



Finding the Right Rhythm

Supporting Pediatric Oncology Nurses in Longitudinal NF1 Management

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Nurses (ANCC)



This activity is designated for 1.0 contact hours.

Note to Nurse Practitioners: The content of this CNE activity pertains to Pharmacology.

This activity is designated for 1.0 contact hours.

The program content has been reviewed by the Oncology Nursing Certification Corporation (ONCC) and is acceptable for recertification points.

OCN

Care Continuum
Oncology Nursing Practice
Treatment

AOCNP

Care Continuum
Treatment

CBCN

Care Continuum
Treatment

ROCNP

Care Continuum
Treatment

CPHON

Care Continuum
Care of the Pediatric Hematology and
Oncology Patient
Pediatric Hematology and Oncology Nursing
Practice
Treatment

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LEARNING OBJECTIVES

1

Apply NF1 diagnostic and oncologic monitoring guidelines to support early recognition of NF1-PNs in pediatric patients.

2

Incorporate MEK inhibitors in the management of NF1-PNs in pediatric patients within care pathways that extend into adult-focused settings through evidence-based monitoring and safety support.

3

Apply interprofessional care coordination and continuity planning strategies in clinical practice to support consistent management of patients with NF1 across pediatric and adult care settings.

Recognizing Neuro-Oncologic Features of NF1 and Supporting the Use of Diagnostic and Oncologic Monitoring Criteria



A 9-year-old girl presents with learning difficulties, multiple café-au-lait macules, and mild scoliosis. Which additional finding would most strengthen a clinical diagnosis of NF1?

- A. Juvenile cataract
- B. Two Lisch nodules
- C. Retinal hamartoma
- D. Epiretinal membrane
- E. I don't know

Development of Clinical Features of NF1

Timing and Severity Varies

- Café-au-lait macule*
- Orbital dysplasia
- Tibial dysplasia
- Pseudoarthrosis*
- Plexiform neurofibroma (PN)*

- Skinfold freckling*
- Lisch nodule*
- Scoliosis
- Dermal neurofibroma*
- Paraspinal neurofibroma*
- Brainstem glioma



Birth

Infancy

**Early
Childhood**

Adolescence

Adulthood

- Learning deficits
- ADHD or ASD
- Motor and/or speech delays
- Optic pathway glioma*

- MPNST
- Breast cancer
- High-grade glioma



*Included in diagnostic criteria.

NF1 = neurofibromatosis type 1; ADHD = attention-deficit hyperactivity disorder; ASD = autism spectrum disorder; MPNST = malignant peripheral nerve sheath tumors.

Kerashvili N, et al. *Expert Rev Neurother*. 2024;24:409-420. Botero V, et al. *J Neurodev Disord*. 2024;16(1):49.

NF1

2021 Diagnostic Criteria

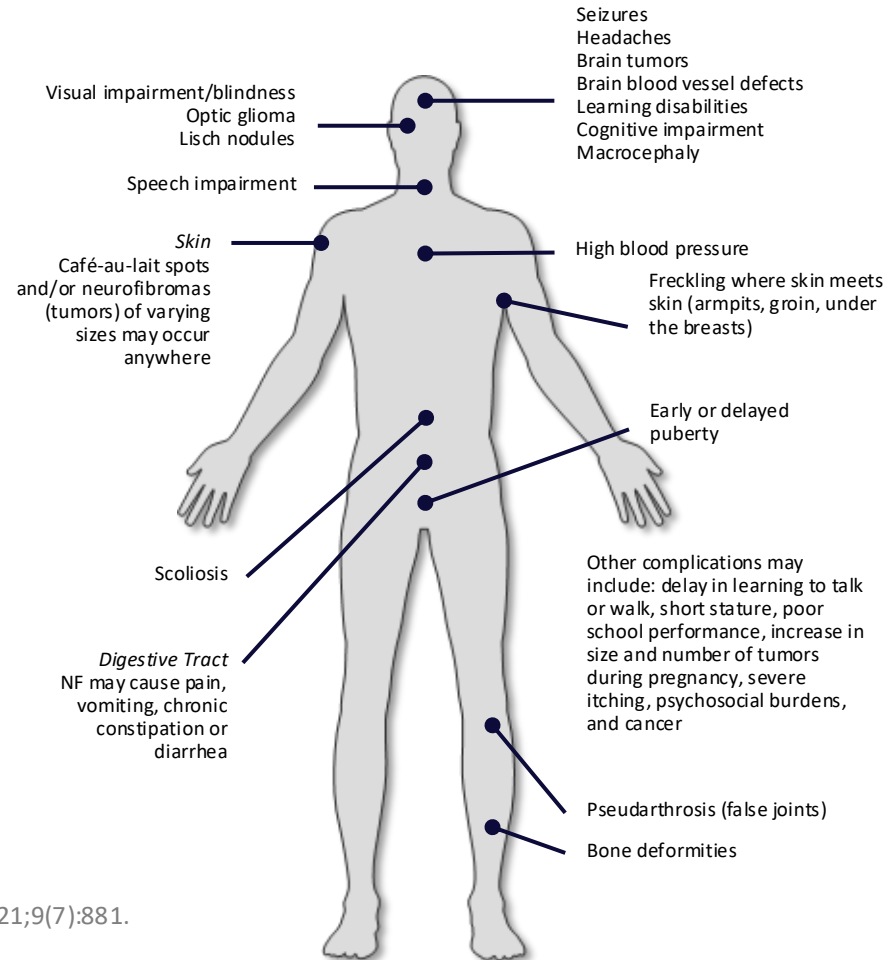
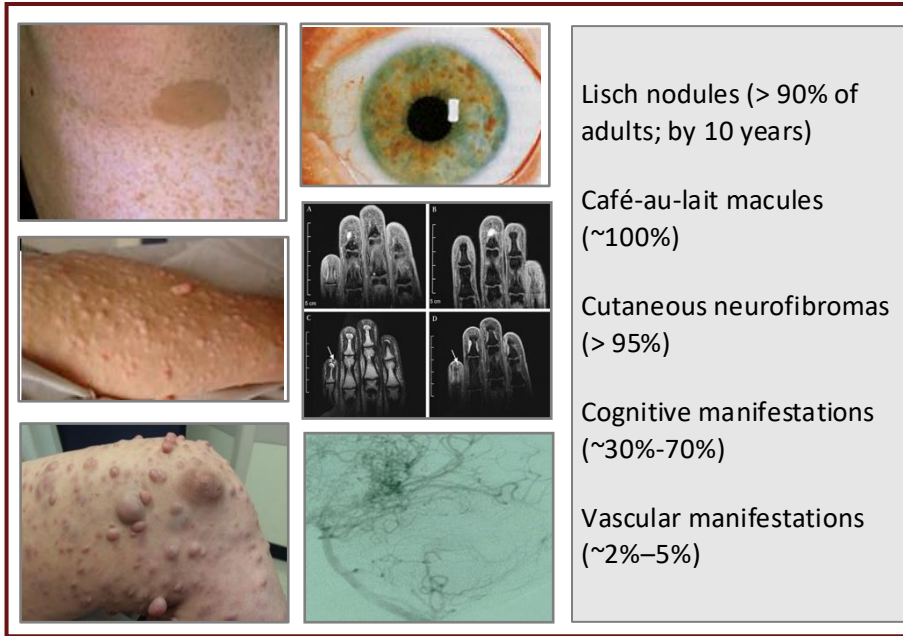
Diagnostic criteria for NF1 are met in an individual who **does not have a parent diagnosed with NF1** if **two or more** of the following are found:

