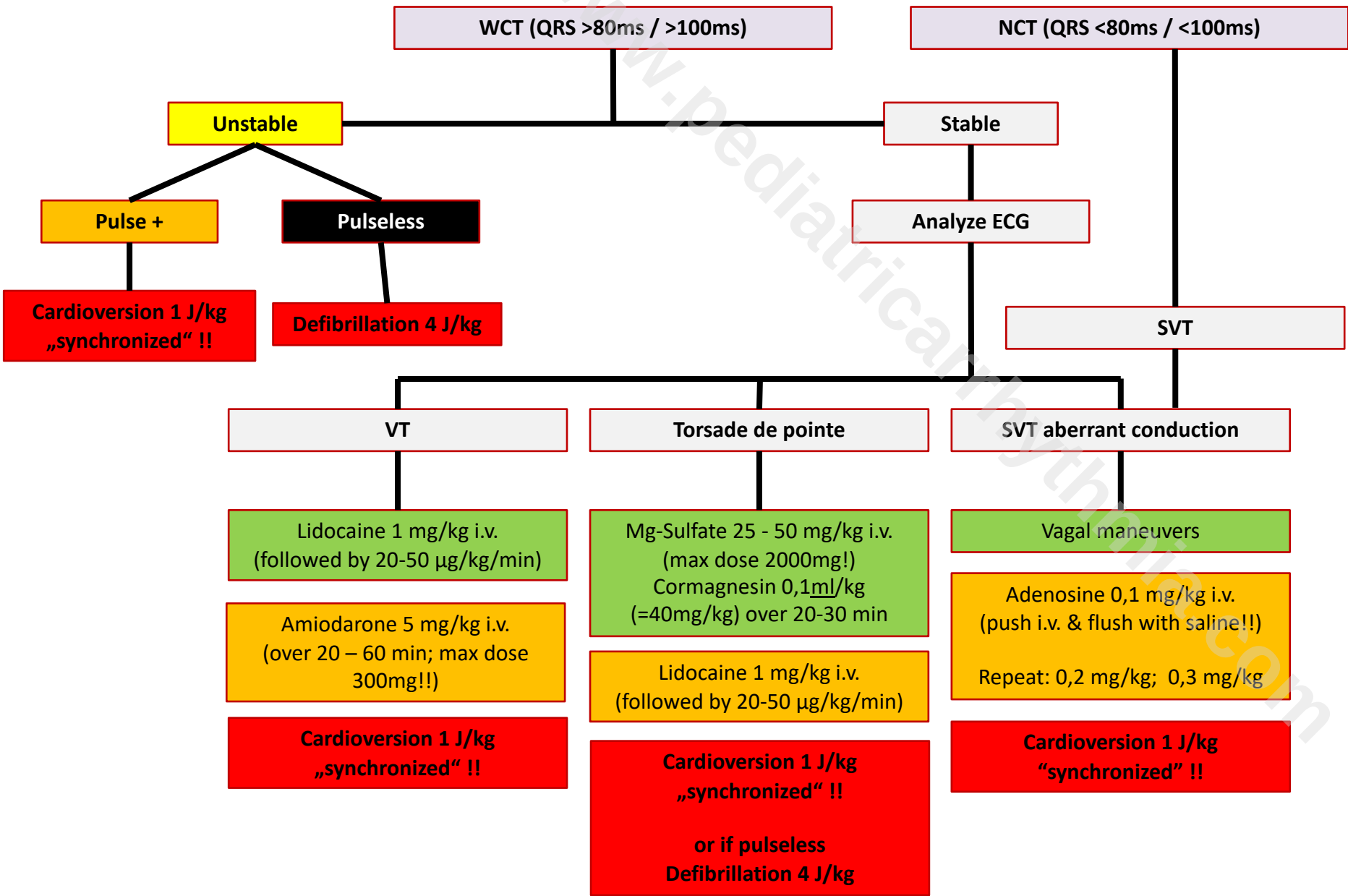
