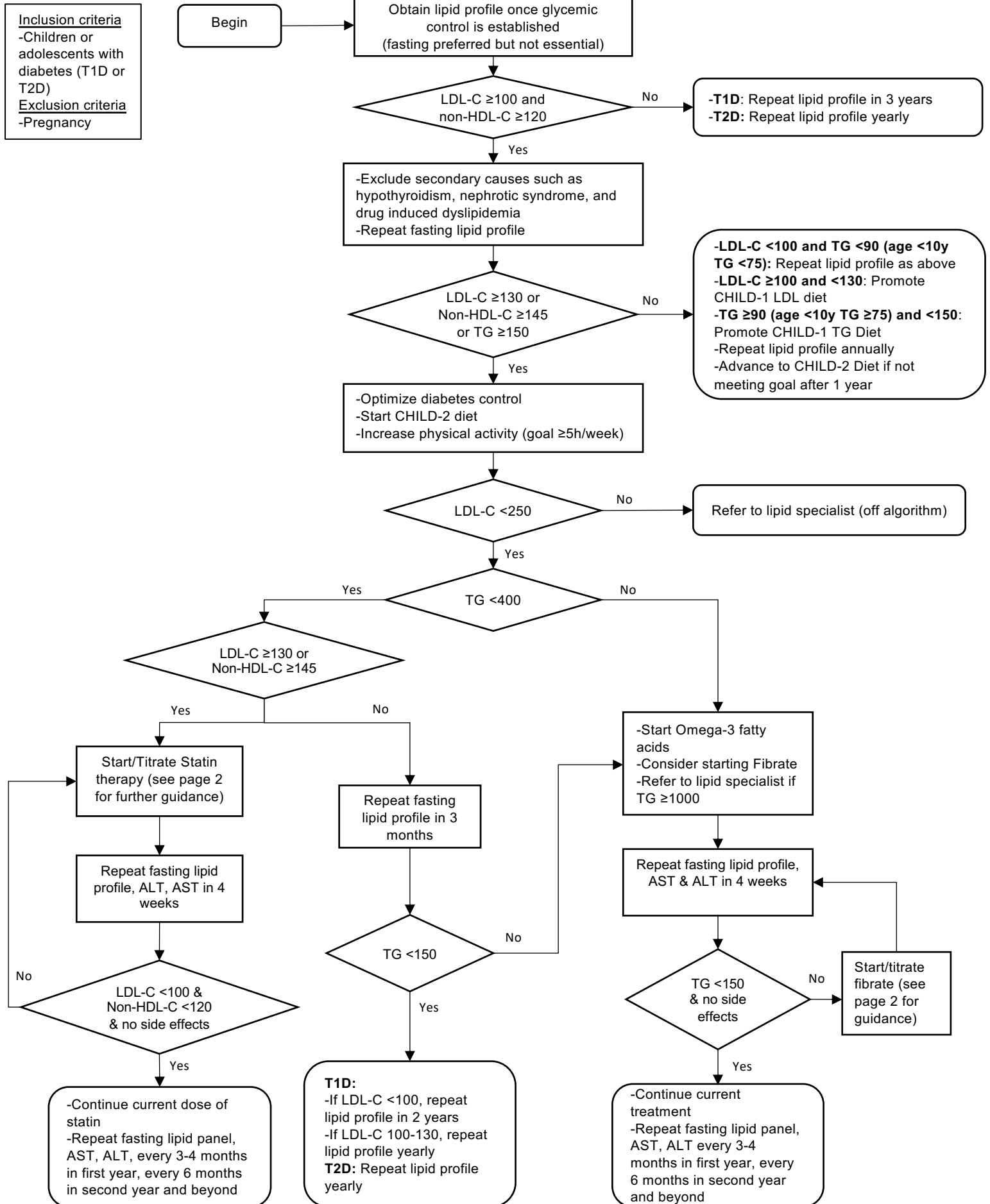
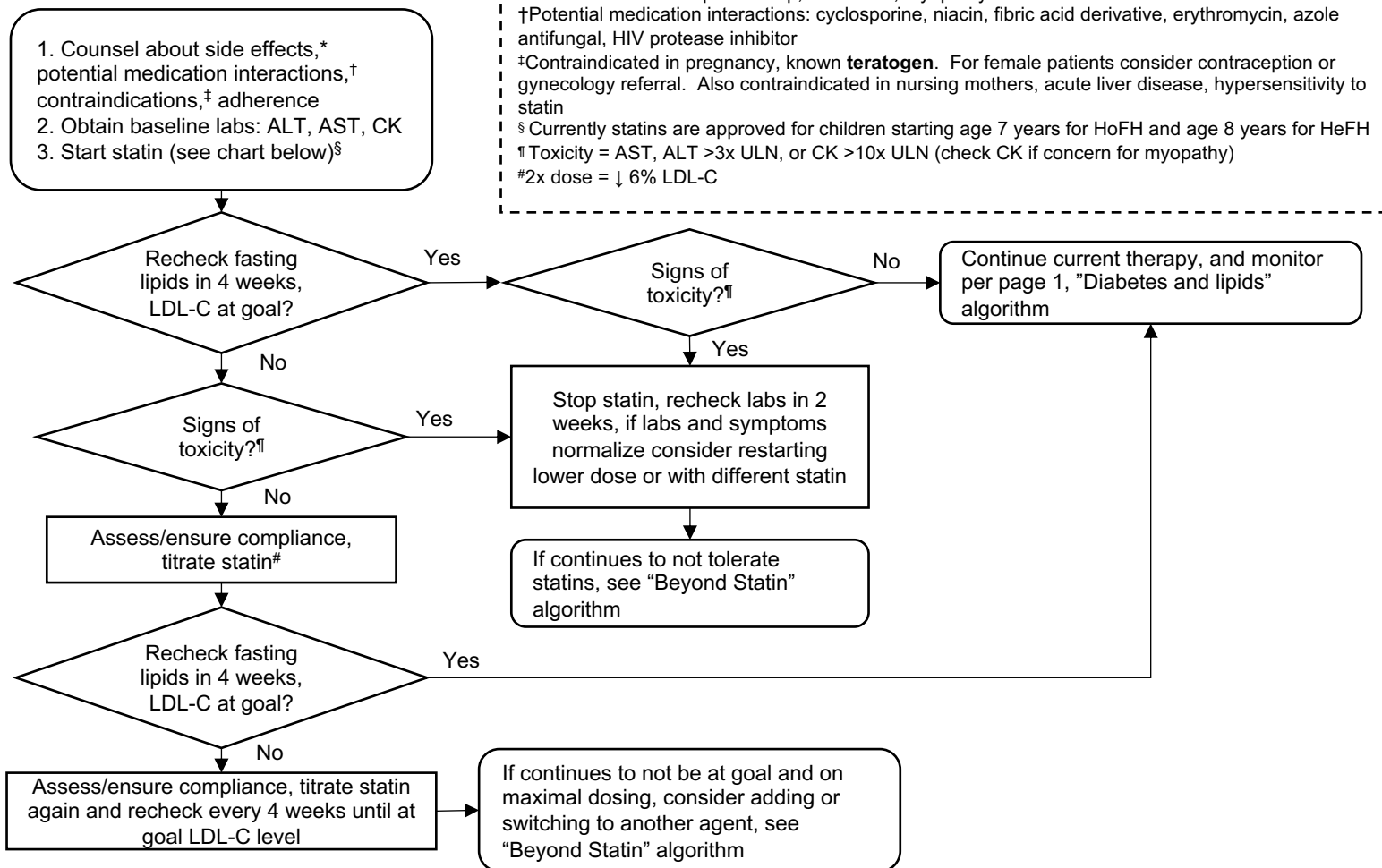