1. Six or more café-au-lait spots (in the greatest diameter)
 - 1.5 cm or larger after puberty
 - 0.5 cm or larger before puberty
2. Freckling in the axilla or groin
3. Two or more neurofibromas OR one plexiform neurofibroma
4. Optic pathway glioma
5. Two or more iris Lisch nodules OR **two or more choroid abnormalities**
6. A distinctive osseous lesion, such as sphenoid dysplasia, anterolateral bowing of tibia or pseudoarthrosis of a long bone
7. **Heterozygous pathogenic *NF1* variant with a variant allele fraction of 50% in apparently normal tissue**

If a **parent meets the above diagnostic criteria**, the individual only requires one or more of the above criteria to merit an NF1 diagnosis

Neurofibromatosis Type 1

Manifestations and Diagnostic Criteria



Carton C, et al. *EClinicalMedicine*. 2023;56:101818.
 Legius E, et al. *Genet Med*. 2021;23(8):1506-1513. Toro G, et al. *Healthcare (Basel)*. 2021;9(7):881.
 Well L, et al. *Sci Rep*. 2021;11(1):16889. Baudou E, et al. *Front Neurol*. 2019;10:1373.
 Kim A, et al. *Sarcoma*. 2017;2017:7429697. Korf BR. *Handb Clin Neurol*. 2013;111:333-340.
 Stevenson DA, et al. *J Pediatr Orthop*. 2013;33(3):269-275. Ferner RE. *Pract Neurol*. 2010;10(2):82-93.

Genetic Considerations and When Genetic Testing is Advisable in NF1

Diagnostic clinical criteria are sufficient for the majority of cases

GENETIC CONSIDERATIONS

100%

penetrance — every patient with a pathogenic mutation will show signs of NF1

50%

of newly diagnosed patients have a family history

- Autosomal dominant tumor predisposition syndrome
- Heterozygous mutation in the NF1 gene on chromosome 17q11.2
- Clinical issues and problems
 - Wide variation among patients, even within families and those with same genetic defect

WHEN TO TEST

Potential use of genetic testing

- For unusual cases or those > 10 years of age without a clear diagnosis
- To help inform therapy decisions
- When the differential includes non-NF1 condition(s)
- When there is concern for siblings or family planning
- Inform prenatal testing and family planning

Limited genotype/phenotype correlation

- Wide variation
- Not completely predictive of risks
- Cost-benefit considerations

Common Missed Opportunities

- Failure to recognize diagnostic criteria for NF1
- Underestimating the impact of mild developmental delays
- Delayed referral to specialists
- Inadequate family history taking
- Lack of coordination with schools
- Overlooking emotional and behavioral health
- Early diagnosis NF1 complications
- Not referring to NF1 specialty clinics



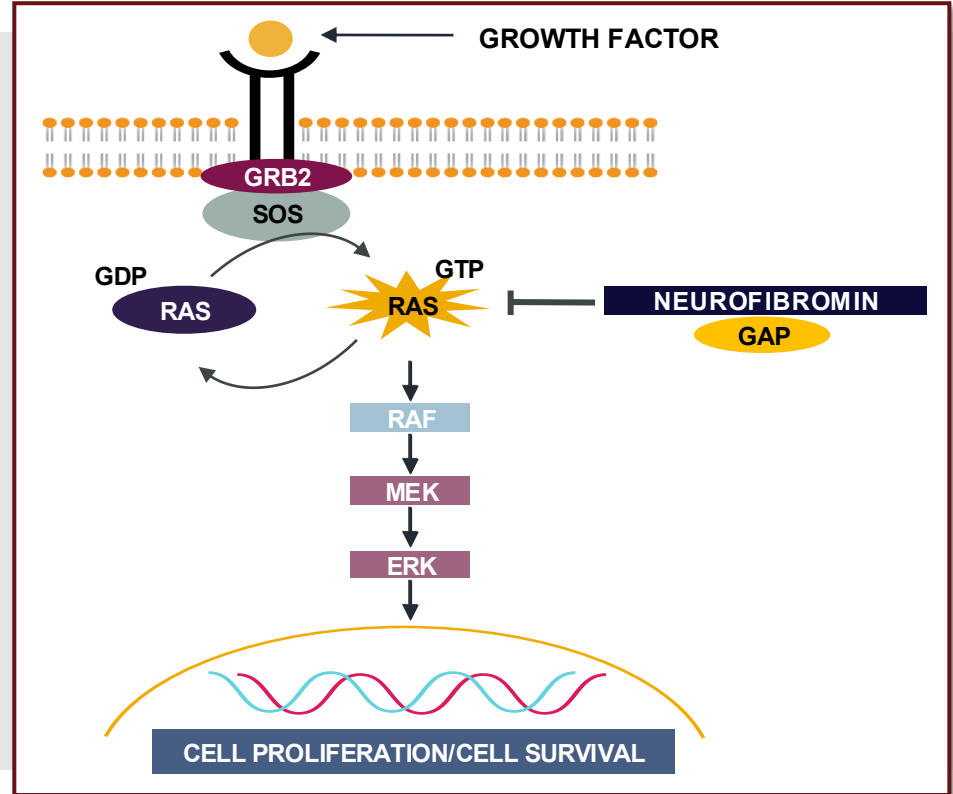
Periodic Reevaluation of Needs in Children with NF1

- Early intervention improves outcomes and quality of life (QoL)
- Timely detection of treatable complications may reduce permanent disability or life-threatening outcomes
- Ongoing education and support for families as new challenges or questions arise at different child development stages

Domain	What to Monitor	Typical Frequency
Skin	New or changing neurofibromas	Annually
Eyes	Signs of optic pathway glioma	Annually
Cardiovascular	Blood pressure (especially for hypertension risk)	Annually
Skeletal	Scoliosis, tibial dysplasia	Annually
Neurodevelopmental	Cognitive, academic, and behavioral issues	Annually, or as needed
Growth/endocrine	Growth patterns, puberty abnormalities	Annually

Tumors Associated with NF1

- Dermal neurofibromas
- Plexiform neurofibromas (PNs)
- Optic pathway gliomas and other low-grade tumors
- Malignant peripheral nerve sheath tumors (MPNSTs)
- High-grade glioma
- Breast cancer
- Gastrointestinal stromal tumors (GISTs)
- Pheochromocytoma and/or paragangliomas
- Rhabdomyosarcomas



ERK = extracellular signal-regulated kinase; GAP = GTPase-activating proteins; GDP = guanosine diphosphate; GRB2 = growth factor receptor-bound protein 2; GTP = guanosine triphosphate; MEK = mitogen-activated kinase; RAF = rapidly accelerated fibrosarcoma; RAS = rat sarcoma; SOS = Son of Sevenless.