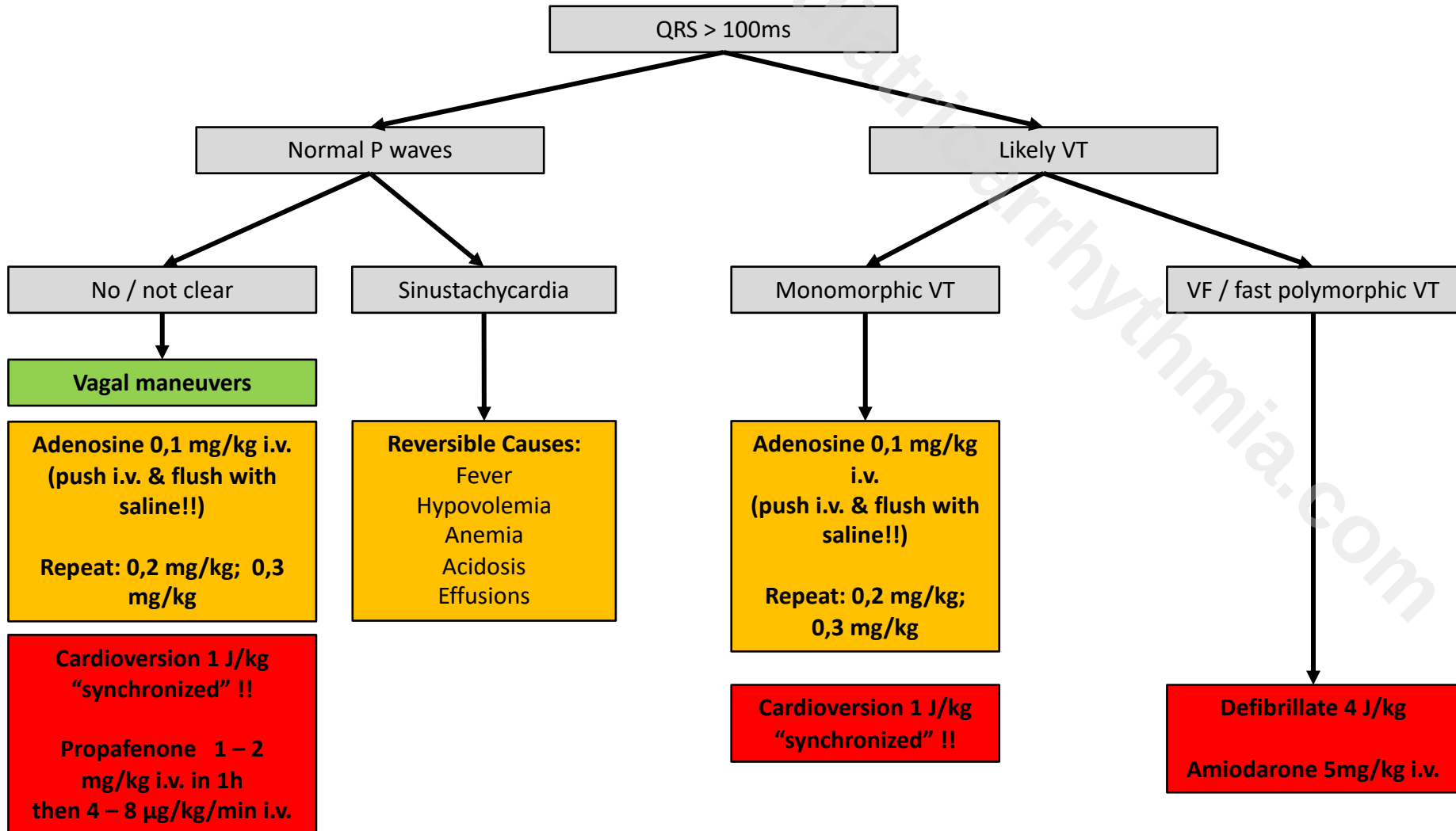
