Growth – Addressing Concerns and Management

Potential Barriers and Suggested Ideas for Change

Key Activity: **Monitor and Discuss Growth and Pubertal Development**

Rationale: Accurate and regular monitoring of growth data and pubertal development can help clinicians recognize and effectively treat growth failure.

Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
Gap: Essential growth measurements are not documented at all pediatric health supervision visits or all endocrinologist visits.		
Clinicians and/or staff do not recognize the importance of accurately and consistently measuring and documenting patients' growth.	• Review AAP recommendations that outline clinician responsibilities for accurate and reliable growth measurements: Assessing growth and nutrition. In: Tanski, S, Garfunkel, L, Duncan P, Weitzman M. *Performing Preventive Services: A Bright Futures Handbook.* Elk Grove Village, IL: American Academy of Pediatrics; 2010:51–56. Available at: http://ebooks.aappublications.org/content/performing-preventive-services-a-bright-futures-handbook. Accessed on January 24, 2018	• Discuss with staff the importance of reliable growth measurements to reassure patients and families of adequate growth and to use for clinical decision-making and intervention: ✓ To detect growth abnormalities ✓ To detect abnormalities in nutritional status ✓ To detect diseases that affect growth ✓ To track the effects of medical or nutritional intervention
The practice does not have a systematic approach for obtaining and documenting patients' growth.	• Use AAP-recommended tools for documenting essential growth measurements: ✓ WHO Growth Charts for Children 0–23 Months of Age ✓ CDC Growth Charts for Children 2 Years of Age and Above • Establish clear office procedures for obtaining, plotting, and discussing essential growth measurements. Consider the following: ✓ Develop a visit flow for obtaining and recording growth measurements at every health supervision visit. The flow should consider the patient and family, physician, and staff members' time, office efficiency, equipment and backup contingencies. Note: Recording growth parameters at sick visits fills in the gaps between scheduled health supervision visits and provides a more complete record of the child's growth.	• Consult with other practices about their office procedures for growth measurement, documentation, and family discussions. Adapt ideas that work for other practices into your office procedures. • Periodically audit office procedures to assure they are effective and that staff members follow them consistently and correctly. • Consider using age-appropriate Bright Futures Visit Forms *(scroll down from the Web page and click on title to reveal forms)* for a place to record measurements and to remind

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Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
	✓ Identify roles and responsibilities for measurement and plotting growth and for the clinician to review the growth chart and summarize results with the patient and family. ✓ If patients are not keeping regularly scheduled health supervision appointments, consider implementing a reminder and recall system or implementing other suggestions made in content for Monitor and Discuss Growth and Pubertal Development of this EQIPP course to improve adherence.	staff to record measurement information. • If staff feels rushed to take and document measurements, revisit the scheduling system to ensure adequate time is allotted to appointments.
Gap: Growth measurements are not consistently shared with the patient and family.		
There is a lack of a process to share growth data, or the discussion with the family takes place, but is not documented.	• Include an office procedure to share the growth summary with the patient and family and to document sharing it: ✓ Utilize EMR electronic reminders or flags to remind practitioners to discuss growth data with families at all health supervision visits. ✓ Build a question or check box in patients' charts, the EMR, the after-visit summary, or the clinician's dictation or progress template to document that growth data is shared with the patient and family.	• Use a written or electronic checklist at the end of health supervision visits to ensure key topics such as growth data are addressed. • Recognize and stress with staff the importance of documentation as a necessary component of high-quality care. Realize that actions that are not documented are considered not done.
Gap: Pubertal development is not documented at all pediatric health supervision visits or all endocrinologist visits.		
Clinicians do not recognize the importance of assessing sexual maturity stages or they may be unfamiliar with documenting the various stages of development.	• Review the guidelines and recommendations that outline clinician responsibilities for assessing sexual maturity stages for pediatric patients: ✓ Performing Preventive Services: A Bright Futures Handbook: Physical Examination: Sexual Maturity Stages (pp. 79-86). ✓ Keep visual and descriptive tools of the stages of normal puberty for both genders handy and available. See SMR ratings. • Consider taking the AAP PediaLink Essentials course, Endocrinology: Pubertal Variation.	• Review the following literature: ✓ Bordini B, Rosenfield R. Normal pubertal development: part I: the endocrine basis of puberty. *Pediatr Rev.* 2011;32:223-229 ✓ Bordini B, Rosenfield R. Normal pubertal development: part II: clinical aspects of puberty. *Pediatr Rev.* 2011;32:281-292
The practice does not have a systematic approach for documenting pubertal development.	• Establish clear office procedures for assessing and documenting pubertal development at every health supervision visit and at every age. Consider the following:	• Recognize the importance of accurate and reliable documentation as a necessary component of high-quality care. Avoid nonspecific documentation (eg, "normal for age")