PES Lipid SIG Diabetes and Lipids Algorithm (updated 5/2023)



Statin initiation



Lipid Lowering Dose Ranges

Drug	Strength	Dose	% ↓LDL-C	% ↑HDL-C	% ↓Trigs	% ↓TC
Lovastatin	10 mg	10 mg QD	22%	4%	5%	12%
	20 mg	20 mg QD	29%	7%	12%	21%
	40 mg	40 mg QD	31%	5%	2%	23%
	80 mg	80 mg QD	48%	8%	13%	36%
Atorvastatin	10 mg	10 mg QD	38%	6%	13%	28%
	20 mg	20 mg QD	46%	5%	20%	35%
	40 mg	40 mg QD	51%	5%	32%	40%
	80 mg	80 mg QD	54%	1%	25%	42%
Fluvastatin	20 mg	20 mg QD	17%	1%	5%	13%
	40 mg	40 mg QD	23%	3%	13%	19%
	80 mg XL	80 mg QD	35%	8%	11%	20%
Pravastatin	10 mg	10 mg QD	19%	10%	3%	13%
	20 mg	20 mg QD	24%	3%	15%	18%
	40 mg	40 mg QD	34%	6%	10%	24%
Rosuvastatin	5 mg	5 mg QD	45%	13%	35%	33%
	10 mg	10 mg QD	52%	14%	10%	36%
	20 mg	20 mg QD	55%	8%	23%	40%
	40 mg	40 mg QD	63%	10%	28%	46%
Simvastatin	5 mg	5 mg QD	24%	7%	12%	17%
	10 mg	10 mg QD	28%	7%	12%	21%
	20 mg	20 mg QD	35%	5%	17%	26%
	40 mg	40 mg QD	41%	10%	15%	30%
	80 mg	80 mg QD	47%	12%	36%	36%