Lalvani S, et al. *J Multidiscip Healthc.* 2024;17:1803-1817. Kerashvili N, et al. *Expert Rev Neurother.* 2024;24(4):409-420. Botero V, et al. *J Neurodev Disord.* 2024;16(1):49.

Screening for PNs in Pediatrics

- Primarily based on history and physical examination
 - +/- MRI, if symptoms or exam findings concerning for a problematic PN
- Do not recommend screening/imaging in the absence of clinical findings
 - Many PN will never grow or cause problems
 - Does not change management
 - Treatment is not recommended for PN that are not large or causing problems
- Screening MRI whole body without contrast at 18 years of age



Patient Case: Julie



Julie, age 6, has NF1 diagnosed in infancy (6+ café-au-lait macules, axillary and inguinal freckling; her mother also has NF1).



She is seen for routine annual NF surveillance. At intake, her mother mentions Julie has been rubbing her left lower back and skipping activities she used to enjoy.



On exam, the nurse palpates a new, soft, non-tender fullness along the left paraspinal area and notes subtle posture asymmetry, which have not been documented at prior visits.

The Oncology Nurse's Role

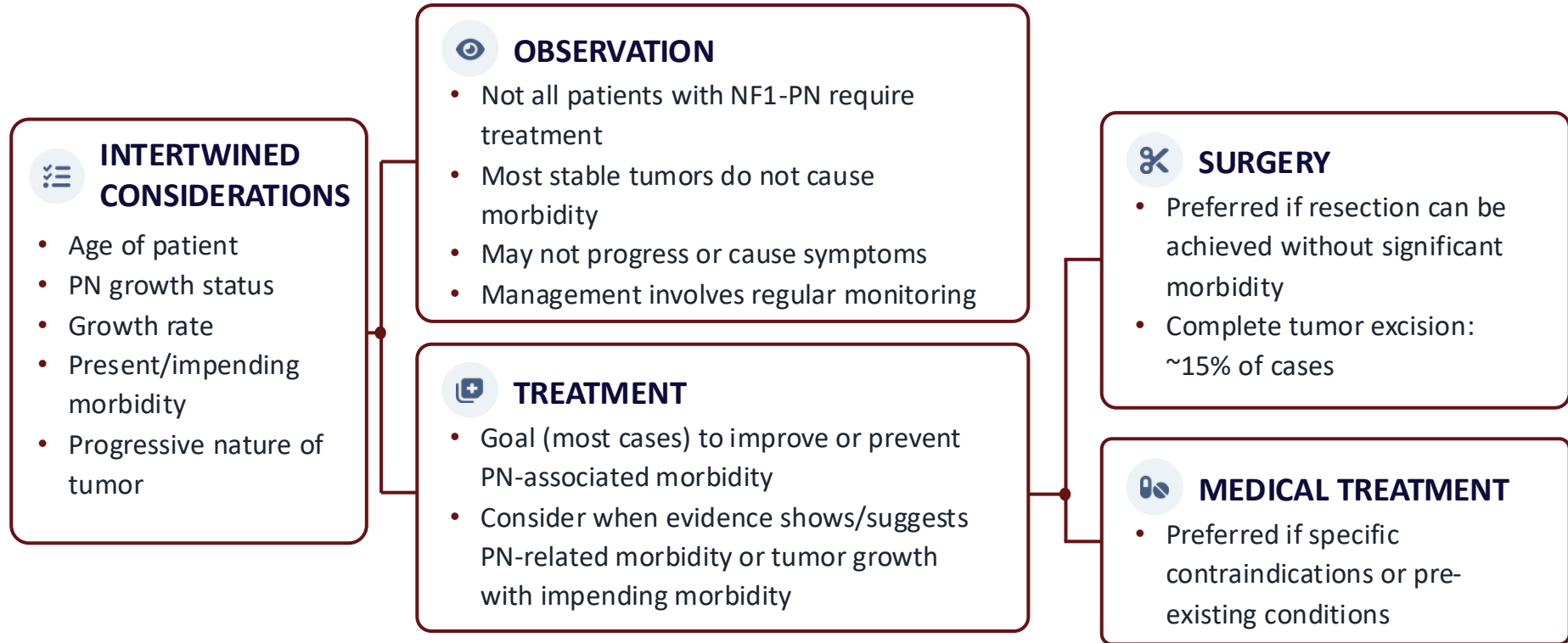
- Recognize hallmark NF1 features and track them over time.
- Take a focused symptom history: night pain, weakness, bowel or bladder change, rapid growth.
- Document the change objectively and compare with the prior record.
- Communicate the finding promptly to the NF provider to prompt evaluation.
- Explain next steps to Julie and family in clear, age-appropriate language.

Integrating MEK Inhibitors into NF1-PN Management

Evidence, Monitoring, and Safety

NF1-PN Management

From Observation to Treatment Selection



Targeted Medical Therapy for NF1-PN

Several MEK inhibitors and tyrosine kinase inhibitors (TKIs) have demonstrated activity against NF1-PN.