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Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
	✓ Ensure that office staff recognizes that a complete physical examination that includes pubertal development status will take place at every health supervision visit. Create a short statement that staff may use when rooming patients. For example, *As part of the health supervision visit today, your son/daughter will have a complete physical examination of his/her anatomy from head to toe.* ✓ Develop strategies to address patient or family discomfort or hesitancy about the pubertal development examination. ✓ Determine where and how to document gender-specific pubertal development stages in the medical record. Include an area in which to document family discussions.	and record specific sexual maturity stages. • Periodically audit office procedures to assure they are effective and are followed consistently and correctly.
There is discomfort or hesitancy about the pubertal development examination.	• Identify the reason for such discomfort or hesitancy – for example, embarrassment, fear of pain, cultural or religious beliefs opposing the examination, history of abuse, cognitive, behavioral, or physical limitations, gender/chaperone/privacy issues. • Normalize the procedure by explaining that a pubertal development examination is a standard component of every child's health supervision visit. Make every attempt to convince, but not coerce. • Offer options to maximize the patient's comfort (ie, accommodate patient preference to wear a gown or to wear loose clothing and explain the examination process ahead of time to ease fears.	• Postpone the examination and suggest that the parent and child return to discuss at a follow-up visit. • Refer the patient to a same gender clinician if available. • Consider sedation for patients with emotional or intellectual disabilities, as needed.
Gap: Pubertal development is not discussed with patients and families at the pediatric health supervision visit. For endocrinologists, it is not discussed at the initial visit.		
There is no process for sharing pubertal development assessments, or the discussion with the family takes place, but is not documented.	• Include an office procedure to share the pubertal assessment with the patient and family and to document sharing it: ✓ Utilize EMR electronic reminders or flags to remind practitioners to discuss pubertal maturity ratings with families at all health supervision visits. ✓ Build a question or checkbox in patients' charts, the EMR, the after-visit summary, or the clinician's dictation or progress template to document that growth data is shared with the patient and family.	• Use a written or electronic check list at the end of health supervision visits to ensure key topics such as growth data are addressed. • Recognize and stress with staff the importance of documentation as a necessary component of high-quality care.

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Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
Gap: Patients and families are not asked about their growth or pubertal development concerns.		
Patients and families are not asked about concerns regarding growth or pubertal development.	• Consider a previsit questionnaire or prompts in the documentation for the medical encounter that ask questions about family concerns in general and about growth and puberty development specifically. For example, ask, “What concerns do you have about your or your child’s growth or pubertal development?” • Then, following the discussion, ask, “Have I adequately addressed all your concerns?”	• Develop a post-visit process, for example, have the discharging nurse ask patients and families if all their concerns were addressed at this visit.

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Growth – Addressing Concerns and Management

Potential Barriers and Suggested Ideas for Change

Key Activity: Investigate and Manage Growth Concerns

Rationale: Patients with suspected abnormal growth or pubertal development require timely evaluation to determine if a growth problem exists, and if so, to necessitate timely treatment and follow-up to effectively treat the condition. Referral to a pediatric endocrinologist or other specialist should be considered as warranted. Plans for further evaluation and treatment should be documented; developed in partnership with the patient and family; and address the patient's and family's medical, psychosocial, and educational needs.

Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
Gap: Steps necessary for further evaluation of growth or pubertal-related concerns are not taken or documented within recommended intervals.		
The practice does not have a systematic process for further evaluation when abnormal growth or pubertal development is suspected.	• Establish clear office procedures for following up on suspected abnormal growth or pubertal development. Consider the growth assessment flow to assist in developing the evaluation plan. ✓ Obtain growth parameters such as growth velocity, upper to lower segment ratio, and mid-parental height. ✓ Schedule patient follow-up within suggested intervals (1 month if <1 year; 2–4 months if 1–3 years; 3–6 months if >3 years of age). ✓ Order laboratory tests and imaging, as needed. Or consider referral to pediatric endocrinologist/specialist, as appropriate. ✓ Ensure tests results are completed and reviewed by the physician. Follow up and document the reason for any noncompleted tests. ✓ Document tests ordered and results in the patient's care plan. ✓ Share tests results with the patient and family. ✓ Establish or communicate with the multidisciplinary care team as appropriate. (See the list of essential patient information to send or obtain with referral.)	• Generalist and endocrinologist discuss a growth assessment plan that works effectively for your practices. • Consult with staff to determine where breakdowns in the growth assessment flow are occurring and why. Brainstorm suggestions to resolve and incorporate new and promising ideas into the flow.
Patients and families are not keeping appointments, perhaps because they forget or because they do not realize the importance of the visit.	• Educate patients and families about the importance of ongoing health supervision visits to monitor growth and well-being. Review the recommended assessments and timeframes that support favorable health outcomes. • Implement a reminder and recall system using Electronic Medical Record (EMR) system, internal memo, or chart reminder.	• Engage social workers or case managers in the attempt to improve adherence to regular health supervision. Social service support may be available for transportation, visiting nurse, respite, or other services that limit the patient's access to care.

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Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
Some families may fail to keep appointments because they have limited access to care, eg, lack of insurance coverage, inability to take time off from employment, lack of transportation, other caretaking responsibilities, or conflicts with parents' work or child's school/activity schedule.	• Set up a registry or other system that tracks patients who are not being seen regularly. Designate a staff member to reach out to families who are not seen at recommended intervals. • Consider ways to improve access to care within the practice—for example, additional evening or Saturday appointments.	
Gap: Essential patient information is not sent or obtained with referrals.		
The practice does not have a systematic process for sending/obtaining referred patient information or does not know what data should be included.	• Review your office procedures for following up on growth or pubertal development concerns (as described in Row 1 of this document) to ensure that essential patient information is sent or obtained with referrals: ☐ History ☐ Physical examination ☐ Growth charts ☐ Medications ☐ Laboratory and imaging results, if any (See the growth assessment flow for suggested studies as a starting point of reference.) ☐ Summary of case (ie, impression of growth concern) ☐ Assessment of psychosocial concerns ☐ Contact information for the referring physician ☐ Contact information for the patient/family	• Generalist and endocrinologist discuss a growth assessment plan that works effectively for your practices. • Consult with staff to determine what information is not being sent or obtained and why. Brainstorm suggestions to resolve and incorporate new and promising ideas into the growth assessment flow.
Gap: Written care plans to evaluate and manage growth and pubertal concerns are not established, maintained, updated, or shared with the patient and family.		
The importance of developing or maintaining a written care plan with input from the patient and family is not recognized.	• Review the 2002 AAP Medical Home Policy Statement (reaffirmed in 2008), which defines the concept of the medical home and outlines the importance of written care plans and effective care coordination between the pediatric medical home, the specialty care team, and other providers.	• Discuss with staff the importance of developing and maintaining a care plan. ✓ To improve patient care and long-term patient outcomes ✓ To determine the need for referral and treatment