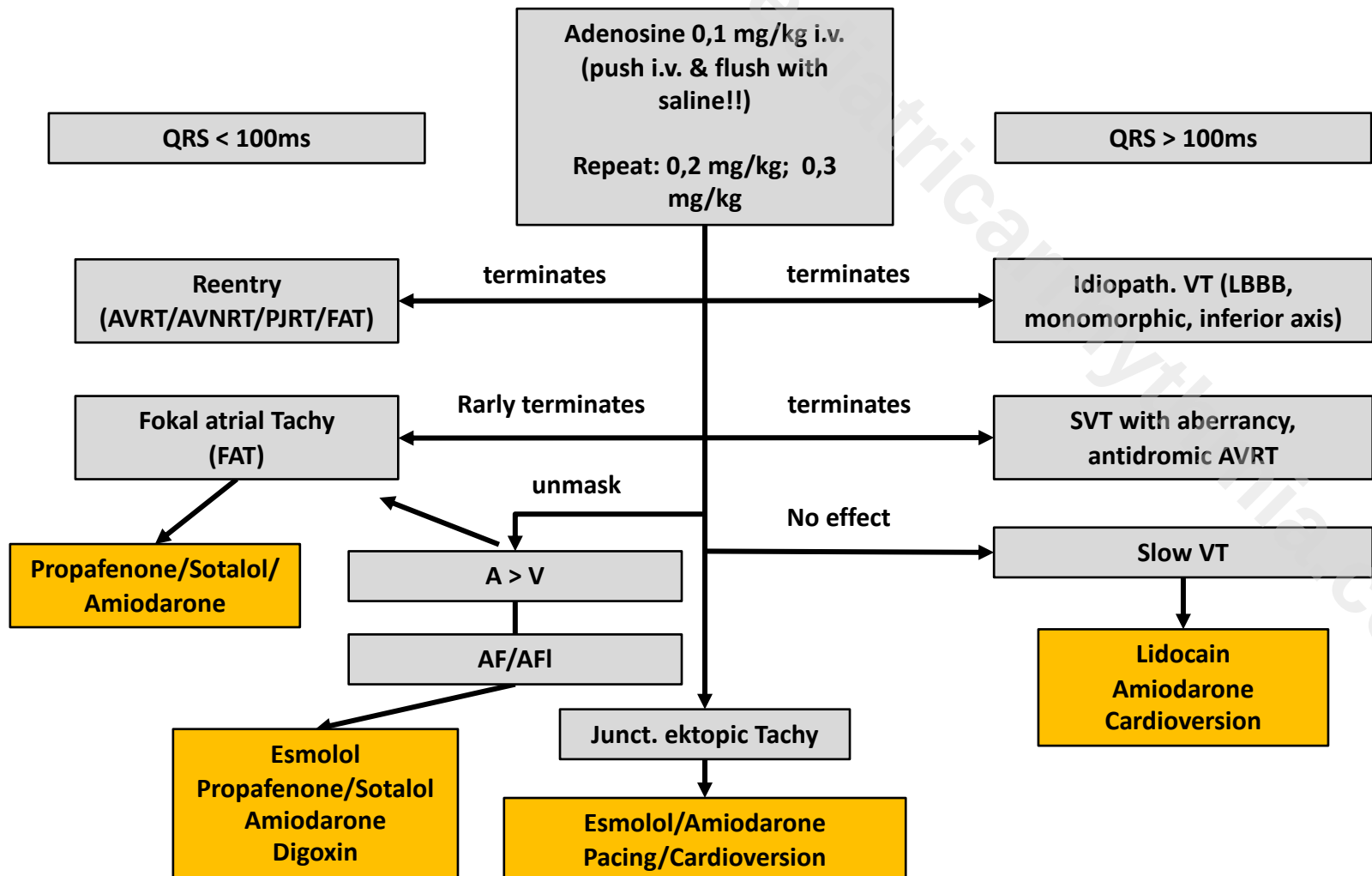