Outcomes of note in clinical trials:

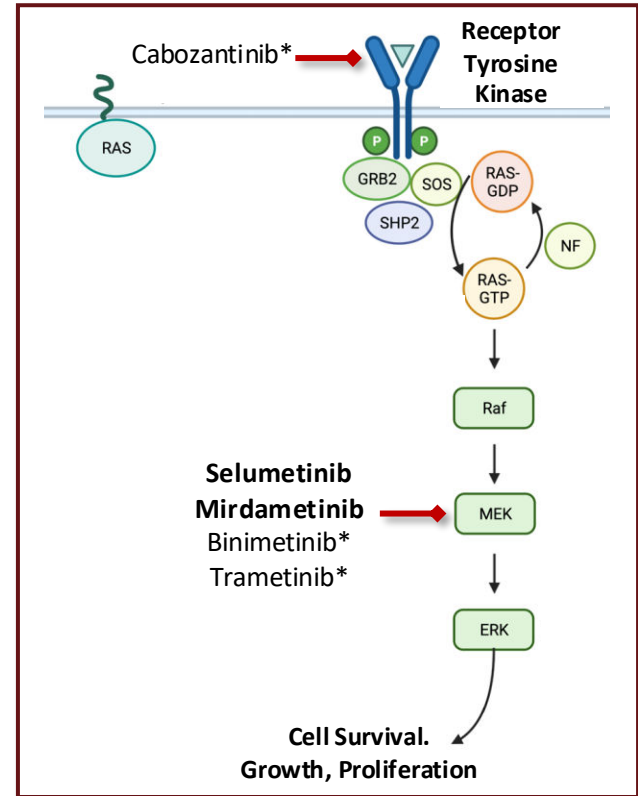
- Assessed PN growth and response via 3D volumetric analysis
- Patient-reported and functional outcome assessments

SELUMETINIB

FDA-approved in **adult and pediatric** patients 1 year of age and older with NF1 who have symptomatic, inoperable PN

MIRDAMETINIB

FDA-approved in **adult and pediatric** patients 2 years of age and older with NF1 who have symptomatic PN not amenable to complete resection



*These agents are not FDA-approved for the treatment of NF1-PN.

NF = neurofibromin; SHP2 = Src homology-2 protein tyrosine phosphatase.

Na B, et al. *Curr Oncol Rep*. 2024;26:706-713. Armstrong AE, et al. *BMC Cancer*. 2023;23(1):553.

Fischer MJ, et al. *Neuro Oncol*. 2022;24:1827-1844. de Blank PM, et al. *Neuro Oncol*. 2022;24:1845-1856.

Selumetinib [package insert]. https://www.accessdata.fda.gov/drugsatfda_docs/label/2026/219943s003lbl.pdf.

Mirdametinib [package insert]. <https://dailymed.nlm.nih.gov/dailymed/getFile.cfm?setid=4c41bf90-5fa7-4935-a95c-e047ea6bbf8e&type=pdf>.

Pediatric MEKi Trial Efficacy

Selumetinib (SPRINT Trial)	Mirdametinib (ReNeu Trial)
- Pediatric cohort (n = 74) - Median duration of treatment: 57.5 cycles (54 months) - Remaining on treatment at data cutoff (n = 31)	- Pediatric cohort (n = 56) - Median duration of treatment: 23.6 cycles (22 months)
- Partial response - Confirmed and durable: 70% and 59% - Median time to response - Initial: 8 cycles (range 4–40) - Best response: 18 cycles (range 4–94) - Median PFS 88 cycles (6.7 years)	- Partial response - Confirmed and durable: 52% and 39% - Median time to response - Initial: 8 cycles (range 4–19) - Best response: 14.3 cycles (13.4 months, range 4–33) - Median PFS not reached
Self-reported Numeric Rating Scale-11 (NRS-11) scores improved throughout treatment	Participants had a clinically meaningful improvement from baseline in chronic pain intensity scores
- SPRINKLE Trial - Selumetinib granules demonstrated comparable exposure to capsules	- ReNeu - Available as a dispersible tablet

No head-to-head comparisons

Adult MEKi Trial Efficacy

Selumetinib (KOMET Trial)	Mirdametinib (ReNeu Trial)
- Cohorts: selumetinib (n = 71), placebo (n = 74) - Randomized, placebo-controlled, double-blind phase III trial - Continuous dosing - All patients open-label selumetinib after cycle 12 - Median selumetinib exposure, 554 days	- Cohort: mirdametinib (n = 58) - Open-label, phase IIb trial - Intermittent dosing (3 wks on, 1 wk off)
- Primary endpoint: response at cycle 16 - Selumetinib, 20% PR, 70% SD - Placebo 5% PR (n = 4: 2 by cycle 12; 2 by cycle 16)	- Primary endpoint: response at cycle 24 41% PR, 47% SD
Participants with baseline chronic pain intensity scores of at least 3 had a clinically meaningful improvement from baseline	Participants with responses had a clinically meaningful improvement from baseline in chronic pain intensity score

No head-to-head comparisons

PR = partial response; SD = stable disease; wk/wks = week/weeks.

Chen AP, et al. *Lancet*. 2025;405(10496):2217-2230. Moertel CL, et al. *J Clin Oncol*. 2025;43(6):716-729.

MEKi Options

- Response rates vary slightly across clinical trials, cohort size, and differences in patient characteristics, limiting comparison of outcomes across MEK inhibitors
- At present, selumetinib and mirdametinib demonstrate broadly comparable clinical activity and overlapping MEK inhibitor class toxicities
- MEK inhibitors may be prescribed based on insurance coverage, provider experience, and prior toxicities

SELUMETINIB

- Pediatric and adult patients
- Pill and granular (sprinkle) dosing
- Continuous therapy
- 6.2-hour serum half life
- Avoid CYP3A4 inhibitors



MIRDAMETINIB

- Pediatric and adult patients
- Capsule and dispersible tablet
- 3 weeks on, 1 week off
- 28-hour serum half life
- Effect of concomitant strong CYP3A4 inducers is currently unknown

**No head-to-head comparisons
No data on MEKi switching**

MEKi Safety in Pediatrics

All Grade	Selumetinib (Grade 3–4)		Mirdametinib (Grade 3–4)	
≥ 80%	Vomiting (6%)	All rashes* (6%)		
50%–79%	Abdominal pain	Rash acneiform (4%)	Rash* (3.6%)	Increased CPK (5%)
	Diarrhea (16%)	Increased CPK (7%)	Diarrhea (5%)	
	Nausea (2%)	Musculoskeletal pain		
	Stomatitis	Fatigue		
	Dry skin	Pyrexia (8%)		
20%–49%	Constipation	Proteinuria	Nausea	Left ventricular dysfunction (1.8%)
	Paronychia (6%)	Decreased appetite	Vomiting	Abdominal pain (3.6%)
	Pruritus	Decreased ejection fraction	Stomatitis	Musculoskeletal pain (1.8%)
	Dermatitis (4%)	Sinus tachycardia	Headache (1.8%)	Upper respiratory tract infection
	Hair changes	Skin infection (2%)	Paronychia	COVID-19
	Headache (2%)	Edema	Cough	
	Epistaxis		Pyrexia	
	Hematuria (2%)			

Data on adverse events occurring in ≥ 20% of pediatric patients.