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Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
		✓ To monitor the effects of intervention
A systematic approach for creating, updating, and sharing the care plan is not in place.	• The following action items can be used to create a practice procedure for creating, updating, and sharing growth/puberty care plans: ✓ Meet with staff to gather information and ideas about establishing an officewide procedure for creating and maintaining care plans. ✓ Identify roles and responsibilities for documenting and maintaining information in the plan, including specific responsibilities for updating elements of the case plan (as identified above). ✓ Develop a visit flow for documentation and maintenance of the care plan that considers the patient and family, physician, staff members, office efficiency, equipment, and backup contingencies. ✓ Include checks and balances in office procedures to ensure that: – The clinician reviews the care plan at each visit. – All care plan elements are documented or updated. – The care plan is shared with the patient, family, and essential team members. – The benefits and possible side effects of treatment are communicated to the patient and family. – Any identified diagnostics tests have been completed, reviewed, documented, and communicated to the patient and family. – If tests are not completed, follow up to identify the reason and document the reason for noncompletion. • Standardize how and where the care plan is documented and maintained: ✓ After the visit summary ✓ Care plan as a separate document ✓ EMR ✓ Other	• Consult with other practices about their office procedures for care plans and adapt them for your purposes. • Stress with staff the importance of care plan documentation as a necessary component of high-quality care. Help them recognize that actions that are not documented may not have been done. • Periodically audit office procedures to assure their effectiveness and that staff members follow them consistently and correctly.
There is not enough time in the visit to create, update, or share the care plan.	• Revise the practice schedule to ensure adequate time for appointments. • Reevaluate office procedures, including visit flow and roles and responsibilities, to improve efficiency and have adequate checks and balances in place. Modify office procedures as needed.	• Consult with other practices about how their care plans are created, updated, and shared with the patient, family, and other care team members. Adapt ideas that work for other practices into your office procedures.

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Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
	• Revisit the care plan format and select a form (after visit summary, EMR, progress notes, etc.) that is most effective and efficient for the clinician and for staff maintaining care plan data.	
Gap: Diagnostic test results are not reviewed by the provider, shared with the family, or incorporated into the patient's care plan. *(Follow-up attempts should be made if tests are ordered but not completed.)*		
There is no process to follow up to ensure ordered tests were completed.	• As described above, establish clear office procedures for following up on suspected growth failure and testing. This includes ensuring tests are completed and reviewed by the physician, following up and documenting the reason for any noncompleted tests, documenting test results in the patient's care plan, sharing the results with the patient and family, and communicating with the multidisciplinary care team if one is in place.	• Implement a reminder and recall system using Electronic Medical Record (EMR) system, internal memo, or chart reminder to check on test completion. Establish staff responsibility for follow-up if tests are not completed.
Gap: Growth hormone (GH) therapy is not initiated or discontinued per recommended guidelines. *(This gap pertains primarily to endocrinologists.)*		
Clinician is unsure about when to consider growth hormone therapy.	• The FDA approved the use of GH therapy to treat children with short stature who have one of the following conditions: ✓ GHD ✓ Renal insufficiency ✓ Prader-Willi syndrome ✓ Turner syndrome ✓ Children born small for gestational age ✓ Idiopathic short stature (ISS) ✓ SHOX deficiency ✓ Noonan syndrome • Review the following guidelines: ✓ Grimberg A, DiVall S, Polychronakos C, et al.; The Drug and Therapeutics Committee, the Ethics Committee of the Pediatric Endocrine Society. Guidelines for growth hormone and insulin-like growth factor-I treatment in children and adolescents: growth hormone deficiency, idiopathic short stature, and primary insulin-like growth factor-I deficiency. *Horm Res Paediatr.* 2016;86(6):361–397. Available at: https://www.karger.com/Article/FullText/452150. Accessed January 24, 2018	• Consult a classic pediatric endocrine textbook such as Sperling M. *Pediatric Endocrinology*. Elsevier/Saunders, 2014 or Kappy M. *Pediatric Practice: Endocrinology*. 2014.