Hemodynamically unstable



Hemodynamically stable



Sinustachy

Sinus P wave morphology
Long RP tachy, positive P in I/II/aVF
Starts slowly – ends slowly

Treat reversible causes!

Consider Betablocker
E.g. if necessary Esmolol i.v. 500µg/kg in 1 min,
then 50-300µg/kg/min

Cause	
Physiological causes	Emotion, physical exercise, sexual intercourse, pain, pregnancy
Pathological causes	Anxiety, panic attack, anemia, fever, dehydration, infection, malignancies, hyperthyroidism, hypoglycemia, pheochromocytoma, Cushing's disease, diabetes mellitus with autonomic dysfunction, pulmonary embolus, myocardial infarction, pericarditis, valve disease, congestive heart failure, shock
Drugs	Epinephrine, norepinephrine, dopamine, dobutamine, atropine, beta-2-adrenergic rezeptor agonists (e.g. salbutamol), methylxanthines, doxorubicin, daunorubicin, withdrawal of beta-blockers
Other	Caffeine, alcohol, drugs

AVRT

NCT

Absolutely rhythmic (Reentry)

P waves following QRS

RP > 70ms, RP < PR

P waves neg. in II/III/aVF

“On/Off Tachy”

Possibly Delta wave and preexcitation during sinus rhythm

Vagal maneuvers

Adenosine 0,1 mg/kg i.v.
(push i.v. & flush with saline!!)

Repeat: 0,2 mg/kg; 0,3 mg/kg

Hold defibrillator ready!!!

Cardioversion 1 J/kg
“synchronized” !!

Catheter ablation

Caveat: rapid conduction via accessory pathway in AF/AFL (may be induced by Adenosine!)

Antidromic AVRT

WCT
Absolutely rhythmic (Reentry)
QRS axis "identical" to SR
"On/Off Tachy"
Possibly Delta wave during sinus rhythm

Cardioversion 1 J/kg
"synchronized" !!

Propafenone 1 – 2 mg/kg i.v. in 1h
then 4 – 8 µg/kg/min i.v.

Flecainide i.v. may be used if available

AVNRT

NCT

Absolutely rhythmic (Reentry)

P waves hidden within QRS or within S wave

RP <90ms in ECG tracing / <70ms in EP study (typical AVNRT – slow-fast)

Long RP (atypical AVNRT – e.g. fast-slow), DDx Focal Atrial Tachy

“On/Off Tachy”

“Frog sign”

Vagal maneuvers

**Adenosine 0,1 mg/kg i.v.
(push i.v. & flush with saline!!)**

Repeat: 0,2 mg/kg; 0,3 mg/kg

**Cardioversion 1 J/kg
“synchronized” !!**

Catheter ablation

SVT & BBB

WCT

Absolutely rhythmic (Reentry)
No AV dissoziation
Typical BBB morphology
QRS axis never "northwest"
"On/Off Tachy"

Vagal maneuvers

Adenosine 0,1 mg/kg i.v.
(push i.v. & flush with saline!!)

Repeat: 0,2 mg/kg; 0,3 mg/kg

Hold Defibrillator ready!!!

Cardioversion 1 J/kg
"synchronized" !!

PJRT

PJRT: Permanent Junctional Reentry Tachycardia

NCT
100 – 250 bpm
Chronically permanent / paroxysmal
Long RP
P waves usually neg. in II/III/aVF/V3-6
No “warm-up”

Adenosine 0,1 mg/kg i.v.

(push i.v. & flush with saline!!) almost always very short effect!

Rhythmnorma (Propafenone) 1 – 2 mg/kg i.v. in 1h
dann 4 – 8 µg/kg/min i.v.

or

Sotacor (Sotalol) 0.5 – 2 mg/kg (Adult 25-120mg) i.v. in 10 min
(p.o. 1 – 4 mg/kg (Adult 50-160mg) in 2-3 ED)

or

Amiodarone 5 mg/kg i.v.
(in 20 – 60 min; max dose 300mg!!)

Consider + Esmolol i.v. 500µg/kg in 1 min, then 50-300µg/kg/min

Consider + Digoxin

Alter	Sättigung		Erhaltung	
	i.v. (mg/Kg)	p.o. (gtt/Kg)	i.v. (mg/Kg)	p.o. (gtt/Kg)
NG bis 2Wo., FG, SFD	0,04	3	0,01	3/4
NG 2-4 Wo.	0,05	4	0,01	3/4
Kind < 30 Kg	0,05	4	0,008	2/3
Kind > 30Kg	0,04	3	0,006	1/2
Lanitop=Beta-Methyl-Digoxin				
1 Tablette = 0,1mg				
1 Amp = 2ml = 0,2mg				
Lanitop Liquidum 1ml = 45gtt, 1 gtt = 0,013mg				