Triglyceride management (off label in pediatrics^a)

Omega-3 fatty acids

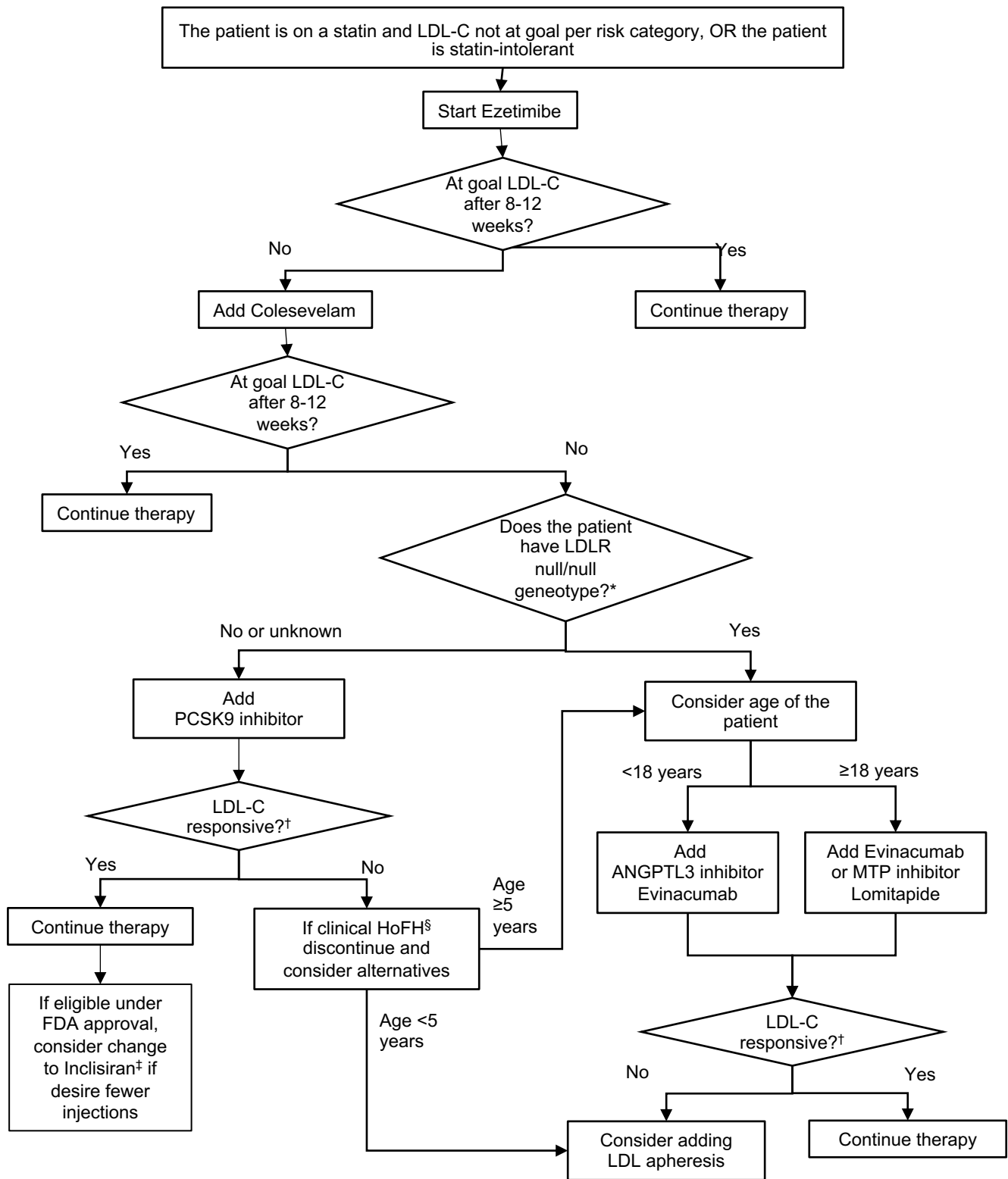
1. Recommended dose is 4g/day DHA/EPA

Fibrates

1. Counsel about side effects,^β potential drug interactions,^γ and contraindications^δ
2. Prefer fenofibrate initially due to fewer side effects, better tolerated, and only once daily dosing
3. Check baseline AST, ALT and again in 4 weeks to monitor on fibrate. If AST, ALT >3x ULN, stop fibrate, consider restarting at lower dose once labs normalize or refer to lipid specialist