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Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
Clinician is unsure about when to discontinue growth hormone therapy.	• Review expected growth velocities during the first year of therapy in the following: ✓ Bakker B, Frane J, Anhalt H, Lippe B, Rosenfeld RG. Height velocity targets from the National Cooperative Growth Study for First-Year Growth Hormone Responses in Short Children. *J Clin Endocrinol Metab.* 2008;93(2):352–357 • When the growth plates are nearing fusion, growth-promoting doses of growth hormone should be stopped. For growth velocity and bone age criteria for stopping the growth hormone, review the following: ✓ Cohen P, Rogol AD, Deal CL, et al. Consensus statement on the diagnosis and treatment of children with idiopathic short stature: a summary of the Growth Hormone Research Society, the Lawson Wilkins Pediatric Endocrine Society, and the European Society for Paediatric Endocrinology Workshop. *J Clin Endocrinol Metab.* 2008;93(11):4210–4217	• Review the guidelines listed in the previous row or consult a classic pediatric endocrine textbook, also listed.
Gap: The potential benefits and side effects of recommended treatment are not communicated to the patient and family.		
Clinician is not clear about the message to deliver to patients and families concerning the risks and benefits of hormone therapy.	• Review the following guidelines: ✓ Grimberg A, DiVall S, Polychronakos C, et al.; The Drug and Therapeutics Committee, the Ethics Committee of the Pediatric Endocrine Society. Guidelines for growth hormone and insulin-like growth factor-I treatment in children and adolescents: growth hormone deficiency, idiopathic short stature, and primary insulin-like growth factor-I deficiency. *Horm Res Paediatr.* 2016;86(6):361–397. Available at: https://www.karger.com/Article/FullText/452150. Accessed January 24, 2018 ✓ Allen DB, Backeljauw P, Bidlingmaier M, et al. GH safety workshop position paper: a critical appraisal of recombinant human GH therapy in children and adults. *Eur J Endocrinol.* 2016;174(2):1–9	• Generalist and endocrinologist discuss appropriate messaging about the risks and benefits of hormone therapy.
Review of benefits and side effects as well as documentation of the discussion is not part of the visit flow.	• Revise the visit flow to review and document communication of benefits and side effects of treatment. ✓ Elicit questions from the patient and family and ensure understanding of the benefits and side effects. ✓ Document the discussion and which, if any, written educational materials were provided.	• Recognize and stress with staff the importance of documentation as a necessary component of high-quality care. Actions that are not documented may not have been done.

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Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
	✓ Obtain patient and family educational materials and brochures that document benefits and side effects of treatment.	
Gap: Family concerns regarding growth and/or pubertal development are not elicited, addressed, or documented. *(Addressing concerns includes providing education and/or linking families to community resources and support.)*		
Procedures for eliciting and addressing patient and family concerns regarding growth and development are inadequate or unsystematic, or such discussions are not documented.	• Establish ways to routinely elicit, address, and document patient and family concerns such as the following: ✓ Use a previsit questionnaire or prompts on the intake form to ask about family concerns at health supervision and growth follow-up visits. ✓ Develop a post-visit process that queries patients and families about whether their concerns were addressed at this visit or if plans were made to address them. ✓ Establish a routine to document concerns in the medical record.	• Consider a patient portal that allows patients and families to interact and communicate their concerns with the practice via the Internet or e-mail.
Gap: Educational materials (or web-based links) are not provided as concerns about growth and pubertal development emerge.		
Clinician or staff does not recognize the important role of education for confirmed or suspected growth or development concerns.	• Review Bright Futures: Guidelines for Health Supervision of Infants, Children and Adolescents, fourth ed. Promoting Family Support and Promoting Mental Health which stresses the importance of education and family involvement in a child's health. • Keep visual and descriptive tools of the stages of normal puberty for both genders handy and available. See SMR ratings.	• Discuss with staff the need to provide education and to engage families as partners. Also discuss obstacles for making education part of the visit, then brainstorm and implement ways to overcome the barriers. • Identify a growth and development champion in the practice who can serve as a resource for education.
The practice does not distribute educational materials. Or, clinicians/staff lack confidence delivering such education.	• Locate educational materials from sources such as AAP.org, Healthychildren.org, Hormone.org and Pediatric Endocrine Society to provide to patients and families. • Develop educational materials by culling information from a variety of reputable sources and your practice's expertise and experiences. • Consider the cultural background, language, and literacy levels of families in discussions and education materials.	• Consult with other clinicians about the educational materials they provide to families and use or adapt them for your practice. • Attend CME courses, workshops, or seminars to glean educational materials that are suitable for families.

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Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
There is not enough time in the visit for patient and family education.	• Schedule a follow-up visit (counseling appointment) to discuss the concern or issue further. • Use teachable moments during history or physical examination to provide education. • Establish a process for trained office staff to deliver educational messages and materials. • Provide handouts to help facilitate the educational message and for families to review at home. • Direct families to online and community educational resources that have been previewed for reputable content. • Use alternative messaging forums such as telephone or patient portal.	• Identify an education champion that follows up with the patient after the examination.
Gap: Psychosocial issues related to the growth or pubertal problem are not assessed or addressed.		
The clinician does not proactively assess psychosocial issues during the visit and waits until the patient and family demonstrates or communicates concerns.	• Routinely ask patients and families about concerns about growth and puberty—for example, ask*: What concerns do you have about your/your child's growth or pubertal development? What concerns do you/does your family have about managing life with <name of condition or issue>?*	• Develop a post-visit process; for example, the discharging nurse could ask patients and families if all concerns were addressed at the visit.
The clinician lacks knowledge or comfort recognizing or addressing psychosocial issues.	• Recognize the varied types of psychosocial issues associated with growth or pubertal development problems, including social immaturity, infantilization, low self-esteem, being bullied, stress experiences, parental attitudes, and prevailing cultural opinions. Use tools such as the following to aid in the recognition of cognitive, emotional, and behavioral problems so that interventions can be initiated. ✓ Pediatric Symptom Checklist (PSC) Instructions for Use and 35-question PSC tool ✓ Bright Futures downloadable 17-question PSC tool available at http://brightfutures.aap.org/tool_and_resource_kit.html. Depersonalize the conversation; review the wide range of what is normal growth and development and inform the child where he or she fits on the continuum. • Identify appropriate referral avenues and, when appropriate, refer patients to specialized behavioral medicine professionals who are	• Review and share articles with staff: ✓ American Academy of Pediatrics Committee on Psychosocial Aspects of Child and Family Health. Pediatrics and the psychosocial aspect of child and family health. *Pediatrics.* 1982;70(1):126–127 ✓ Visser-van Balen H, Sinnema G, Geenen R. Growing up with idiopathic short stature: psychosocial development and hormone treatment; a critical review. *Arch Dis Child.* 2006;91(5):433–439