Catheter ablation

JET

NCT / RBBB

180 – 280 bpm

AV dissoziation (consider monitoring atrial ECG via transient pacing leads)

Adenosine → retrograde VA Block, ventricular rate continues

RBBB → atrial pacing 10-20% faster than JET = normal conduction, identical QRS morphology

typical postoperative arrhythmia (first 24h)

Usually resolves within 2-4d

Pacing: consider switch of A&V leads

→ improved AV sync., long AV interval

→ CAVEAT: PVARP must be reduced significantly!

Consider: May not be terminated!

→ Intubation & deep sedation!

DDx Accelerated junct. Rhythm: HR up to 20% faster than Sinusrhythm. Usually no therapy necessary!

Moderate **Hypothermia** (33-35°C)

Mg++

Esmolol i.v. 500µg/kg in 1 min, then 50-300µg/kg/min

Amiodarone 5 mg/kg i.v.
(over 20 – 60 min; max dose 300mg!!)

+

Pacing 10-20% faster than JET

Cardioversion 1 J/kg
„synchronized“ !!

FAT

FAT: Fokal Atrial Tachycardia

NCT
130 – 280 bpm
no „Sinus-P“
warm up & cool down
no stable Tachy cycle lengths
Variable AV conduction, AVB II° on occasion
chron. permanent = >60%/24h

Adenosine 0,1 mg/kg i.v.
(push i.v. & flush with saline!!) diagnostic value!

MAT: ≥ 3 different P morphologies

Rhythmnorma (Propafenone) 1 – 2 mg/kg i.v. in 1h
dann 4 – 8 µg/kg/min i.v.

or

Sotacor (Sotalol) 0.5 – 2 mg/kg (Adult 25-120mg) i.v. in 10 min

(p.o. 1 – 4 mg/kg (Adult 50-160mg) in 2-3 ED)

or

Amiodarone 5 mg/kg i.v.
(over 20 – 60 min; max dose 300mg!!)

DDx Accelerated junct. Rhythm: HR up to 20% faster than Sinusrhythm. Usually no therapy necessary!

Consider + Digoxin

Catheter ablation

Alter	Sättigung		Erhaltung	
	i.v. (mg/Kg)	p.o. (gtt/Kg)	i.v. (mg/Kg)	p.o. (gtt/Kg)
NG bis 2Wo., FG, SFD	0,04	3	0,01	3/4
NG 2-4 Wo.	0,05	4	0,01	3/4
Kind < 30 Kg	0,05	4	0,008	2/3
Kind > 30Kg	0,04	3	0,006	1/2
Lanitop=Beta-Methyl-Digoxin				
1 Tablette = 0,1mg				
1 Amp = 2ml = 0,2mg				
Lanitop Liquidum 1ml = 45gtt, 1 gtt = 0,013mg				

MAT

MAT: MultiFokal Atrial Tachycardia, Synonym: CAT – Chaotic Atrial Tachycardia

NCT

130 – 280 bpm

discrete P waves with at least **three** different morphologies

P-P intervals, P-R duration, and R-R intervals that vary

→ “chaotic tachycardia”

Adenosine 0,1 mg/kg i.v.

(push i.v. & flush with saline!!) diagnostic value!

Keep levels of Mg++ & K+ high

Metoprolol (Beloc) 0,2-0,3mg/kg i.v. in 1h

Or

Esmolol (Brevibloc) i.v. 500µg/kg in 1 min, then 50-300µg/kg/min

Or

Verapamil 0,1mg/kg in 3min, then 5µg/kg/min

Consider + Digoxin

Ablation EP Study??

MAT: ≥ 3 P morphologies

„Rate control, rate control, rate control!“

DDx Accelerated junct. Rhythm: HR up to 20% faster than Sinusrhythm. Usually no therapy necessary!