^aOf note, TG lowering medications in adults with diabetes have shown inconsistent results with improved CVD benefit
^βSide effects: muscle toxicity, hepatotoxicity. If on fibrate and statin, higher risk of muscle toxicity
^γDrug interactions: coumarin anticoagulants, immunosuppressants, bile acid resins
^δContraindications: severe renal dysfunction, acute liver disease, gall bladder disease, hypersensitivity to fibrate, nursing mothers

PES Lipid SIG: Beyond Statin Algorithm (updated 5/2023)



*Genetic testing is currently not an exclusive criteria for defining familial hypercholesterolemia, and not all patients with clinical FH have identifiable mutations. Thus, the decision branch encompasses patients whose genetics are unknown

†In severe cases, initial LDL-C goal may be $\geq 50\%$ reduction from baseline, and clinical judgment is required to evaluate responsiveness.

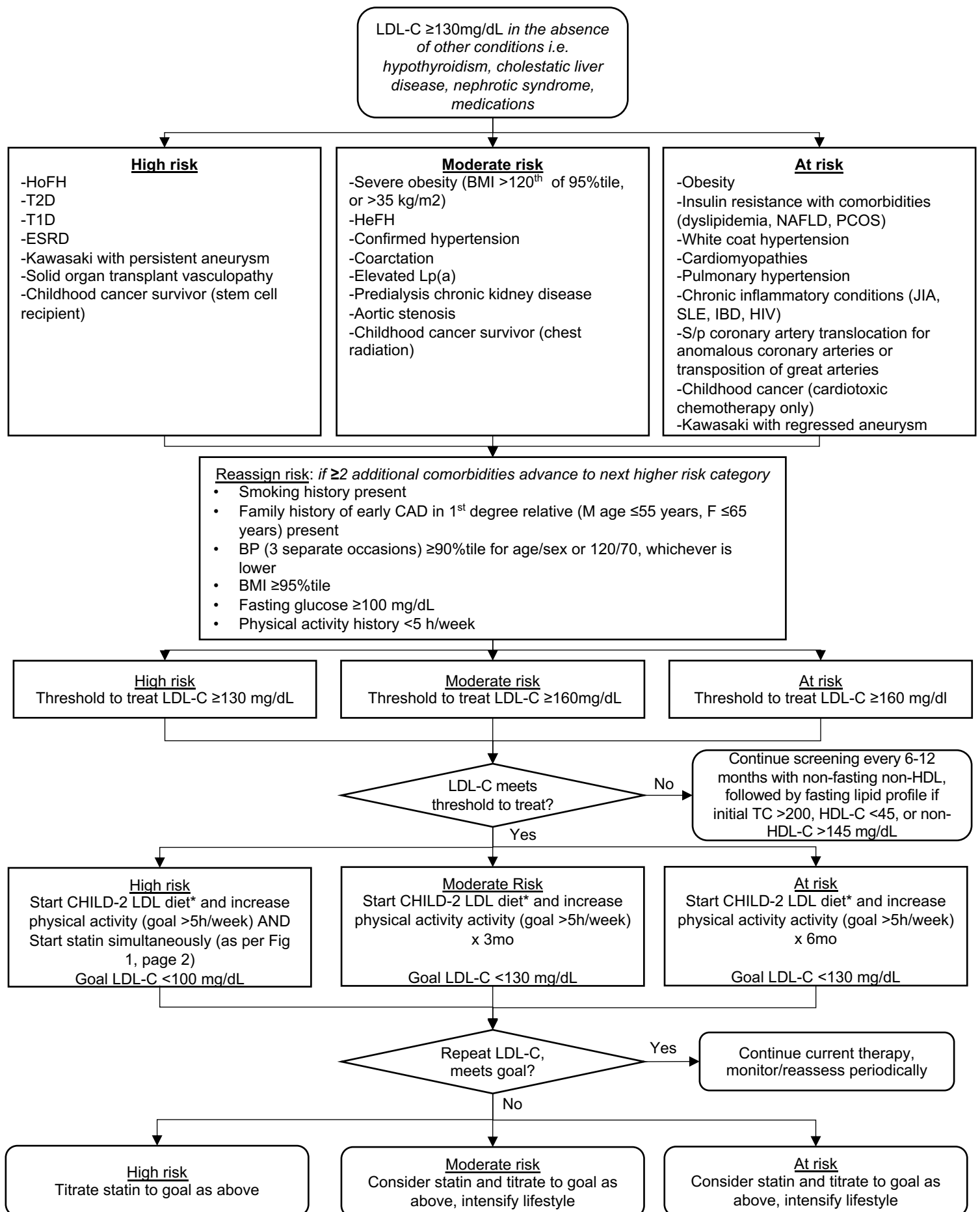
‡At this time Inclisiran is only FDA-approved for age 18 years and older