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Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
	specifically trained for psychological and social assessments and care. Indications for referral to a mental health specialist may include coping/adjustment concerns, noncompliance with medical regimen, depression (with or without the possibility of self-harm), and anxiety, among other issues. • Refer patients with a specific diagnosis to appropriate support groups (Turner syndrome, etc.), which can provide valuable interaction with peers experiencing similar psychological, emotional, and physical issues.	• Discuss with your multidisciplinary care team ways to use depression screening tools and how to interpret results. Administration and scoring should be completed by professionals or paraprofessionals that are familiar with testing procedures and with appropriate supervision. • Consider alternative communication methods—phone or e-mail, for example—in between visits to discuss and address ongoing psychosocial concerns.

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Key Activity: Follow Up and Communicate with the Care Team

Rationale: Effective care management of growth-related problems requires the identification of a multidisciplinary team and frequent, bidirectional communication among all members. Such communication will help improve the quality of care provided and health outcomes. Without clear roles and frequent communication, important issues can be overlooked, patient safety can be compromised, and costs of care can increase unnecessarily.

Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
Gap: Essential patient information is not communicated or obtained with patient referrals. *It is the **generalist's** responsibility to send patient information with the referral. It is the **endocrinologist's** responsibility to obtain missing information.*		
The practice does not have a system in place to ensure all pertinent patient information is sent/received with the referral. Or time is wasted obtaining essential patient information.	• Establish a practice protocol that defines *what* information is required by the ***endocrinologist's*** office and should be sent by the **generalist's** office with the referral. Create a checklist of essential patient information such as the following and attach it to the referral: ✓ History ✓ Physical examination ✓ Growth charts ✓ Medications, if any ✓ Laboratory and imaging results, if any ✓ Summary of case (ie, impression of growth concern) ✓ Assessment of psychosocial concerns ✓ Contact information for the referring physician ✓ Contact information for the patient and family Similarly, the ***endocrinologist's*** office should create a comparable checklist when receiving a referral, and if all essential patient information is not received before the initial visit, staff should contact the **generalist's** office to obtain it.	• Schedule a discussion between offices to establish documentation and communication expectations and procedures. • Review the Care Team Bidirectional Communication Flow, which underscores the importance of ongoing communication between the entire care team in order to achieve high-quality care.
Gap: Written care plans or important health changes are not consistently shared with the care team. *It is the **endocrinologist's** responsibility to establish, maintain, or update the care plan on a timely basis and to communicate important updates after every visit.* *It is the **generalist's** responsibility to obtain and support the care plan and to communicate important health status changes as they occur.*		
Care plan and health changes are immediately addressed with the patient and family, but not necessarily shared with the entire multidisciplinary care team. Physicians focus on their	• Review provider and patient perceptions regarding effective care coordination and communication: ✓ Generalist-subspecialist communication about children with chronic conditions: an analysis of physician focus groups (links to abstract only) • Review recommendations for improving communication:	• Share provider and patient perceptions regarding care coordination and ways to improve communication with staff. • Invite open discussion about the following with staff:

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Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
specific responsibilities within the care team.	✓ Enhancing continuity of information: essential components of consultation reports ✓ IOM: Crossing the Quality Chasm (available for purchase) • Review the 2002 AAP Medical Home Policy Statement (reaffirmed 2008), which defines the concept of the medical home and outlines the importance of care coordination the between pediatric medical home, the subspecialist care team, and other providers. • Encourage open communication channels among the growth team so that each can contact the other to share important information or to assist with growth-specific issues at the time of intercurrent illnesses or surgeries. • Review the Care Team Bidirectional Communication Flow, which illustrates communication between the multidisciplinary team.	✓ The individual roles of the generalist and the pediatric endocrinologist and the importance of a team-based approach to growth-related care management ✓ The impact that growth-related problems has on families and ways to mitigate them with collaborative care coordinated among all involved in the child's care
There is no process in the **endocrinologist's** office for communicating the current care plan and important updates to all team members. There is no process in the **generalist's** office for obtaining the patient's care plan or communicating important health status changes to all team members.	• Establish clear office procedures for sharing or obtaining the current care plan and health status changes to all team members. Consider the following: ✓ Who (staff member) is responsible for sharing/obtaining the plan ✓ What should be included in the communication – Essential care plan elements – The benefits and possible side effects of treatment – Results of diagnostic tests that have been completed, reviewed, documented, and communicated to the patient and family. Or, if tests are not completed, the reason for noncompletion. ✓ Who should be included in the communication – The patient and family – The physician in the medical home – Endocrinologist or other specialists – Other care team members essential to the disease management process (eg, registered dietician, school personnel, mental health professional)	• Discuss with staff the importance of regular communication with all team members essential to the child's care that accurately and completely reflects the care provided. Quality communication and documentation are essential components of care continuity. • Meet with staff members who are not fulfilling their communication responsibilities and troubleshoot why this is happening. Brainstorm any obstacles and ways to overcome them. Conduct Plan, Do, Study, and Act (PDSA) cycles using the ideas presented by the group. • If the practice uses an EMR, consult with the EMR team to develop a method for transmitting care plan updates to appropriate team members.

