pediatric airway for emergency physicians who are not also pediatricians

reuben j. strayer
mount sinai school of medicine

sizing
dosing
anatomy
physiology
provider anxiety

provider anxiety

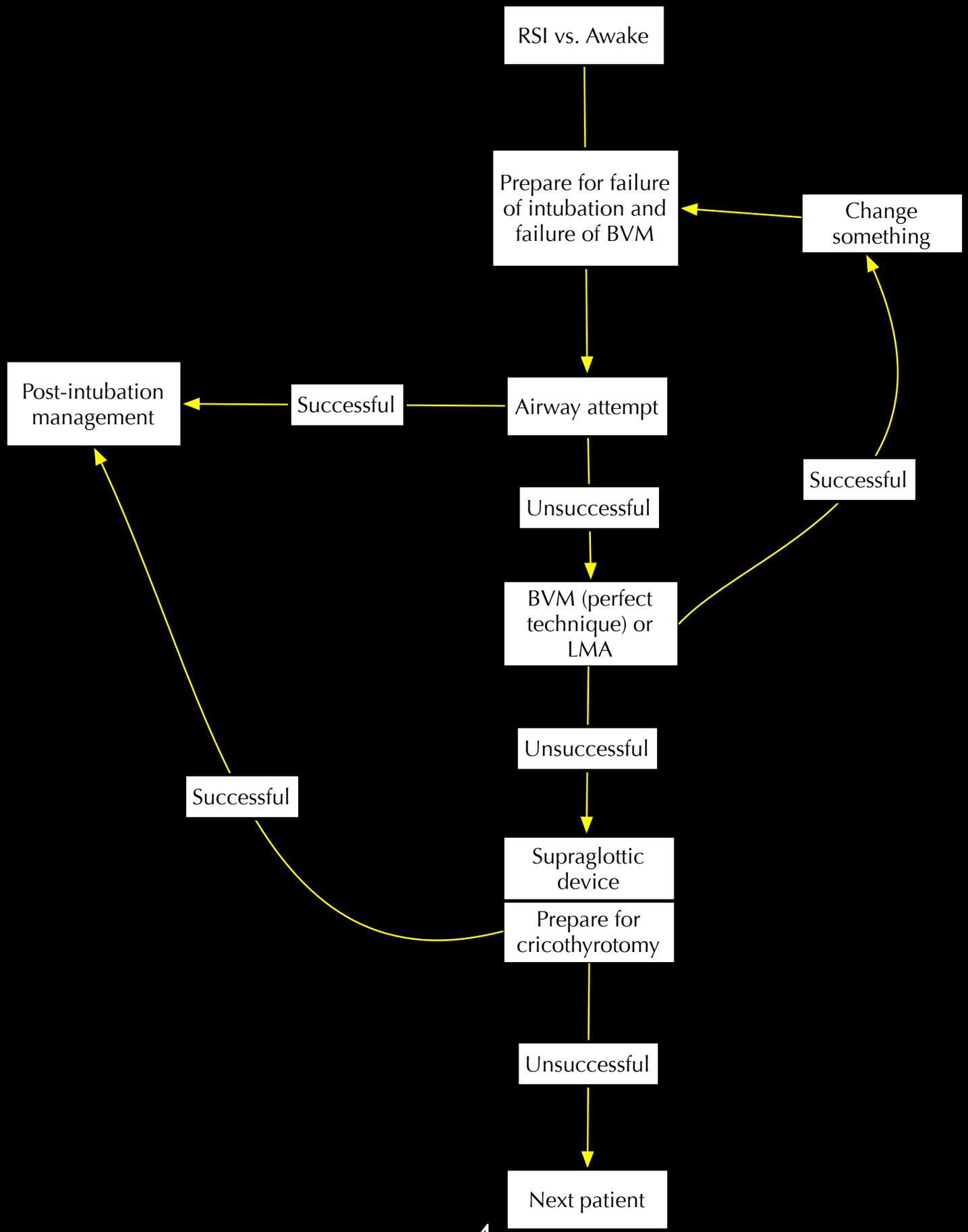
provider anxiety

the principles are the same

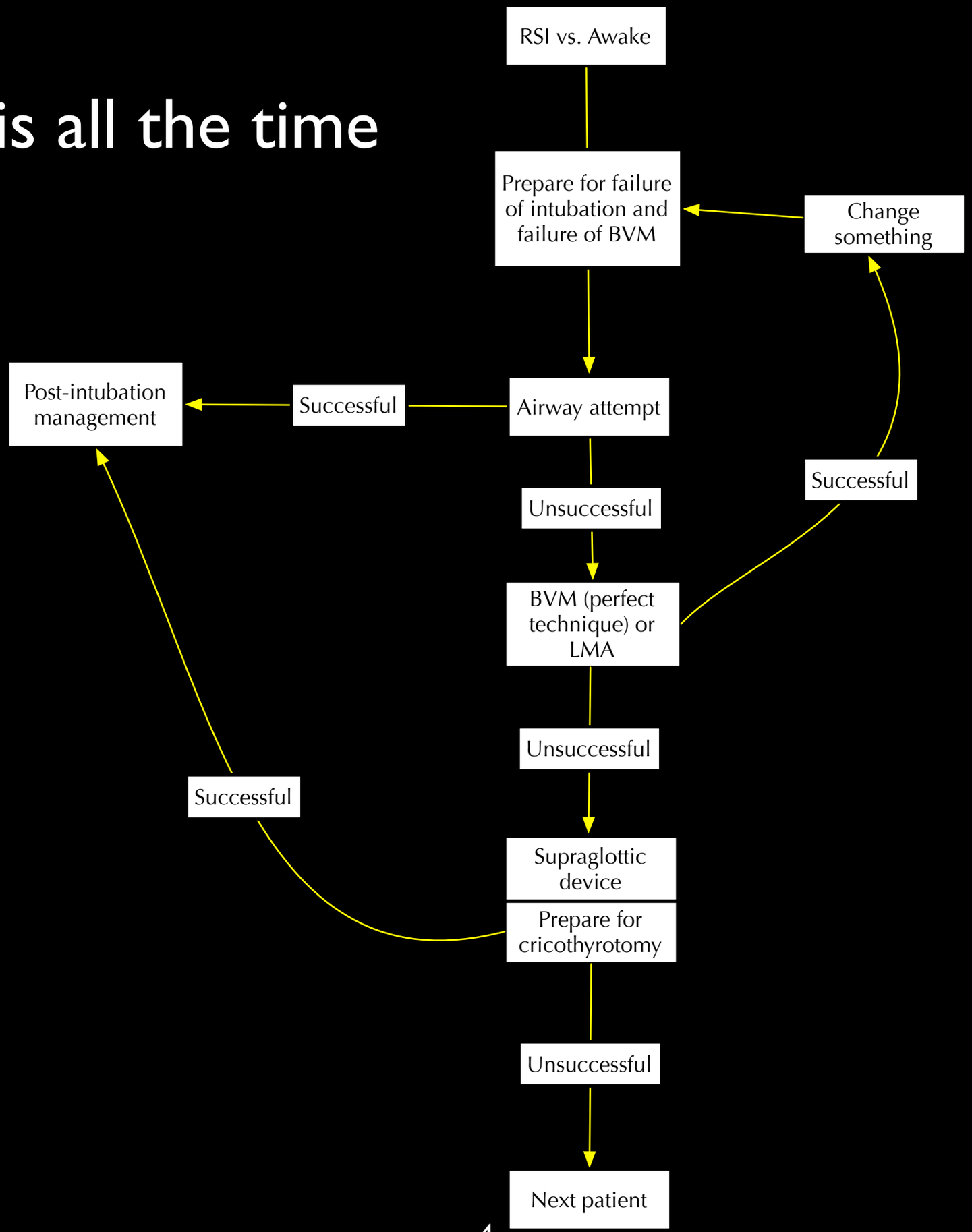
the strategy is the same

the meds are the same

the techniques are the same


RSI vs. Awake
Prepare for failure of intubation and failure of BVM
Change something
Airway attempt
Successful
Post-intubation management
Unsuccessful
Successful
BVM (perfect technique) or LMA
Unsuccessful
Successful
Supraglottic device
Prepare for cricothyrotomy
Unsuccessful
Next patient

you do this all the time



sizing

sizing

the most important issue

sizing

the most important issue

what is the right size?

sizing

the most important issue

what is the right size?

where is the right size?