§HoFH is clinically diagnosed when a person has an untreated LDL-C level >500 mg/dL, with either the presence of cutaneous or tendinous xanthomas before the age of 10 years or documentation of untreated LDL-C levels of >250 mg/dL in both parents

Beyond Statins – published lipid-lowering effects of medications

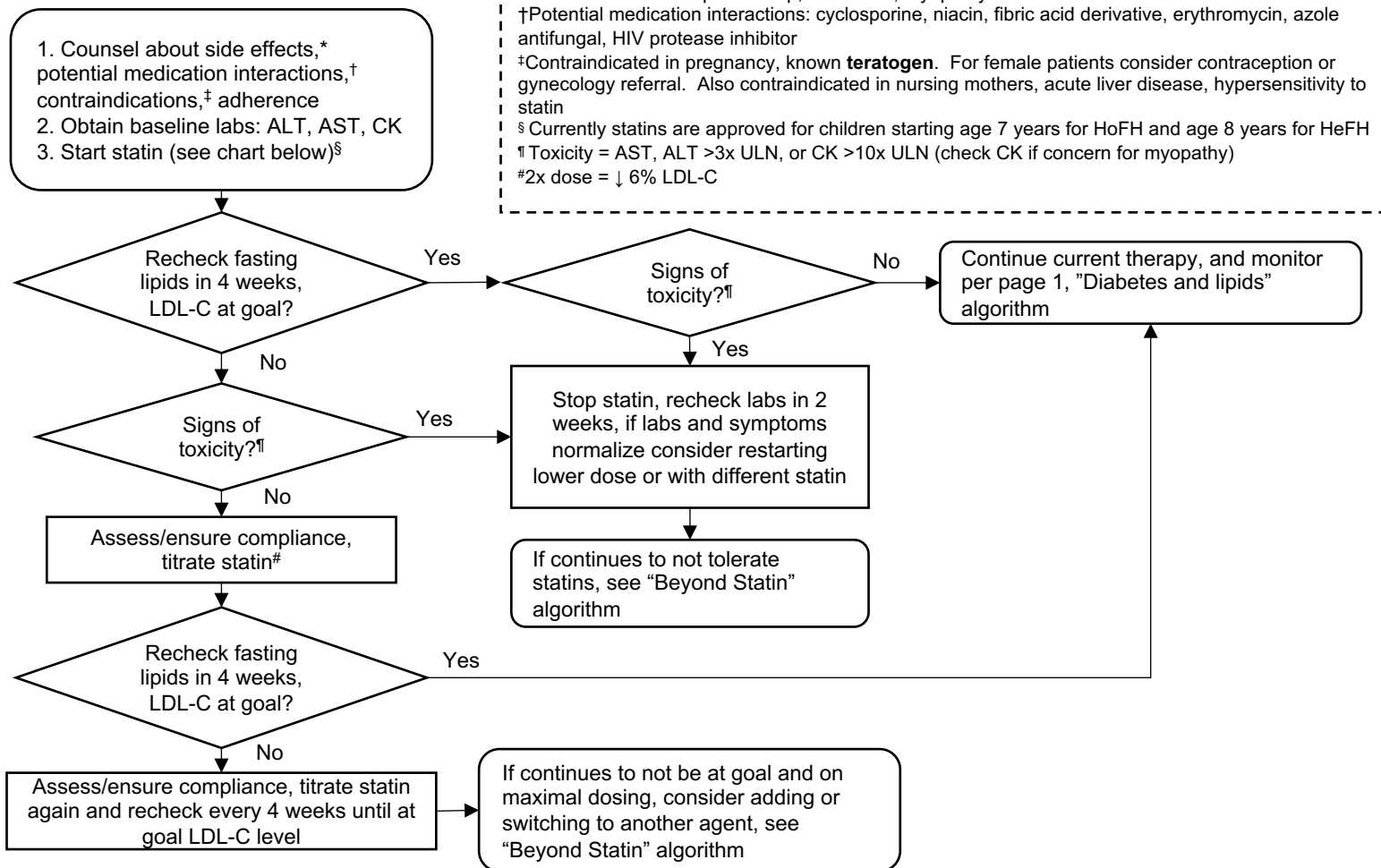
Medication class and drug name	Approved pediatric age range and indication	Dosage and formulation	LDL-C reduction from clinical trial	Comments
Selective cholesterol-absorption inhibitor				
Ezetimibe	Age 10-17 years and older HeFH	Pill, 10 mg daily	-28% over 12 weeks PMID: 25841542	May be used as monotherapy or add-on to statin therapy
Bile-acid sequestrant				
Colesevelam	Age 10-17 years and older HeFH	Powder for suspension, 3.75 gm per day	-12.5% over 8 weeks PMID: 19879596	GI side effects are common. Take at least 4 hrs after other medications.
PCSK9 inhibitor				
Evolocumab	Age 10-17 years and older HeFH, HoFH	HeFH: 140 mg subQ injection q 2 wks, pre-filled syringe or pen device; HoFH: 420 mg subQ q 4 wks via disposable infusion device	-23.1% over 12 wks (TESLA-B) PMID: 25282520 -23.3% over 48 wks (TAUSSIG) PMID: 28215937 -44.5% over 24 wks (HAUSER-RCT) PMID: 32865373	Dependent on LDL receptor function. Not effective in LDLR null/null genotype
ANGPTL3 inhibitor				
Evinacumab	Age 5-17 years and older HoFH	15 mg/kg iv infusion q 4 wks. Given in infusion center or by home health nursing.	-47.1% over 24 weeks (ELIPSE HoFH) PMID: 32813947	Teratogen counseling for females, and advised to be on effective contraception.
FOR ADULTS ONLY - MTP inhibitor				
Lomitapide	18 years and older HoFH	Starting dose 5 mg tabs. Titrate up to 60 mg/day. Max dose 30 mg/day if on simvastatin, atorvastatin, or lovastatin.	-50% after 26 weeks (Phase 3 HoFH Lomitapide Study) PMID: 23122768 Rx with vitamin E and omega 3+6 supplements (see prescribing label).	Follow FDA REMS protocol for dose titration and monitoring for liver toxicity. FDA REMS provider training required. GI side effects are common.
FOR ADULTS ONLY – siRNA to PCSK9 mRNA				
Inclisiran	18 years and older HeFH or ASCVD	284 mg injection subQ. After initial dose, give second dose at 3 months, then every 6 months after that.	-39.7% over 15 months (ORION-9) PMID: 32197277	Not likely to be effective in LDLR null/null genotype