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Potential Barriers	Suggested Ideas for Change	Still Not Seeing Results?
	✓ Ensure that the patient and family have a copy of the current care plan. ✓ Establish the form of team communications, eg, fax the care plan to the primary care office and request verification that it was received and understood. Alternatively, submit electronically to practices sharing the same EMR system and have one staff person in the clinic responsible for transmission of the updated plan at every encounter. ✓ Establish the frequency of communication for changes to the plan, eg, after every visit or when clinical changes occur. • Encourage the patient and family to keep an up-to-date copy of their care plan and to communicate changes in health status and care regimen to all members of their medical support team.	
Care plans are not updated bidirectionally because patients and families do not fully embrace the team approach to care. Either the patient does make or keep regular appointments with the **endocrinologist/specialist** or the patient does not have an ongoing relationship with a **primary pediatric physician** in the medical home.	• Discuss with the patient and family the importance of developing an ongoing relationship with a primary pediatric physician for new and ongoing health concerns. Recommend that the patient receive their health supervision visits and immunizations from their primary pediatric physician. In addition, the pediatric medical home generally provides the insurance referrals for specialty visits. • Explain the role of a pediatric endocrinologist and discuss the benefits of a team-based approach to growth-related care management. • Set up a registry or other system to track patients who are not being seen regularly. Designate a staff member to reach out to patients and families that are behind with appointments. • Implement a reminder and recall system (using EMR, internal memo, or chart reminder).	• Offer to have the office staff schedule an appointment for the other provider before the patient leaves the clinic. • Enlist the help of a social worker or case manager to help connect families to needed resources.

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Appendix

Essential Growth Measurements

Generalist requirements at every health supervision visit

For children ages 0–23 months, plot on WHO charts:

☐ Head circumference
☐ Weight-for-age percentile
☐ Length-for-age percentile
☐ Weight-for-length percentile (recommended but not required for this exercise)

For children age 2 years and older, plot on CDC charts:

☐ Weight-for-age
☐ Stature-for-age
☐ BMI-for-age

For all ages

☐ Pubertal stages

Generalist requirement when abnormal growth is suspected

☐ Mid-parental height

Endocrinologist requirements at every health supervision visit

☐ All generalist requirements listed above
☐ Growth velocity

Additional endocrinologist requirements at the initial visit

☐ Upper to lower segment ratio
☐ Mid-parental height

Body Mass Index (BMI)

BMI measures an individual's overall body fat composition.

- Obtain weight in meters, height in kilograms.
- Calculate using the formula: BMI = weight (kg)/height $(m)^2$.
- Plot results on a standard curve to determine percentile rank and BMI classification:
  - ✓ Underweight: BMI <5th percentile
  - ✓ Normal weight: BMI between ≥5 and <85th percentile
  - ✓ Overweight: BMI between ≥85 and <95th percentile
  - ✓ Obese: BMI ≥95th percentile

Note: If weight and height are not obtained in metric units, use formula: BMI = (weight in pounds/height in $inches^2$) x 703.

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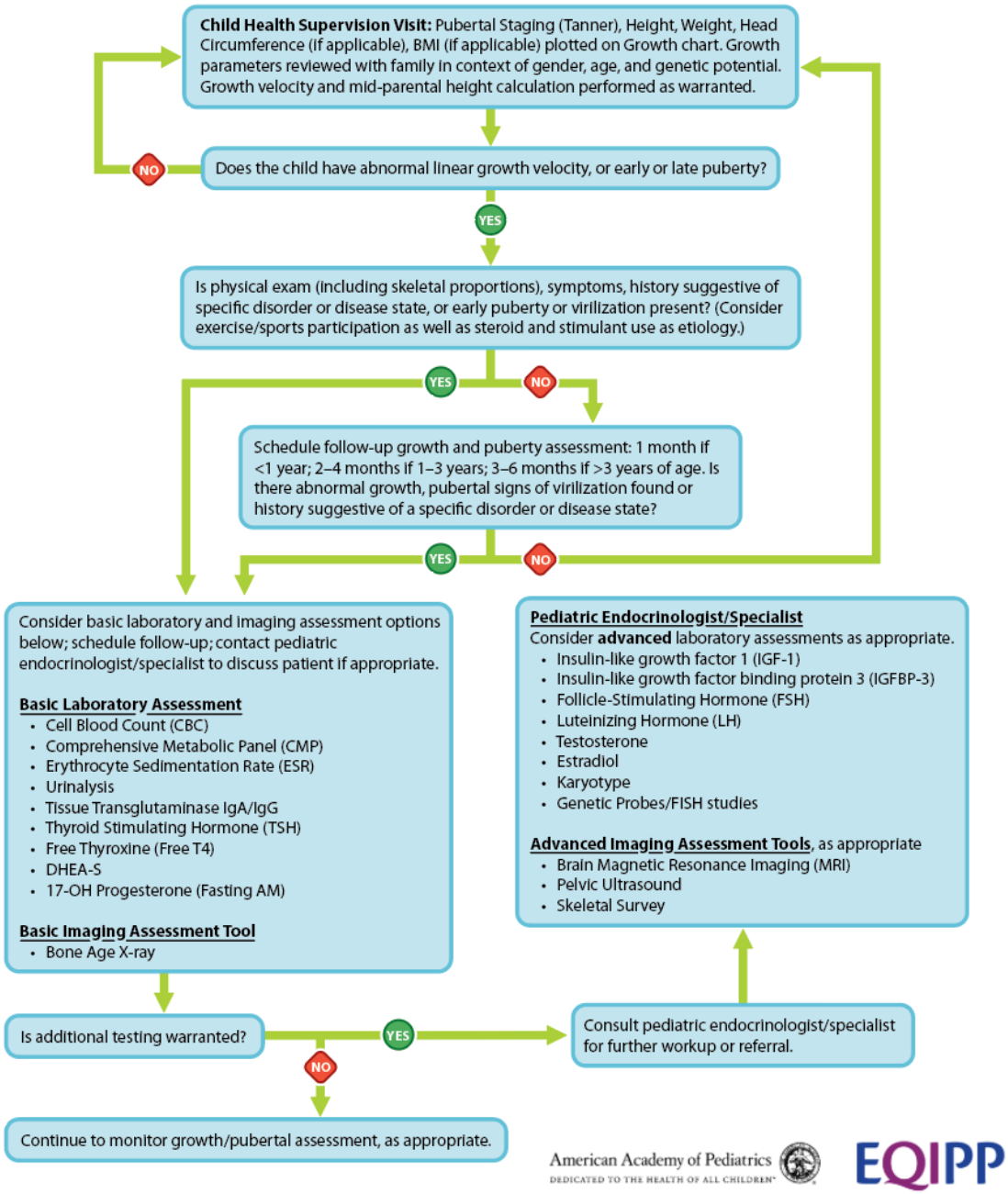
Growth – Addressing Concerns and Management