sizing

weight = 2 x age in years + 9

ETT size = (age + 16) / 4
ETT size = (age / 4) + 4
ETT size = 4 + 1/4 age
ETT size = same as child's pinky

distance to lip = ETT size x 3

distance to nare = ETT size x 4

cuffed ETT if ≥ 5.5 mm

you will not remember
infrequently used information
when you're nervous

you will not remember
infrequently used information
when you're nervous

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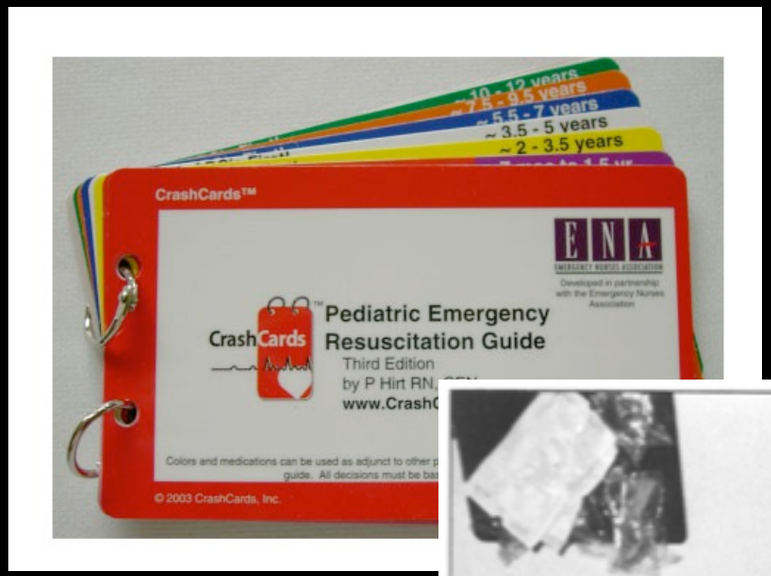
sizing



					2y	3y	4y	5y	6y	7y	8y	10y	12y	>15
					12	14	17		20		25	33	40	50+
					26	31	37	40	44	49	55	73	88	
				115	65–115	75–125	80–120	80–120	90–120	90–120	94–130	95–135	100–140	
HR	120–180	100–145	110–180	100–130	90–120	90–120	80–110	65–135	70–115		60–110	60–100	55–105	
RESP	55–60	30–50	25–40	25–40	20–30	15–25	14–25	14–24	14–22		13–20	13–20	10–16	
Oral airway	0	0	1	1	2	2	3		3		4	4	5	
ETT	2.5	3.0–3.5	3.5–4.0	3.5–4	4–4.5	4.5–5	5–5.5		5.5–6		6.0–6.5	6.0–6.5	6.0–6.5	
											cuffed	cuffed	cuffed	
LMA	1	1	1	1.5	2	2	2	2	2.5	2.5	2.5	3	3	4
Cuff volume	2–4 ml		7		≥10				14			20		30
DLEBT											26	26–28	32	35
Blade	0–1 Miller			1 Miller	1.5 Wis Hipple, 1 Phillips, 2 Miller, 1-3 MAC		1.5 Miller 2 Flagg 2 Mac				> 8y: 2 Phillips 2 Miller or 3 Mac			
Vent bag	0.5 Liter		1 liter			2 liter				3 liter				
IVF	D5.2NS via syringe pump				Lactated Ringers . . . . . >									
NG/O	5F	5–8F	8F	8–10F	8–10F	8–10F	8–10F		10–12F		10–12F	14–18F	14–18F	

sizing

ARMSTRONG MEDICAL
A-SMART CART SYSTEM
7
WARNING
5-7 kg
8-9 kg
10-11 kg
12-14 kg
15-18 kg
19-22 kg
24-30 kg
32-34 kg

