/S	**ALAT**	Male	0,15 – 1,1	µkat/L
		Female	0,15 – 0,75	µkat/L
P/S	**ALP**		0,60 – 1,8	µkat/L
P/S	**Amylas**		0,40 – 2,0	µkat/L
P/S	**Albumin**	18 – 40 y.	36 – 48	g/L
		41 – 70 y.	36 – 45	g/L
		>70 y.	34 – 45	g/L
P/S	**ASAT**	Male	0,25 – 0,75	µkat/L
		Female	0,25 – 0,60	µkat/L
P/S	**Bilirubin**		5 – 25	µmol/L
P/S	**Calcium**		2,15 – 2,50	mmol/L
P/S	**CK**	Male 18 – 50 y.	0,80 – 6,7	µkat/L
		Male >50 y.	0,70 – 4,7	µkat/L
		Female	0,60 – 3,5	µkat/L
P/S	**Fosfat**	Female	0,80 – 1,5	mmol/L
		Male 18 – 50 y.	0,70 – 1,6	mmol/L
		Male >50 y.	0,75 – 1,4	mmol/L
fP	**Glukos**		4,2 – 6,3	mmol/L
P/S	**GT**	Male 18 – 40 y.	0,15 – 1,3	µkat/L
		Male >40 y.	0,20 – 1,9	µkat/L
		Female 18 – 40 y.	0,15 – 0,75	µkat/L
		Female >40 y.	0,15 – 1,2	µkat/L
P/S	**Järn**		9 – 34	µmol/L
P/S	**Järnmättnad**	Male	0,15 – 0,60	
		Female 18 – 50 y.	0,10 – 0,50	
		Female >50 y.	0,15 – 0,50	
P	**Kalium**		3,5 – 4,4	mmol/L
S	**Kalium**		3,6 – 4,6	mmol/L
P/S	**Kolesterol**	18 – 30 y.	2,9 – 6,1	mmol/L
		31 – 50 y.	3,3 – 6,9	mmol/L
		>50 y.	3,9 – 7,8	mmol/L
P/S	**HDL-Kolesterol**	Female	1,0 – 2,7	mmol/L
		Male	0,80 – 2,1	mmol/L

- Laboratory -

Lab reference (Swe)

Sys.	Component	Subgroup	Ref. interval	Unit
P/S	**LDL-Kolesterol**	18 – 30 y.	1,2 – 4,3	mmol/L
		31 – 50 y.	1,4 – 4,7	mmol/L
		>50 y.	2,0 – 5,3	mmol/L
P/S	**Kreatinin**	Male	60 – 105	µmol/L
		Female	45 – 90	µmol/L
P/S	**LD**	18 – 70 y.	1,8 – 3,4	µkat/L
		>70 y.	1,9 – 4,2	µkat/L
P/S	**Magnesium**		0,70 – 0,95	mmol/L
P/S	**Natrium**		137 – 145	mmol/L
P/S	**Pankreasamylas**		0,15 – 1,10	µkat/L
P/S	**Protein**		64 – 79	g/L
P/S	**TIBC**		47 – 80	µmol/L
P/S	**Triglycerider**		0,45 – 2,6	mmol/L
P/S	**Urat**	Male	230 – 480	µmol/L
		Female 18 – 50 y.	155 – 350	µmol/L
		Female >50 y.	155 – 400	µmol/L
P/S	**Urea**	Male 18 – 50 y.	3,2 – 8,1	mmol/L
		Male >50 y.	3,5 – 8,2	mmol/L
		Female 18 – 50 y.	2,6 – 6,4	mmol/L
		Female >50 y.	3,1 – 7,9	mmol/L
B	**Hemoglobin**	Female	117 – 153	g/L
		Male	134 – 170	g/L
B	**EVF**	Female	0,350 – 0,458	
		Male	0,393 – 0,501	
B	**Erytrocyter**	Female	3,94 – 5,16	1012/L
		Male	4,25 – 5,71	1012/L
B	**MCV**		82 – 98	fL
Erc	**MCH**		27,1 – 33,3	pg
Erc	**MCHC**		317 – 357	g/L
B	**Leukocyter**		3,5 – 8,8	109/L
B	**Trombocyter**	Female	165 – 387	109/L
		Male	145 – 348	109/L