Growth Assessment Flow

The evaluation of growth and pubertal development is an integral part of the well-child exam. When a child has abnormal growth, coordinated efforts can identify the next steps necessary to further evaluate the problem. The following diagram may be helpful in developing a plan for the evaluation of growth concerns. **Since clinical practice varies, a discussion between the generalist and pediatric endocrinologist is strongly recommended to determine how this flow fits with recommendations for assessing growth in a specific patient.**



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Growth – Addressing Concerns and Management

Essential Patient Referral Information

Send or obtain the following information with all referrals:

- ☐ History
- ☐ Physical examination
- ☐ Growth charts
- ☐ Medications, if any
- ☐ Laboratory and imaging results, if any (See growth assessment flow for suggested studies when evaluating a child with abnormal linear growth as a starting point of reference.)
- ☐ Summary of case (ie, impression of growth concern)
- ☐ Assessment of psychosocial concerns (Send with referral, if available; endocrinologist will reassess.)
- ☐ Contact information for the referring physician
- ☐ Contact information for the patient/family

Growth Velocity

Growth velocity is the rate at which an individual is growing. Calculating growth velocity is an inexpensive and useful tool for identifying children who warrant further evaluation.

Equipment and Procedure

- Height/length (if <2 years) in centimeters from most recent visit and prior visit (ideally at least 6 months prior)
- Time between measurements in months
- Growth velocity (centimeters per year) = (current height – prior height)/number of months between visits * 12 months

Special Considerations

- Avoid placing too much emphasis on a growth velocity that is measured over a period of less than 6 months.
- Children grow in spurts, often overnight, and may not grow at all for 2 months.
- Don't forget to consider that there is a normal rapid change in growth velocity over the first 3 years of life. Thus, the WHO data for growth velocity are presented in 2- to 6-month increments over the first years of life.
- As prenatal influences diminish with time, it is normal during the first 3 years of life for an infant to cross growth centiles. After 3 years of life, this may be abnormal and warrants careful observation or evaluation.
- Both WHO data and U.S. CDC data are included for reference, but the WHO data is considered more applicable for following an individual child during the first 2 years because the data are from a multinational cohort, include larger numbers, and are longitudinal.

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Upper to Lower Segment Ratio

The upper-to-lower body segment ratio is the length from the top of the symphysis pubis to the top of the head, divided by the length from the top of the symphysis pubis to the sole of the foot. In bony dysplasias such as achondroplasia or hypochondroplasia, and in Turner syndrome, the upper to lower segment ratio is abnormally high for the child's age (ie, the upper segment is significantly longer than the lower segment). The segments are calculated by:

1. Measuring from the symphysis pubis to the floor to measure the lower segment
2. Subtracting the lower segment from the total height or total length to give the upper segment
3. Dividing the length of the upper segment by the length of the lower segment

Following is a chart of upper-to-lower body segment ratios.