*Rash includes dermatitis acneiform, eczema, maculopapular rash, pustular rash, dermatitis, erythematous rash, palmar-plantar erythrodysesthesia syndrome, exfoliative rash, skin exfoliation, pruritic rash, papule, papular rash, and macular rash.

CPK = creatine phosphokinase.

Selumetinib [package insert]. https://www.accessdata.fda.gov/drugsatfda_docs/label/2026/219943s003lbl.pdf.

Mirdametinib [package insert]. <https://dailymed.nlm.nih.gov/dailymed/getFile.cfm?setid=4c41bf90-5fa7-4935-a95c-e047ea6bbf8e&type=pdf>.

Selumetinib

Pediatric Warnings and Precautions

- Ocular toxicity: blurred vision, photophobia, cataracts, ocular hypertension, and retinal tear
 - 13% of pediatric population (resolved in 72%)
- Cardiomyopathy
 - Grade 2 LVEF decrease occurred in 17% of evaluable patients; decreased LVEF of $\geq 20\%$ occurred in 0.7% of patients and resulted in dose interruption and dose reduction; decreased LVEF resolved in 75% of these patients
- Skin toxicity
 - Rash occurred in 68% of pediatric patients (5% Grade 3); the most frequent rashes included dermatitis acneiform (47%), maculopapular rash (31%), pruritus (30%), alopecia (26%), and eczema (24%)
- Gastrointestinal toxicity
 - Diarrhea in 59% of pediatric population (10% Grade 3)
- Increased creatine phosphokinase
 - Occurred in 73% of pediatric population (8% Grade 3 or 4)
- Risk of bleeding
 - Vitamin E is excipient and can inhibit platelet aggregation and antagonize vitamin K-dependent clotting factors
- Embryo-fetal toxicity

Toxicities seen in the approved adult population:

- Retinal vein occlusion (RVO) and retinal pigment epithelial detachment (RPED)
- Intestinal perforation, colitis, ileus, and obstruction
- Cardiomyopathy (decreased left ventricular ejection fraction [LVEF])
- Severe palmar-plantar erythrodysesthesia syndrome
- Rhabdomyolysis

Mirdametinib

Pediatric Warnings and Precautions

- Ocular toxicity: RVO, RPED, and blurred vision
 - 19% of pediatric patients (17% Grade 1 and 1.7% Grade 2)
- Left ventricular dysfunction
 - Decreased LVEF of 10% to < 20% occurred in 25%, and decreased LVEF of $\geq$ 20% occurred in 1.8% of patients (all were identified during routine echocardiography; decreased LVEF resolved in 75% of adult and pediatric patients)
- Dermatological AEs
 - Rash occurred in 72% of pediatric patients (22% Grade 2, 3.4% Grade 3); higher frequency in patients aged 12 to 17 years (77%) than those aged 2 to 11 years (16%); non-acneiform rashes occurred with a higher frequency in patients aged 2 to 11 years (53%) than those aged 12 to 17 years (15%)
- Embryo-fetal toxicity

Toxicities seen in the approved adult population:

- Ocular toxicity: RVO, RPED, and blurred vision
 - 28% of adult patients (21% Grade 1, 5% Grade 2, and 1.3% Grade 3)
- Left ventricular dysfunction
 - Decreased LVEF of 10% to < 20% occurred in 16%, (all were identified during routine echocardiography; decreased LVEF resolved in 75% of patients)
- Dermatological AEs
 - Rash occurred in 92% of pediatric patients (37% were Grade 2, 8% Grade 3); rash requiring permanent discontinuation occurred in 11%
- Embryo-fetal toxicity

Long-Term Outcomes and Safety of MEK Inhibitors

Pediatric NF1-Associated Plexiform Neurofibroma

RESPONSE

- SPRINT (selumetinib, median ~5 years): durable tumor shrinkage and sustained pain improvement; no new safety signals
- ReNeu (mirdametinib, median ~2 years): PR rate increased with longer treatment duration; no new safety signals
- Median PFS ~6.7 years on treatment vs ~1.3 years in an age-matched natural history cohort

DURATION AND DISCONTINUATION

- PN regrowth is expected after stopping; retreatment has restored response in reported cases
- No validated stopping criteria — optimal duration remains undefined (NCT06175637 ongoing)

TOXICITY AND LONG-TERM MONITORING

- Ophthalmologic: 148 children — minimal long-term ocular impact; transient changes only, no lasting vision or structural change
- Hematologic: CBC trends in 98 children — decreased ALC and WBC, increased MCV vs baseline; clinical significance unknown
- Cardiac: 16/74 (22%) on SPRINT had asymptomatic LVEF decrease; first episode at a median of 20 cycles (range 4–95)
- Selumetinib: up to 99% had ≥ 1 treatment-related AE; 39% required at least one dose reduction due to AE; 8 participants (11%) who were eventually re-moved from treatment for selumetinib-related toxicity
- Mirdametinib: due to AEs, 30% had a dose interruption; 12% underwent dose reduction; 9% discontinued treatment

AE = adverse event; ALC = absolute lymphocyte count; CBC = complete blood count; LVEF = left ventricular ejection fraction; MCV = mean corpuscular volume; WBC = white blood cell count.