- Medicine -

CHA2DS2VAS

C	Cardiac - Heart failure	**1**
H	Hypertension	**1**
A	Age ≥ 75 years	**2**
D	Diabetes	**1**
S	Stroke/TIA/embolism	**2**
V	Vascular Atherosclerotic disease	**1**
A	Age 65-74	**1**
S	Sex - Female*	**1**

*No indication for antithrombotic treatment if only risk factor

AF and score ≥2 → Antithrombotic treatment
***IF* low-medium risk of bleeding (HAS-BLED <3)**

See local guidelines for specific antithrombotic drugs

Example of initial Warfarin treatment, 2.5mgx1 p.o.

Day 1: 2-4 | Day 2: 2-3 | Day 3: 1-4 (dep. on INR)

- Medicine -

HAS-BLED

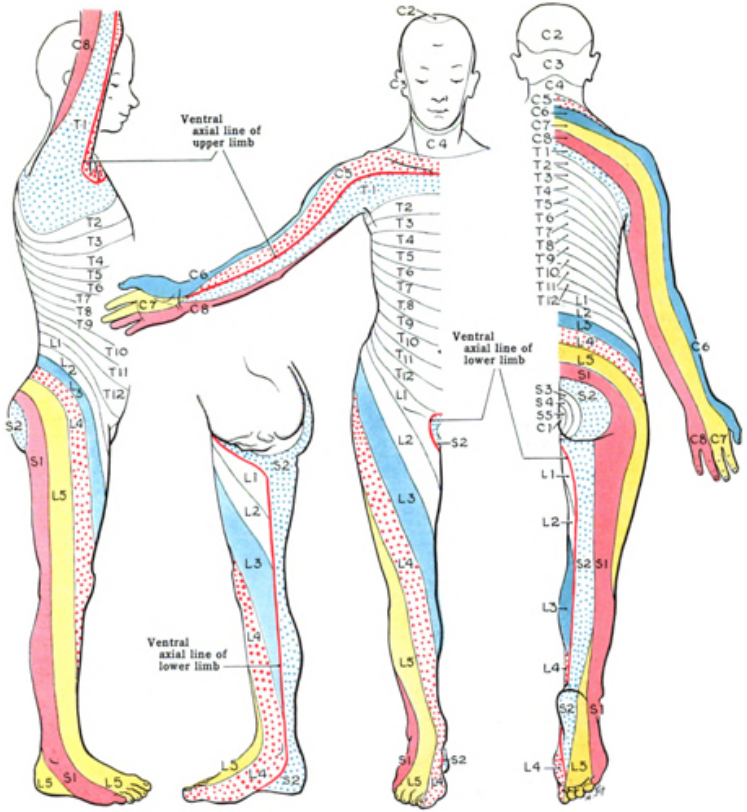
H	Hypertension >160 mmHg	**1**
A	Abnormal liver or kidney function*	**1-2**
S	Stroke	**1**
B	Bleeding Previous tendency or anaemia	**1**
L	Labile INR High/unstable INR or <60% time in therapeutic range	**1**
E	Elderly (>65 years)	**1**
D	Drugs E.g. ASA, NSAID or high alcohol consumption	**1-2**

* Kidney: Creatinine >200, dialysis, or transplant
Liver: Chronic liver disease, Bilirubin 2x ref, or ALAT/ASAT/ALP 3x ref.

High risk of bleeding if ≥3 points

- Neurology -

Dermatomes



- Neurology -

Myotomes

Segment	Function
C1/C2	Neck flexion/extension
C3	Neck lateral flexion
C4	Shoulder elevation
C5	Shoulder abduction
C6	Elbow flexion/wrist extension
C7	Elbow extension/wrist flexion
C8	Finger flexion
T1	Finger abduction
L2	Hip flexion
L3	Knee extension
L4	Ankle dorsi-flexion
L5	Great toe extension
S1	Ankle plantar-flexion/ankle eversion/ hip extension
S2	Knee flexion
S3–S4	Anal wink

- Neurology -

Neurological exam.