PES Lipid SIG LDL-C Algorithm- updated 5/2023



*See reference for more information on CHILD-2 LDL lowering diet (Williams, L, Wilson, D. Nutritional management of pediatric dyslipidemia. Endotext. 2020)
 LDL-C low density lipoprotein cholesterol, HoFH Homozygous familial hypercholesterolemia, T2D type 2 diabetes mellitus, T1D type 1 diabetes mellitus, ESRD end stage renal disease, BMI body mass index, HeFH Heterozygous familial hypercholesterolemia, Lp(a) lipoprotein (a), NAFLD nonalcoholic fatty liver disease, PCOS polycystic ovary syndrome, JIA Juvenile idiopathic arthritis, SLE systemic lupus erythematosus, IBD inflammatory bowel disease, HIV human immunodeficiency virus, CAD coronary artery disease, M male, F female, BP blood pressure, h hours, non-HDL non high density lipoprotein, TC total cholesterol, HDL-C high density lipoprotein, CHILD-2 LDL Cardiovascular Health Integrated Lifestyle- 2 low density lipoprotein diet

Statin initiation



Lipid Lowering Dose Ranges

Drug	Strength	Dose	% ↓LDL-C	% ↑HDL-C	% ↓Trigs	% ↓TC
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	80 mg XL	80 mg QD	35%	8%	11%	20%
Pravastatin	10 mg	10 mg QD	19%	10%	3%	13%
	20 mg	20 mg QD	24%	3%	15%	18%
	40 mg	40 mg QD	34%	6%	10%	24%
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	10 mg	10 mg QD	52%	14%	10%	36%
	20 mg	20 mg QD	55%	8%	23%	40%
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Triglyceride management (off label in pediatrics^a)