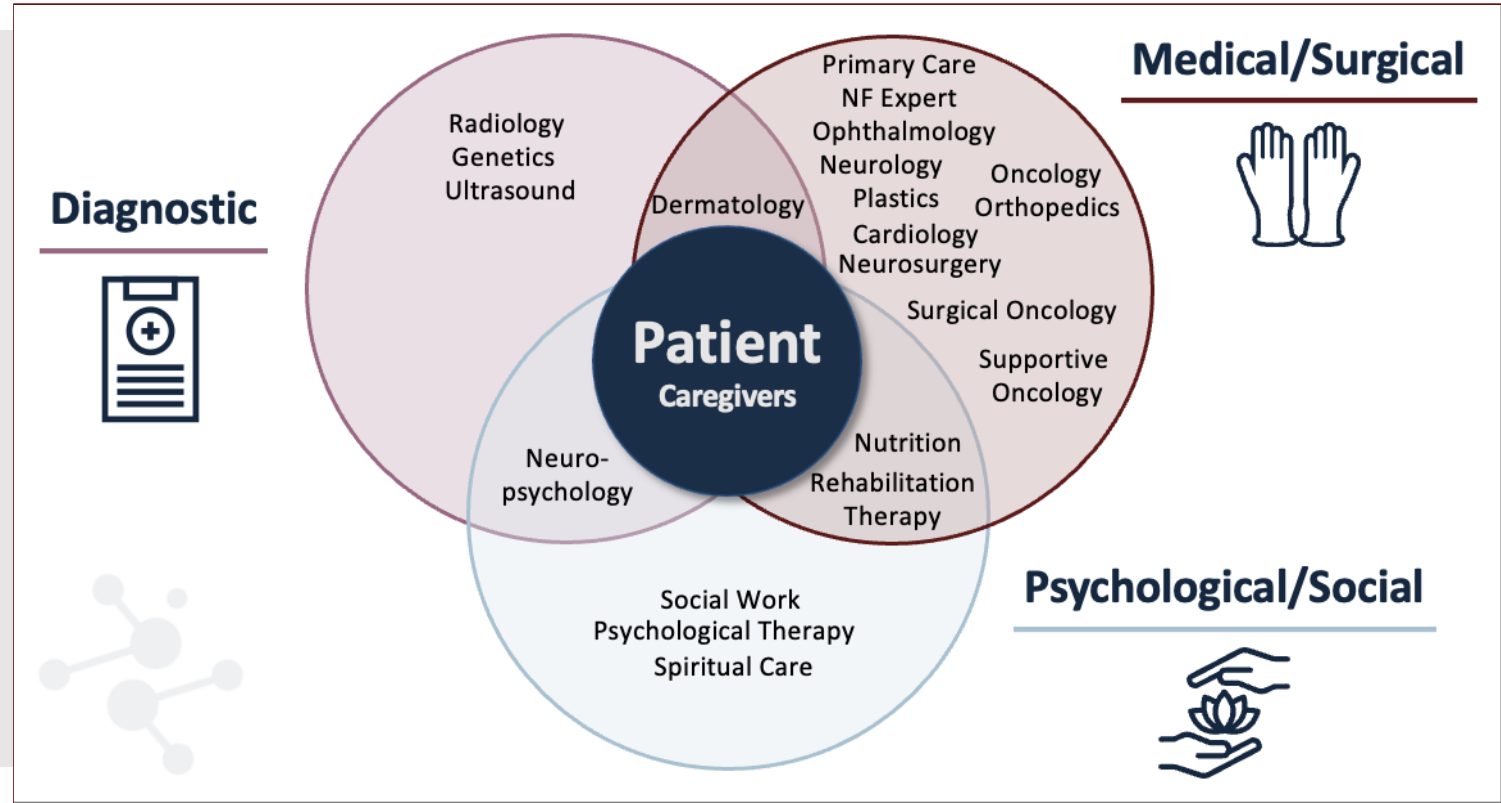
Avery RA, et al. *Ophthalmology*. 2026;133(2):291-294. Gross AM, et al. *Neuro Oncol*. 2023;25(10):1883-1894. Siegel AH, et al. *Pediatr Blood Cancer*.

2026:e70477. Kim H, et al. *Neuro Oncol*. 2024;26(12):2352-2363. Moertel CL, et al. *J Clin Oncol*. 2025;43:716-729. Selumetinib [package insert].

https://www.accessdata.fda.gov/drugsatfda_docs/label/2026/219943s003lbl.pdf. Mirdametinib [package insert].

<https://dailymed.nlm.nih.gov/dailymed/getFile.cfm?setid=4c41bf90-5fa7-4935-a95c-e047ea6bbf8e&type=pdf>.

Multidisciplinary Care for Patients with NF1



NF1-PN and MEKi Therapy Monitoring



Exam

Review of systems and physical examination
(including GI, vision, skin, oral mucosa, and nails)

Ophthalmologic examination

Echocardiogram/ejection fraction

Electrocardiogram

Pregnancy status

Laboratory examinations



Monitoring

- Every visit (generally monthly)
- Baseline, then every 6–12 months
- Consider increased frequency with new symptoms
- Baseline, every 3–6 months
- Baseline, then as clinically indicated
- Baseline, then per institutional standards
- Baseline, then every 3–6 months: creatine kinase, metabolic panel, liver function tests, CBC
- Baseline, then as clinically indicated: amylase, lipase

GI = gastrointestinal.

Friedman JM. Neurofibromatosis 1. In: Adam MP, et al., eds. *GeneReviews*. Seattle (WA): University of Washington, Seattle; 1993 (updated 2025).
Moodley M, et al. *Semin Pediatr Neurol*. 2024;52:101172. Na B, et al. *Curr Oncol Rep*. 2024;26:706-713. Lee TJ, et al. *Orphanet J Rare Dis*. 2023;18(1):292.



About 6 weeks after starting the MEK inhibitor, Julie develops an acneiform and eczematous facial rash and early redness around two toenails (paronychia). Her mother calls the clinic, worried, and asks whether Julie should stop the drug. Which response is most appropriate?

- A. Permanently discontinue the MEK inhibitor, because early rash predicts more severe toxicity
- B. Advise that PN control benefits typically appear early, within the first 4 weeks, so stopping now is reasonable if no response is seen
- C. Reassure the family that the toxicity is expected and requires no intervention
- D. Triage and grade the toxicity, start protocol-based skin care, reinforce adherence, and involve dermatology if warranted
- E. I don't know

Management of MEK Inhibitor Dermatological Toxicities

Expert Recommendations for Skin Care for ALL PATIENTS

- Counseling to adopt gentle skin care practices, daily baths, and the use of mild cleansers
- Use of cream or ointment-based hypoallergenic skin moisturizers at least twice a day

Patient Group	Prepubescent Patients		Postpubescent Patients
All patients upon MEK inhibitor initiation	Directions for bleach baths should be provided to patients and can begin with MEKi treatment or in reaction to the development of rash • Add ¼ to ½ cup of regular strength bleach to a full bathtub (or approximately 1 teaspoon per gallon) and soak 5–10 minutes • Recommended frequency is 3x per week • Follow immediately by a high-quality hypoallergenic skin moisturizer		Prophylactic treatment with topical clindamycin and an oral tetracycline at an anti-inflammatory dose is recommended • Topical clindamycin lotion 1.0% BID should be applied to the face • Begin treatment with a tetracycline (e.g., doxycycline or minocycline) 50 mg/day for 3 months
Mild rash reactive treatment	DERMATITIS Use hydrocortisone cream 2.5% BID for face and skinfold areas, and triamcinolone ointment 0.1% BID on trunk and extremities	ACNEIFORM RASH Topical clindamycin lotion 1.0% BID should be used until rash is clear, and as needed thereafter; hydrocortisone cream 2.5% BID can be added	If acneiform rash still develops and bothers patient, add hydrocortisone cream 2.5% BID or triamcinolone ointment 0.1% BID
Moderate to severe rash reactive treatment		ACNEIFORM RASH Cephalexin 20 mg/kg/day divided BID (with max dose of 500 mg) for up to 6 weeks or Amoxicillin 25 mg/kg/day divided BID (with max dose of 875 mg) for up to 6 weeks	
Referral to dermatology	Dermatitis uncontrolled with recommended supportive care	For moderate/severe acneiform rash concurrent with initiation of cephalexin/amoxicillin, or suspected infection	If acneiform rash continues to worsen or if an infection is suspected, refer to dermatology; stronger topical steroids or oral retinoids may be added
Agents and strategies to avoid	Agents with the potential to dry skin, such as benzoyl peroxide, salicylic acid, acne skin washes, scrubs, exfoliants, anti-aging creams, alcohol (cleansers, wipes), or other agents that can dry skin; avoid topical retinoids		

BID = twice daily.