Alter	Sättigung		Erhaltung	
	i.v. (mg/Kg)	p.o. (gtt/Kg)	i.v. (mg/Kg)	p.o. (gtt/Kg)
NG bis 2Wo., FG, SFD	0,04	3	0,01	3/4
NG 2-4 Wo.	0,05	4	0,01	3/4
Kind < 30 Kg	0,05	4	0,008	2/3
Kind > 30Kg	0,04	3	0,006	1/2

Lanitop=Beta-Methyl-Digoxin

1 Tablette = 0,1mg

1 Amp = 2ml = 0,2mg

Lanitop Liquidum 1ml = 45gtt, 1 gtt = 0,013mg

Do not use Verapamil <1 year of age!!

AFI/IART

Afl: Atrial Flutter; IART: Intraatrial Reentry Tachycardia

Flutterwaves (sawtooth pattern)
250 – 400 bpm (IART 180 – 300 bpm)
AVB II° (2:1, 3:1,...)

May use Adenosine for diagnosis, reveals “Sawtooth pattern”

Postoperative setting with transient pacing leads: use atrial leads for EKG → rapid atrial activity!

Unstable

**Cardioversion 1 J/kg
„synchronized“ !!**

Cave: if persisted >48h → Exclude thrombus by echo!

Alter	Sättigung		Erhaltung	
	i.v. (mg/Kg)	p.o. (gtt/Kg)	i.v. (mg/Kg)	p.o. (gtt/Kg)
NG bis 2Wo., FG, SFD	0,04	3	0,01	3/4
NG 2-4 Wo.	0,05	4	0,01	3/4
Kind < 30 Kg	0,05	4	0,008	2/3
Kind > 30Kg	0,04	3	0,006	1/2
Lanitop=Beta-Methyl-Digoxin				
1 Tablette = 0,1mg				
1 Amp = 2ml = 0,2mg				
Lanitop Liquidum 1ml = 45gtt, 1 gtt = 0,013mg				

Stable

Overpacing (20% faster, high output! 10-20mV / 1-2ms)

Esmolol i.v. 500µg/kg in 1 min, then 50-300µg/kg/min

**Rhythmnorma (Propafenone) 1 – 2 mg/kg i.v. in 1h
then 4 – 8 µg/kg/min i.v.**

or

**Sotalol (Sotalol) 0.5 – 2 mg/kg (Adult 25-120mg) i.v. in 10 min
(po 1 – 4 mg/kg (Adult 50-160mg) every 8-12 h)**

or

**Amiodarone 5 mg/kg i.v.
(in 20 – 60 min; max dose 300mg!!)**

Consider Digoxin

AF

AF: Atrial Fibrillation

Fibrillation waves not always visible on the ECG!

350 – 450 bpm

Arrhythmia absoluta – absolutely arrhythmic R-R intervals

Postoperative setting with transient pacing leads: use atrial leads for EKG → rapid atrial activity!

Fast Broad Irregular (FBI) if accessory pathway with rapid antegrade conduction present! (CAVEAT Adenosine!)

Unstable

**Cardioversion 1 J/kg
„synchronized“ !!**

Cave: if persisted >48h → Exclude thrombus by echo!

Alter	Sättigung		Erhaltung	
	i.v. (mg/Kg)	p.o. (gtt/Kg)	i.v. (mg/Kg)	p.o. (gtt/Kg)
NG bis 2Wo., FG, SFD	0,04	3	0,01	3/4
NG 2-4 Wo.	0,05	4	0,01	3/4
Kind < 30 Kg	0,05	4	0,008	2/3
Kind > 30Kg	0,04	3	0,006	1/2
Lanitop=Beta-Methyl-Digoxin				
1 Tablette = 0,1mg				
1 Amp = 2ml = 0,2mg				
Lanitop Liquidum 1ml = 45gtt, 1 gtt = 0,013mg				

Stable

Overpacing (20% faster, high output! 10-20mV / 1-2ms)

Esmolol i.v. 500µg/kg in 1 min, then 50-300µg/kg/min

**Rhythmnorma (Propafenone) 1 – 2 mg/kg i.v. in 1h
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or

**Amiodarone 5 mg/kg i.v.
(in 20 – 60 min; max dose 300mg!!)**

Consider Digoxin