Higher cerebral functions

Wakefulness, oriented to time/place/self, comprehension, attention, spatial function, dysarthria, dysphasia, dyslexia, dyspraxia, neglect, amnesia, right or left handed

Standing

Walking	Symmetry	**Strength**	
	Pattern	Squat and rise	
	Normal/Toes/Heels	Jump on one leg	
	Arm movements	**Coordination**	
	Step length	Romberg's test	
	Turning	Finger nose test	

Sensory: Visual acuity, hearing

Sitting

Eyes	Fundus examination (papillary stasis)	**Face**	Symmetry
	Visual field (Donder's test)		Facial expressions
	Movement (nystagmus, paresis, diplopia)		Sensibility
	Pupil (symmetry, size, reaction to light)		Motor function
	Corneal reflex		Ptosis
Tests	Muscle strength (arm/finger/shoulder)	**Mouth**	Symmetry
	Reflexes (brach.rad/bic/tric/patel./achill.)		Tongue motor function
	Grasset's test		Swallow reflex
	Dysdiadochokinesis, finger play		Gingival hyperplasia

Lying down

Important: Neck stiffness

Muscles	Strength – proximal, distal	**Sensibility**	Light touch
	Tonus* – hand/elbow/knee joint		Vibration
	Atrophies		Temperature
	Fasciculation		Pain
	Tremor		Proprioception
Tests	Heel-knee test	**Prim. reflex**	Grasping reflex
	Reverse Barré's test		Glabellar
	Straight leg raise		Palmomental
	Babinski's sign		Sucking

*Rigidity, gear phenomenon, spasticity

- Neurology -

Glasgow Coma Scale

	Respone	Score
Eye opening response	Spontaneously	4
	To speech	3
	To pain	2
	No response	1
Best verbal response	Oriented to time, place, and person	5
	Confused	4
	Inappropriate words	3
	Incomprehensible sounds	2
	No response	1
Best motor response	Obeys commands	6
	Moves to localized pain	5
	Flexion withdrawal from pain	4
	Abnormal flexion (decorticate)	3
	Abnormal extension (decerebrate)	2
	No response	1
Total score	Best response	15
	Comatose patient	≤8
	Totally unresponsive	3

- Orthopedics -

Ottawa Ancle Rule

1 **Pain around the malleolus AND**

Palpation tenderness over the dorsal ridge of the lateral or medial malleus

OR

Inability of the foot to support four steps

2 **Pain around the mid part of the foot AND**

Palpation tenderness over the base of the 5th metatarsal bone OR the Navicular bone

OR

Inability of the foot to support four steps

X-ray of foot and lower leg if 1 or 2 are met

Otherwise: Elastic wrap, tape, possibly orthosis, information (proprioceptive exercises e.g. stand on one leg while brushing teeth)

Acute care (PRICE)
Protection, Rest, Ice, Compression, Elevation

Only applicable on adults (>18 years) with isolated injury

- Orthopedics -

Well's DVT Score

Sign	Point
Active cancer last 6 months	**1p**
Paralysis, paresis, newly casted	**1p**
Immobilized >3 d. or large surgery last 4 w.	**1p**
Localized tenderness along the deep venous system	**1p**
Whole leg swelling	**1p**
Calf circumference >3 cm, compared to asymptomatic side	**1p**
Pitting oedema on symptomatic side	**1p**
Collateral flow in superficial veins (non-varicose)	**1p**
Similar likelihood of alternative diagnosis	**-2p**

Low points <2 + negative D-dimer
= low probability for DVT

High points ≥2 → Ultrasound whole leg

Risk of false negative D-dimer when symptoms >1w or anticoagulation therapy

Distal Status - Hand

Inspection

Hematomas / Wounds

Malalignment / Tonus

Palpation

Fossa tabatière

Distal radioulnar joint

Circulation

Allen's test – Ulnar / Radial loss of circulation

Capillary refill Dig I-V

Passive movement (tendons)