Hirbe AC, et al. *Front Oncol*.16:1826735. Oztosun G, et al. *Expert Opin Investig Drugs*. 2025;34(9):665-673. Azizi AA, et al. *Neuro-Oncology Practice*. 2024;11(5):515-531.

Management of MEK Inhibitor Diarrhea

DIARRHEA RECOMMENDATIONS FOR ALL PATIENTS

First onset of diarrhea is typically reported during the first 2 cycles of MEKi treatment, typically grade 1 or 2.

- For diarrhea, all patients should be counseled at treatment initiation to manage their diet

Initial interventions for grade 1–2 diarrhea should include avoidance of greasy foods and possible adoption of the BRAT diet.

- Probiotics can also be added
- If this is insufficient, loperamide or similar anti-diarrheal agents can be used per institutional practice

Consider if other newly prescribed medications may be contributing to diarrhea.

Management of MEK Inhibitor Cardiac Toxicities

- **Baseline**
 - Cardiovascular assessment, including echocardiogram to assess LVEF
 - Blood pressure, including hypertension correction
 - Review medications
- **Routine monitoring**
 - Repeat echocardiogram at 4 weeks, then every 3 months
 - Routine clinical assessment for cardiotoxicity (dyspnea, edema, palpitations)
- **LVEF reduction**
 - Asymptomatic: withhold selumetinib/mirdametinib until resolution; resume at reduced dose
 - Symptomatic or severe: permanently discontinue
- **Hypertension**
 - Mild-moderate: initiate or adjust antihypertensive medication
 - Stage 2 hypertension: hold until controlled; resume at reduced dose
 - Grade 4: discontinue
- **QTc prolongation**
 - ≥ 500 ms or increases by > 60 ms from baseline, hold therapy until normalization, resume at reduced dose or permanently discontinue on recurrent events

Management of MEK Inhibitor Ocular Toxicities

- Baseline ophthalmic examination
- Routine monitoring
 - Ophthalmic exams ever 3–6 months
 - Prompt assessment of visual changes (blurred vision, floaters, photophobia, visual field changes)

Selumetinib	
RPED	• Withhold until resolution • Resume at reduced dose
RVO	• Permanently discontinue

Mirdametinib	
Grade ≤ 2	• Continue mirdametinib at current dose level • Consider ophthalmologic examinations every 2–4 weeks until resolution to grade ≤ 1 or baseline
Grade ≥ 3	• Withhold mirdametinib until grade ≤ 1 or baseline • If recovery occurs ≤ 14 days, resume mirdametinib at the next lower dose • If recovery occurs in > 14 days, consider permanent mirdametinib discontinuation
RPED	• Withhold mirdametinib until grade ≤ 1 or baseline • Resume mirdametinib at the same dose
RVO	• Permanently discontinue mirdametinib

Azizi AA, et al. *Neurooncol Pract*. 2024;11(5):515-531. Han J, et al. *Oncology (Williston Park)*. 2023;37(3):130-141. Jeng-Miller KW, et al. *Oncologist*. 2024;29(5):e616-e621.
 Selumetinib [package insert]. https://www.accessdata.fda.gov/drugsatfda_docs/label/2026/219943s003lbl.pdf
 Mirdametinib [package insert]. <https://dailymed.nlm.nih.gov/dailymed/getFile.cfm?setid=4c41bf90-5fa7-4935-a95c-e047ea6bbf8e&type=pdf>.

Patient Case: Julie



MRI confirms a paraspinal PN involving multiple nerve fascicles.

Over ~18 months it enlarges; Julie (now 8) has intermittent pain and trouble keeping up in physical education classes.

Surgical review: the PN encases nerve roots and is not amenable to complete resection without significant morbidity and is judged inoperable.

Based on trial evidence for symptomatic, inoperable PN, a MEK inhibitor is offered.

The Oncology Nurse's Role

- Support an evidence-informed discussion: realistic expectations around partial volume reduction, response over months, pain improvement.
- Provide baseline drug education: administration, food effects, adherence.
- Set up baseline monitoring: echocardiogram, ophthalmology, labs.
- Coordinate the multidisciplinary team and address family questions and fears.



Which statement accurately characterizes the differences/similarities between the pediatric and adult NF1 care models that should inform transition planning?

- A. Multidisciplinary clinics and dedicated care coordination are more common in pediatric than in adult NF1 care
- B. Adult NF1 care generally offers longer appointments and more robust social work support than pediatric care
- C. Care coordination programs for adults with NF1 are more widely distributed
- D. Pediatric and adult providers both have a duty to address non-adherence
- E. I don't know

Supporting Longitudinal and Coordinated NF1 Care Across the Lifespan

Patient Case: Julie



Julie is now 16, with reduced tumor volume and improved pain on therapy.

Like many people with NF1, she has learning difficulties that affect self-management readiness.

The team begins preparing her for transition to adult-focused care.

The Oncology Nurse's Role

- Start transition planning early and assess self-management readiness.
- Build a portable medical summary and coordinate a warm handoff to adult providers.
- Confirm insurance and coverage continuity for the MEK inhibitor to avoid treatment gaps.
- Foster Julie's growing autonomy while keeping family involved.
- Safeguard continuity of monitoring across the pediatric-to-adult transfer.