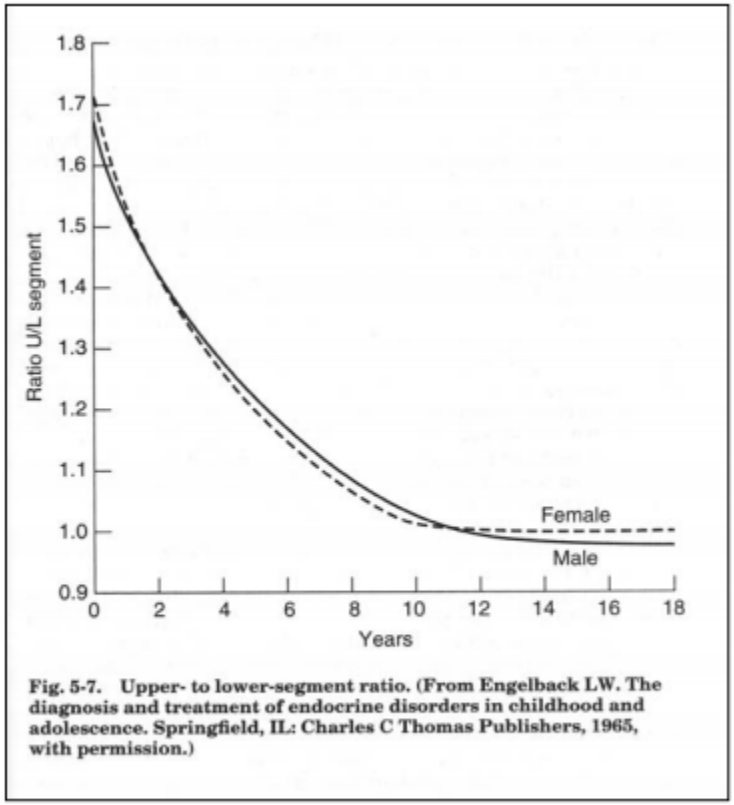

Fig. 5-7. Upper- to lower-segment ratio. (From Engelback LW. The diagnosis and treatment of endocrine disorders in childhood and adolescence. Springfield, IL: Charles C Thomas Publishers, 1965, with permission.)

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Mid-parental Height

Mid-parental height can be determined in inches or centimeters using the following calculations:

- MPH calculation (**inches**):

  For girls: [(Father's height – 5 inches) + Mother's height] divided by 2
  For boys: [(Mother's height + 5 inches) + Father's height] divided by 2
  1 standard deviation (SD) = 2 inches
  2 SD = 4 inches
  Target height range = mid-parental height ±4 inches
  1 inch = 2.54 cm

- MPH calculation (**centimeters**):

  For girls: [(Father's height – 13 cm) + Mother's height] divided by 2
  For boys: [(Mother's height + 13 inches) + Father's height] divided by 2
  1 standard deviation (SD) = 5.1 cm (many clinicians round to 5)
  2 SD = 10.2 cm (rounded to 10 cm)
  Target height range = mid-parental height ±10.2 cm

Ninety-five percent of normal children have a predicted adult height that is within 4 inches above or below the mid-parental height calculation.

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Sexual Maturing Ratings (SMR)

Sexual Maturity Ratings: Males		
SMR	**PUBIC HAIR**	
Stage 1	None	
Stage 2	Scanty, long, slightly pigmented, primarily at base of penis	
Stage 3	Darker, courser, starts to curl, small amount	
Stage 4	Course, curly, resembles adult tyoe but covers smaller area	
Stage 5	Adult quantity and distribution, spread to medial surface of thighs	
SMR	**GENITALS**	
	Penis	**Testes**
Stage 1	Preadolescent	Preadolescent
Stage 2	Slight enlargement	Slight enlargement of testes and scrotum; scrotal skin reddened, texture altered
Stage 3	Longer	Further enlargement of testes and scrotum
Stage 4	Larger in breadth. Glans penis develops.	Further enlargement of testes and scrotum
Stage 5	Adult	Adult

Sexual Maturity Ratings: Females	
SMR	**PUBIC HAIR**
Stage 1	None
Stage 2	Sparse, slightly pigmented, straight, at medial border of labia
Stage 3	Darker, beginnning to curl, increased amount
Stage 4	Course, curly, abundant, but amount less than in adult
Stage 5	Adult feminine triangle, spread to medial surface of thighs
SMR	**BREASTS**
Stage 1	Preadolescent
Stage 2	Breast and papilla elevated as small mound; areolar diameter reincreased
Stage 3	Breast and aerola enlarged, no contour separation
Stage 4	Areola and papilla form secondary mound.
Stage 5	Mature. Nipple projects. Areola part of general breast contour.

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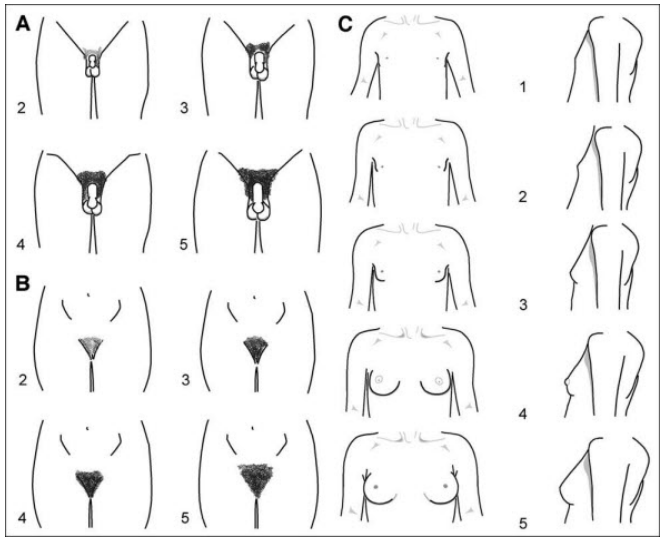

Pictorial stages of normal puberty as described by Marshall and Tanner. Reproduced with permission from Muir A, *Pediatr Rev*. 2006;27:374. Copyright by the AAP.

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