Finger extension, each separately

Flexor digitorum superficilais et profundus, separately

Neurology *1. Radialis 2. Medianus 3. Ulnaris*

Sensory	1. Dig I, radially 2. Dig II, distal of PIP 3. Dig V, ulnar side	1. Extension of fingers 2. Opposition, Dig I & V 3. F.spread / Dig V flex.	Motor

Stability

Dig I, MCP, UCL, Distal radioulnar joint

Watson's test – Instability, scaphiodeum - lunatum

Specific tests

Tinel's and Phalen's tests: carpal tunnel syndrome

Finkelstein's test: Morbus de Quervain

Pain in wrist should result in plain film x-ray

- Orthopedics -

- Empty -

Normal Physiology

Age	RR (/min)	HR (/min)	SBP (mmHg)
0-1 m	30-60	110-160	65-90
1-12 m	30-40	110-160	70-90
1-2 y	25-35	100-150	85-35
2-5 y	25-30	95-140	80-110
5-12 y	20-25	80-120	90-110
>12 y	15-20	60-100	100-120

Age	♀ W. (kg)	♀ H. (cm)	♂ W. (kg)	♂ H. (cm)
0 m	2.8-4.2	46-54	2.9-4.4	47-55
3 m	4.6-7.0	56-64	4.8-7.5	57-66
6 m	6.0-9.3	62-71	6.4-10	63-73
1 y	8.0-12	70-80	8.5-13	71-82
5 y	15-25	102-120	15.5-25	110-112
18 y	46-80	156-180	55-94	167-194

Age (m)	1-2	2-4	4-6	6-8	8-10	10-12
W. gain (g/w)	175	150	125	100	75	50

	W. (kg)	Fluids (ml/kg/24h)
	2-8	150
	6-10	115-120
Holliday-Segar	**0-10**	100
	10-20	50
	>20	20

A. (y)	ml/kg/hour
0-1	2-4
>1	1-2
▲ Urine / Oliguri ▼	
0-1	<1
>1	<0.5

- Pediatrics -

Normal Physiology

Months	Gross motor	Fine motor	Cogn. & Comm.
1-2	Lift head when prone	-	Smile in resp. to face/voice, visual preference for human face
2-3	Head steady in sitting	-	-
3-4	Lift head & chest w. ext. arms	Grasp rattle	Sustain contact, displeasure if soc. contact broken, “aah, ngah”
5-6	Roll over	Transfer objects hand to hand	Monosyllabic babble
6-7	Sit with support	-	Polysyllabic babble, vowel sounds, enjoys mirrors
7-8	Sit without support, crawl	Thumb-finger grasp	Suspicious/afraid of strangers
9-10	Pull to standing pos., walk holding furniture	Pincer grip, bang objects together.	Play peek-a-boo, wave bye-bye, respond to own name
12-18	Walk alone	Turn pages in book, scribble, build 2-cube tower	Speak a few words
4 yrs.	Walk on a straight line, jump on one leg	Button clothes	Answer questions, understand prepositions

- Pediatrics -

Nutrition

0-4 months

Breast milk or formula

4-6 months

Breast milk or formula

Start to introduce small amounts of vegetables, cereals

6-8 months

Breast milk or formula or gruel or cereals

Complete meal (potatoes, meat, vegetables, fruit, berries)

Cow's milk can be used in cooking, but not as a beverage

8-12 months

Two cooked meals a day

From 10-12 months of age milk as a beverage

1-2 years

Regular food

No low-fat products and/or high-fibre foods

Vitamin D supplement

5 drops every day (400 IE/day)

All children from 1 month up to at least 2 years of age

Low intake/sun exposure may need suppl. till school age

Salt intake

No extra salt added to food for children below 1 year

Food items *not suitable* for children below 1 year

Spinach, mangold, and beetroot – high levels of nitrate

Honey – may contain C. Botulinum spores

- Pediatrics -

Apgar score

Apgar Sign	2	1	0
Heart Rate Pulse	>100/min	>100/min	Absent
Breathing Rate and effort	Cries well	Irregular	Absent
Grimace Responsiveness or reflex irritability	Pulls away, sneezes, coughs, or cries with stimulation	Facial movement only with stimulation	Absent
Activity Muscle tone	Active, spontaneous movement	Arms and legs flexed with little movement	No movement, floppy tone
Appearance Skin colouration	Normal colour (also hands and feet are pink)	Normal colour (but hands and feet are bluish)	Bluish-grey or pale all over