1 2 3

dosing

dosing

for the love of god and your license
use a resuscitation chart

anatomy

small diameters
more likely to obstruct

small diameters
more likely to obstruct

this is why adults don’t get croup

small diameters
more likely to obstruct

this is why adults don't get croup

vasoconstrictor and anti-inflammatory therapy

small diameters
more likely to obstruct

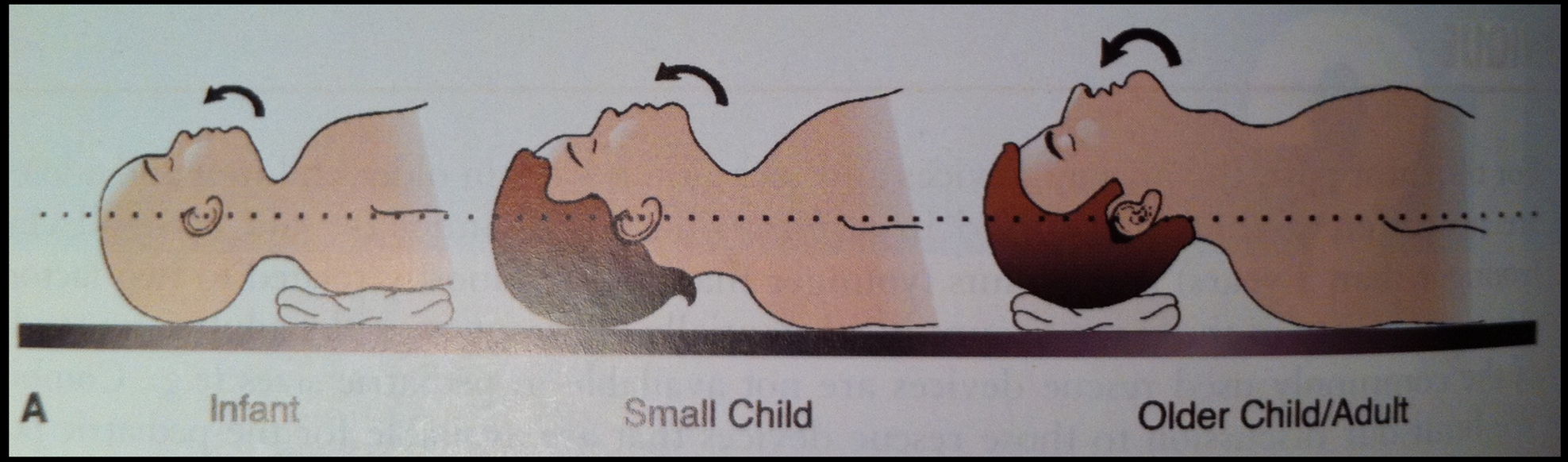
this is why adults don't get croup

vasoconstrictor and anti-inflammatory therapy

positive pressure

large occiput

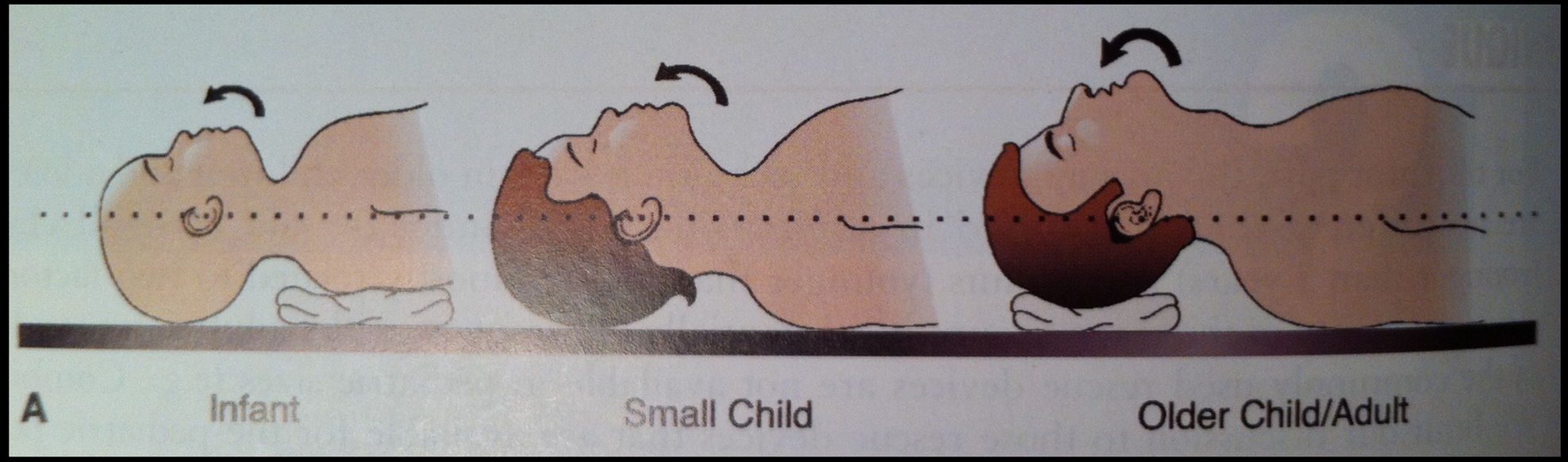
large occiput



*From Walls RM and Murphy MF: Manual of Emergency Airway Management. Philadelphia, Lippincott, Williams and Wilkins, 3rd edition, 2008