Core Elements of Health Care Transition

Key Elements for Transition to Adulthood Program

- Annual assessments to plan transition
- Establishment of yearly personal goals
- Bi-monthly adolescent and young adult transition planning meetings
- Dedicated collaborative specialists across the lifespan

1

TRANSITION POLICY



Ages 12–14

- Discuss transition policy with patient and family

2

TRANSITION TRACKING AND MONITORING



Ages 14–18

- Track progress

3

TRANSITION READINESS



- Assess skills

4

TRANSITION PLANNING



- Develop health care transition plan, including medical summary

5

TRANSFER/ INTEGRATE INTO ADULT-CENTERED CARE



Ages 18–21

- Transfer to adult-centered care
- Integration into adult practice

6

TRANSITION COMPLETION AND ONGOING CARE WITH ADULT CLINICIAN



Ages 18–26

- Confirm transfer completion
- Elicit feedback

Transition from Pediatric to Adult Care

Differences in Delivery of Care

	Pediatric Care Model	Adult Care Model
Practice approach	• Family-centered • Shared decision-making with parents	• Patient-centered • Shared decision-making with patient
Multidisciplinary staffing	• Multiple subspecialists are often available for an MDT approach to care – “one-stop shop”	• Few or no “one-stop shop” multidisciplinary clinics • Separate referrals/appointments for each specialist needed
Coordination of care and access to support services	• Coordination of care often provided by clinic coordinator or nurse navigator • Social work and case management support is often available	• Care coordination services are not often provided; few public care coordination programs are available for adults with NF1 • Less social work, case management staffing, and support available
Length of appointment	• Longer (15-30 min)	• Shorter (< 15 min)
Adherence to care	• Frequent reminders and support from healthcare system • Health care professional has the duty to report non-adherence that may reach a level that looks like medical negligence	• Expectation of self-adherence; often no appointment reminders or follow-up from missed appointments • Health care professional has no reporting duty of non-adherence, unless patient has a court-appointed guardian and is being neglected per provider opinion

MDT = multidisciplinary team.

White PH, et al. *Pediatrics*. 2018;142:e20182587. Radtke HB, et al. *Pediatric Health Med Ther*. 2023;14:19-32.

BARRIERS

to Successful NF1 Health Care Transitions

PEDIATRIC CARE

HEALTH CARE TRANSITION

ADULT CARE

CARE TEAM AND CARE MODEL

1



LIMITED STAFF AVAILABILITY

Social work, care coordination, occupational therapy, genetic counseling, nursing, and case management

2



LACK OF ADULT PROVIDERS

Fewer providers willing to take over care

3



LESS SUPPORTIVE APPROACH

Less support in adult vs pediatric health care

COVERAGE AND LEGAL SUPPORT



4

INSURANCE

Limited or lack of insurance



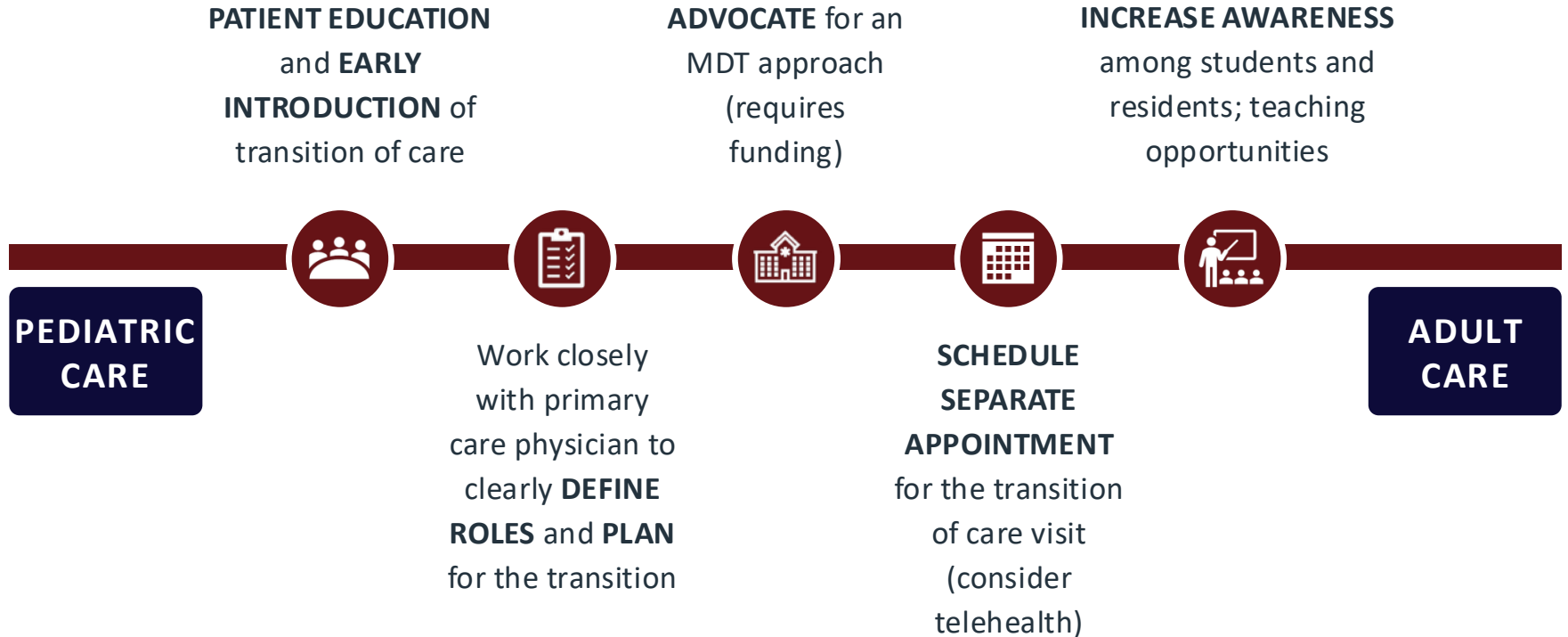
5

LEGAL SUPPORT

Lack of timely legal support

POTENTIAL SOLUTIONS

to Transition Barriers





Put information into action!

Takeaways from this program can be implemented into your practice to improve patient care.

- ***NF1 referral pathway.*** Within 30 days of the activity, identify at least one regional, national, or virtual NF1 specialty center and incorporate its referral/contact information into local practice resources to support timely connection of patients with complex NF1 care needs to clinicians experienced in NF1 diagnosis, monitoring, treatment, and care navigation.
- ***Multidisciplinary NF1 care coordination.*** Within 60 days of the activity, refine a practical multidisciplinary care workflow for patients with NF1, including clear triggers for referral to neurology/neuro-oncology, genetics, cardiology, nephrology, pulmonology, ophthalmology, dermatology, and psychosocial support specialists and other services based on patient-specific manifestations, treatment needs, and surveillance concerns.
- ***Age transition planning.*** Within 90 days of the activity, revisit your transition-support strategy for adolescents and young adults with NF1 that includes early anticipatory guidance, patient and caregiver education, documentation of disease/treatment history and monitoring needs, identification of adult care providers, and follow-up processes to reduce gaps in care during the shift from pediatric- to adult-focused management.

Additional Resources

Visit www.ceconcepts.com
for clinical information and
certified educational activities

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In-Person



Livestream





Finding the Right Rhythm

Supporting Pediatric Oncology Nurses in Longitudinal NF1 Management

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