This test is done to determine whether a newborn needs help breathing or is having heart trouble

Normal Results: 7-10
10 is unusual, almost all newborns lose 1 point for blue hands and feet

Abnormal results: 0-6
Signals that the baby needs medical attention

Low Apgar score is often caused by:
Difficult birth, C-section, Fluid in the baby's airway

A baby with a low Apgar score may need:
- Oxygen and clearing out the airway to help with breathing
- Physical stimulation to get the heart beating at a healthy rate

Most of the time, a low score at 1 minute is near-normal by 5 minutes

A lower Apgar score does not mean a child will have serious or long-term health problems
The Apgar score is not designed to predict the future health of the child

- Pediatrics -

Vaccinations (Swe)

Age	Vaccination	Dose
3 m	Diphtheria, Tetanus, Pertussis, Polio, Hib, S. Pneumoniae	**I**
5 m	Diphtheria, Tetanus, Pertussis, Polio, Hib, S. Pneumoniae	**II**
12 m	Diphtheria, Tetanus, Pertussis, Polio, Hib, S. Pneumoniae	**III**
18 m	Measles, Mumps, Rubella	**I**
5–6 y	Diphtheria, Tetanus, Pertussis, Polio	**IV**
6–8 y	Measles, Mumps, Rubella	**II**
10–12 y	HPV (girls born 1999 or later)	**I,II,III**
14–16 y	Diphtheria, Tetanus, Pertussis	**V**
Risk patients	Hepatitis B x 3 Tuberculosis at 6 m	**-**

Barn födda till och med 2001 följer ett annat schema från 5–6 års ålder

- Pediatrics -

Check-ups (Swe)

Age	Profession	Assessment/Action
0-10 d	Nurse	Home visit
2-8 w	Nurse	Growth assessment and counselling, once a week
6-8 w	Doctor, nurse	Psychomotor development
3 m	Nurse	Vaccination
3-5 m	Nurse	Growth assessment and counselling, every other week
5 m	Nurse	Vaccination
6 m	Doctor	Check-up
6-12 m	Nurse	Growth assessment and counselling, once a month
10/12 m	Doctor	Check-up
12 m	Nurse, dentist	Vaccination Dental health care information
18 m	Nurse	Vaccination
3 y	Nurse	Language development Child security information
4 y	Nurse	Vision, hearing, language, and psychomotor development Child security information
5.5 y	Doctor, nurse	Vaccination School assessment Child security information

Addiction

	Drug	Half-life	Equivalent dose (mg)
Benzo. Equivalents	Oxazepam (Sobril)	Short	15.0 - 25.0
	Zopiklon / Zolpidem	Short / Short	7.5 / 10.0
	Nitrazepam (Mogadon)	Short	2.5
	Lorazepam (Temesta)	Short	1.0
	Flunitrazepam	Short	0.5
	Alprazolam (Xobril)	Short	0.25-0.5
	Triazolam (Halcion)	Short	0.25
	Diazepam (Stesolid)	Long	5.0
	Klonazepam (Iktorivil)	Long	0.25

Principles for dose-lowering

Benzodiazepines	Change drug to equivalent dose of Oxazepam (Sobril)
	Split previous total daily dose into 5 evenly distributed doses over one day
	Decrease total daily dose by 10% per week
	Start by reducing the middle-of-the-day dose, leave morning/evening till last
	Never increase the dose! If there is an increase of withdrawal symptoms, stay on the current dose until the symptoms have stabilised
Opiods	Change drug to equivalent dose of Kodein (Citodon)
	Split previous total daily dose into 5 evenly distributed doses over one day
	Decrease total daily dose by 20% / week
	Start by reducing the middle-of-the-day dose, leave morning/evening till last
	Never increase the dose! If there is an increase of withdrawal symptoms, stay on the current dose until the symptoms have stabilised
	When only 4 pills left, terminate treatment

- Empty -