large occiput

sheets under **shoulders** to get ear to sternal notch



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large tongue and
high tracheal opening

large tongue and high tracheal opening

straight blades may give you a better view

narrowest portion of airway is at cricoid ring

vs. vocal cords in adults

narrowest portion of airway is at cricoid ring

vs. vocal cords in adults

cuffed vs. uncuffed tubes

narrowest portion of airway is at cricoid ring

vs. vocal cords in adults

cuffed vs. uncuffed tubes

the cuff takes up 0.5 mm

narrowest portion of airway is at cricoid ring

vs. vocal cords in adults

cuffed vs. uncuffed tubes

the cuff takes up 0.5 mm

the cuff can make it a little harder to intubate tiny airways

short trachea

short trachea

don’t push the the damn thing in too far

small/absent
cricothyroid membrane

small/absent cricothyroid membrane

cricothyrotomy is “contraindicated” < 10

small/absent cricothyroid membrane

cricothyrotomy is “contraindicated” < 10

LMA

small/absent cricothyroid membrane

cricothyrotomy is “contraindicated” < 10

LMA

forget jet ventilation
needle cric

small/absent cricothyroid membrane

cricothyrotomy is “contraindicated” < 10

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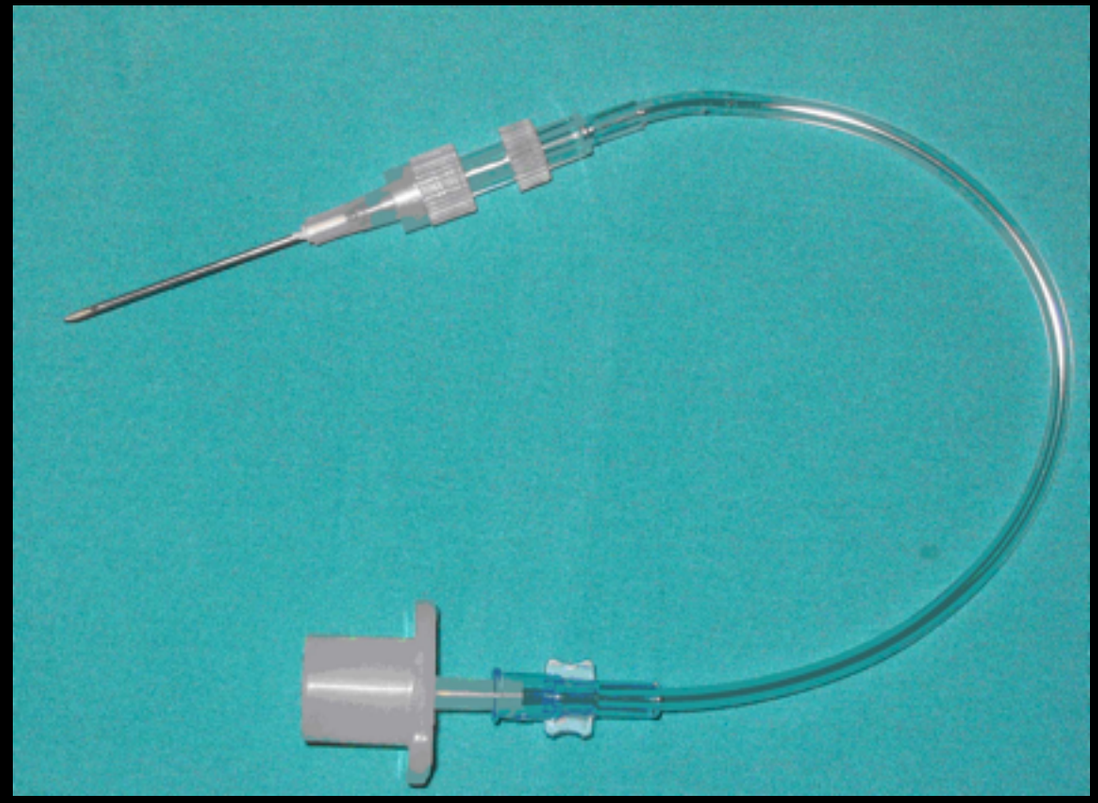