Omega-3 fatty acids

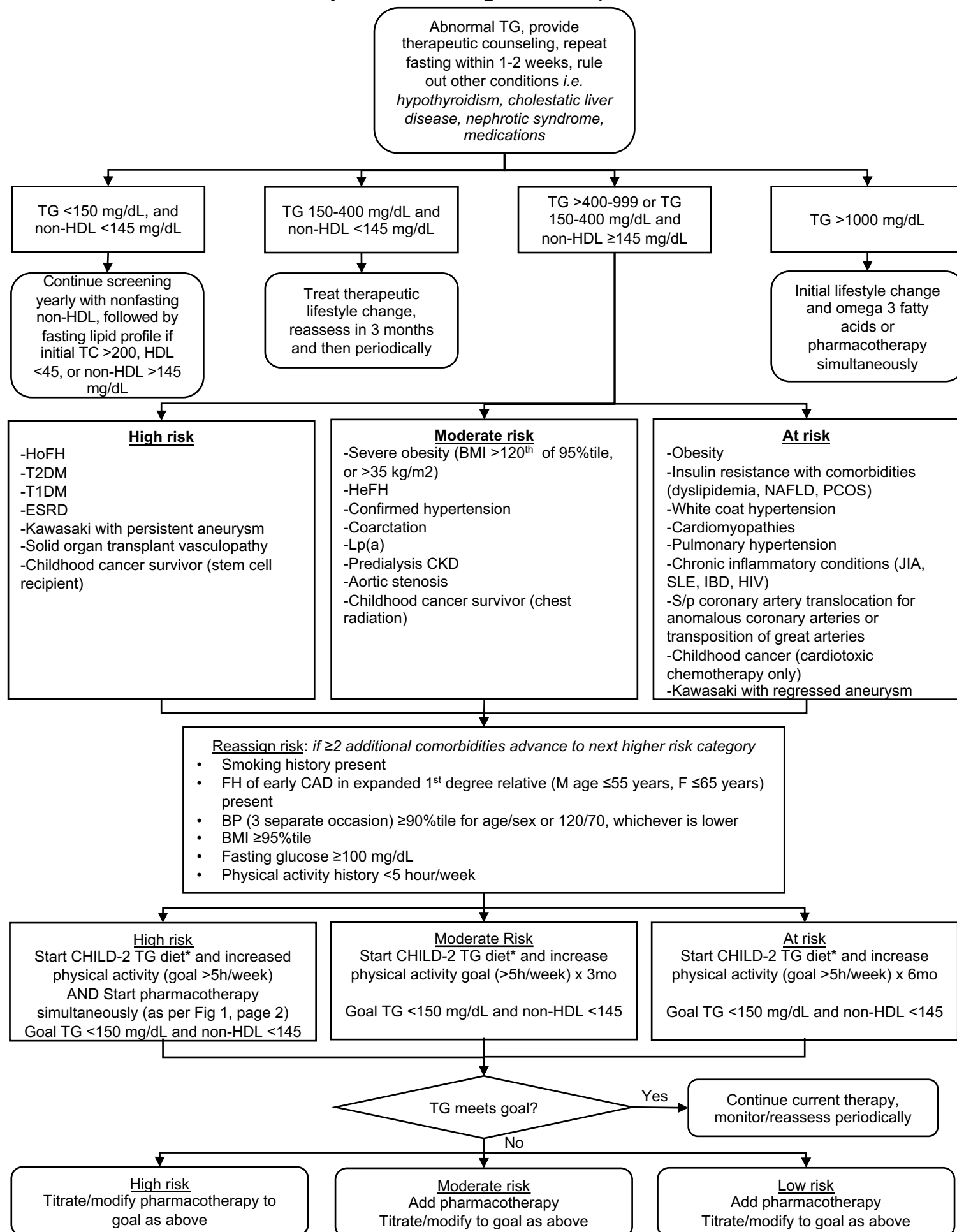
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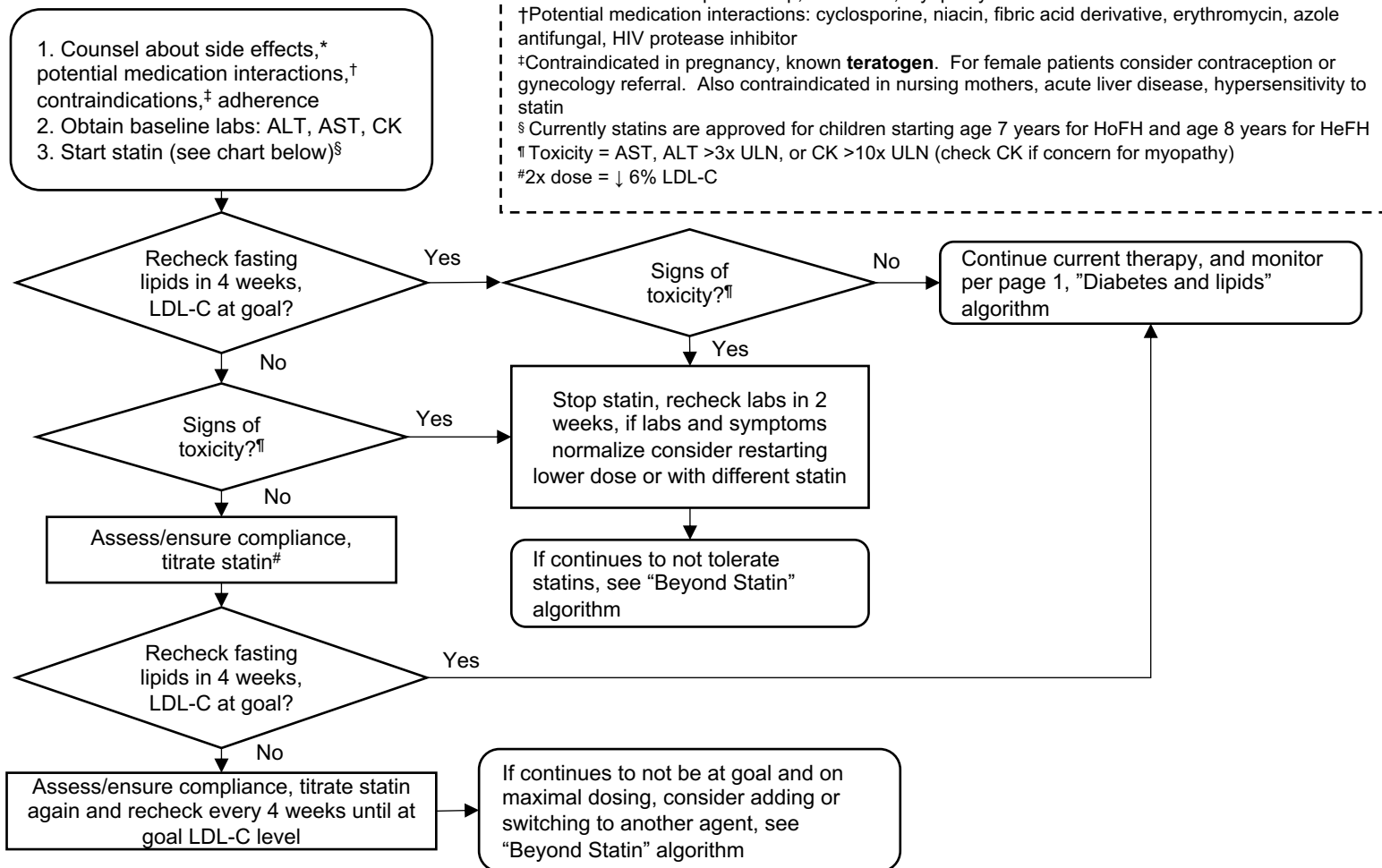
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^βSide effects: muscle toxicity, hepatotoxicity. If on fibrate and statin, higher risk of muscle toxicity
^γDrug interactions: coumarin anticoagulants, immunosuppressants, bile acid resins
^δContraindications: severe renal dysfunction, acute liver disease, gall bladder disease, hypersensitivity to fibrate, nursing mothers

PES Lipid SIG TG Algorithm- updated 5/2023



*See reference for more information on CHILD-2 TG lowering diet (Williams, L, Wilson, D. Nutritional management of pediatric dyslipidemia. Endotext. 2020)
TG triglyceride, CHILD-2 TG Cardiovascular Health Integrated Lifestyle- 2 triglyceride, EPA eicosapentaenoic acid, DHA docosahexaenoic acid, non-HDL non high density lipoprotein, ApoB apolipoprotein B-100, HDL-C high density lipoprotein cholesterol, HoFH Homozygous familial hypercholesterolemia, T2DM type 2 diabetes mellitus, T1DM type 1 diabetes mellitus, ESRD end stage renal disease, BMI body mass index, HeFH Heterozygous familial hypercholesterolemia, Lp(a) lipoprotein (a), CKD chronic kidney disease, NAFLD nonalcoholic fatty liver disease, PCOS polycystic ovary syndrome, JIA juvenile idiopathic arthritis, SLE systemic lupus erythematosus, IBD inflammatory bowel disease, HIV human immunodeficiency virus, CAD coronary artery disease, M male, F female, BP blood pressure

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