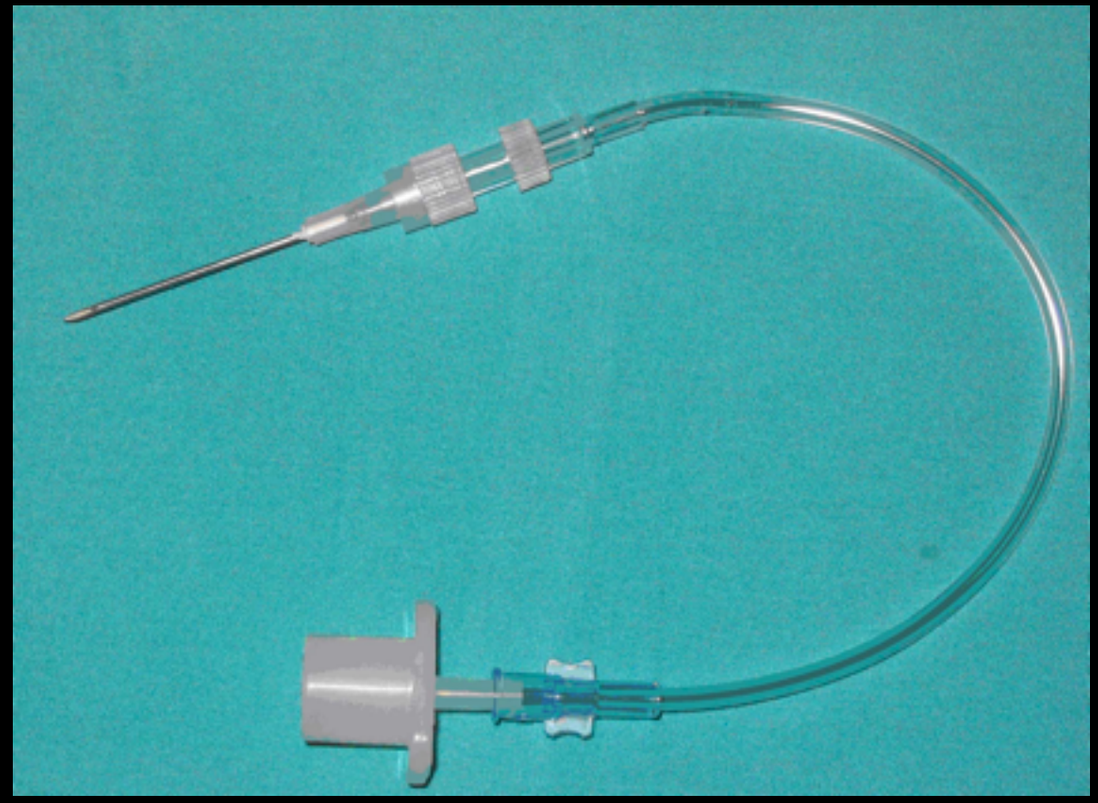
small/absent cricothyroid membrane

cricothyrotomy is “contraindicated” < 10

LMA

forget jet ventilation
needle cric

whatever



physiology

increased metabolic rate

=

decreased time to desaturation

increased metabolic rate

=

decreased time to desaturation

preox preox preox

increased metabolic rate

=

decreased time to desaturation

preox preox preox

be ready ready ready to ventilate ventilate ventilate

high vagal tone

high vagal tone

have atropine ready

45% ECF water

succinylcholine dose is **really** 2 mg/kg

pediatric airway for emergency physicians
who are not also pediatricians

pediatric airway for emergency physicians
who are not also pediatricians

you already know how to do it

pediatric airway for emergency physicians who are not also pediatricians

you already know how to do it

do not try to remember anything–use a resus chart

pediatric airway for emergency physicians who are not also pediatricians

you already know how to do it

do not try to remember anything–use a resus chart

get your pediatric resus stocking organized

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nebulized epinephrine for stridor

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straight blade for little dudes

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straight blade for little dudes

know how to do a needle cric

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