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Clinical Appropriateness Guidelines

Genetic Testing

Appropriate Use Criteria: Prenatal Testing using Cell-free DNA

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Description and Application of the Guidelines

The Carelon Clinical Appropriateness Guidelines (hereinafter “the Carelon Clinical Appropriateness Guidelines” or the “Guidelines”) are designed to assist providers in making the most appropriate treatment decision for a specific clinical condition for an individual. As used by Carelon, the Guidelines establish objective and evidence-based criteria for medical necessity determinations where possible. In the process, multiple functions are accomplished:

- To establish criteria for when services are medically necessary (i.e., in general, shown to be effective in improving health outcomes and considered the most appropriate level of service)
- To assist the practitioner as an educational tool
- To encourage standardization of medical practice patterns
- To curtail the performance of inappropriate and/or duplicate services
- To advocate for patient safety concerns
- To enhance the quality of health care
- To promote the most efficient and cost-effective use of services

The Carelon guideline development process complies with applicable accreditation standards, including the requirement that the Guidelines be developed with involvement from appropriate providers with current clinical expertise relevant to the Guidelines under review and be based on the most up-to-date clinical principles and best practices. Relevant citations are included in the References section attached to each Guideline. Carelon reviews all of its Guidelines at least annually.

Carelon makes its Guidelines publicly available on its website twenty-four hours a day, seven days a week. Copies of the Carelon Clinical Appropriateness Guidelines are also available upon oral or written request. Although the Guidelines are publicly-available, Carelon considers the Guidelines to be important, proprietary information of Carelon, which cannot be sold, assigned, leased, licensed, reproduced or distributed without the written consent of Carelon.

Carelon applies objective and evidence-based criteria, and takes individual circumstances and the local delivery system into account when determining the medical appropriateness of health care services. The Carelon Guidelines are just guidelines for the provision of specialty health services. These criteria are designed to guide both providers and reviewers to the most appropriate services based on a patient’s unique circumstances. In all cases, clinical judgment consistent with the standards of good medical practice should be used when applying the Guidelines. Guideline determinations are made based on the information provided at the time of the request. It is expected that medical necessity decisions may change as new information is provided or based on unique aspects of the patient’s condition. The treating clinician has final authority and responsibility for treatment decisions regarding the care of the patient and for justifying and demonstrating the existence of medical necessity for the requested service. The Guidelines are not a substitute for the experience and judgment of a physician or other health care professionals. Any clinician seeking to apply or consult the Guidelines is expected to use independent medical judgment in the context of individual clinical circumstances to determine any patient’s care or treatment.

The Guidelines do not address coverage, benefit or other plan specific issues. Applicable federal and state coverage mandates take precedence over these clinical guidelines. If requested by a health plan, Carelon will review requests based on health plan medical policy/guidelines in lieu of the Carelon Guidelines. Pharmaceuticals, radiotracers, or medical devices used in any of the diagnostic or therapeutic interventions listed in the Guidelines must be FDA approved or conditionally approved for the intended use. However, use of an FDA approved or conditionally approved product does not constitute medical necessity or guarantee reimbursement by the respective health plan.

The Guidelines may also be used by the health plan or by Carelon for purposes of provider education, or to review the medical necessity of services by any provider who has been notified of the need for medical necessity review, due to billing practices or claims that are not consistent with other providers in terms of frequency or some other manner.

General Clinical Guideline

Clinical Appropriateness Framework

Critical to any finding of clinical appropriateness under the guidelines for a specific diagnostic or therapeutic intervention are the following elements:

- Prior to any intervention, it is essential that the clinician confirm the diagnosis or establish its pretest likelihood based on a complete evaluation of the patient. This includes a history and physical examination and, where applicable, a review of relevant laboratory studies, diagnostic testing, and response to prior therapeutic intervention.
- The anticipated benefit of the recommended intervention should outweigh any potential harms that may result (net benefit).
- Current literature and/or standards of medical practice should support that the recommended intervention offers the greatest net benefit among competing alternatives.
- Based on the clinical evaluation, current literature, and standards of medical practice, there exists a reasonable likelihood that the intervention will change management and/or lead to an improved outcome for the patient.

If these elements are not established with respect to a given request, the determination of appropriateness will most likely require a peer-to-peer conversation to understand the individual and unique facts that would supersede the requirements set forth above. During the peer-to-peer conversation, factors such as patient acuity and setting of service may also be taken into account.

Simultaneous Ordering of Multiple Diagnostic or Therapeutic Interventions

Requests for multiple diagnostic or therapeutic interventions at the same time will often require a peer-to-peer conversation to understand the individual circumstances that support the medical necessity of performing all interventions simultaneously. This is based on the fact that appropriateness of additional intervention is often dependent on the outcome of the initial intervention.

Additionally, either of the following may apply:

- Current literature and/or standards of medical practice support that one of the requested diagnostic or therapeutic interventions is more appropriate in the clinical situation presented; or
- One of the diagnostic or therapeutic interventions requested is more likely to improve patient outcomes based on current literature and/or standards of medical practice.

Repeat Diagnostic Intervention

In general, repeated testing of the same anatomic location for the same indication should be limited to evaluation following an intervention, or when there is a change in clinical status such that additional testing is required to determine next steps in management. At times, it may be necessary to repeat a test using different techniques or protocols to clarify a finding or result of the original study.

Repeated testing for the same indication using the same or similar technology may be subject to additional review or require peer-to-peer conversation in the following scenarios:

- Repeated diagnostic testing at the same facility due to technical issues
- Repeated diagnostic testing requested at a different facility due to provider preference or quality concerns
- Repeated diagnostic testing of the same anatomic area based on persistent symptoms with no clinical change, treatment, or intervention since the previous study

- Repeated diagnostic testing of the same anatomic area by different providers for the same member over a short period of time

Repeat Therapeutic Intervention

In general, repeated therapeutic intervention in the same anatomic area is considered appropriate when the prior intervention proved effective or beneficial and the expected duration of relief has lapsed. A repeat intervention requested prior to the expected duration of relief is not appropriate unless it can be confirmed that the prior intervention was never administered.

Prenatal Testing using Cell-free DNA

Description and Scope

Cell-free DNA (cfDNA) screening for aneuploidy, sometimes called noninvasive prenatal testing (NIPT) or noninvasive prenatal screening (NIPS), evaluates DNA from the placenta/fetus in the maternal circulation to screen for specific chromosomal abnormalities, known as aneuploidies, in the fetus.

These tests can identify fetuses at increased risk for these conditions but cannot definitively diagnose, confirm, or exclude them. Screening tests that show increased risk should be confirmed by diagnostic testing prior to any intervention.

For testing associated with reproduction, see Carrier Screening in the Prenatal Setting guideline.

General Recommendations

Genetic counseling

The approach chosen for any prenatal screening technique should involve shared decision-making between the patient and the clinician. Genetic counseling is strongly recommended prior to any prenatal testing that involves cell free DNA testing and should include **ALL** of the following components:

- Interpretation of family and medical histories to assess the probability of disease occurrence or recurrence
- Education about inheritance, genetic testing, disease management, prevention, risk reduction, and resources
- Counseling to promote informed choices and adaptation to the risk or presence of a genetic condition
- Counseling for the psychological aspects of genetic testing
- Post-test counseling for any positive screening test

Rationale

The approach chosen for any prenatal screening technique should involve shared-decision-making between the patient and the clinician. In general, multiple prenatal screening techniques are unnecessary and when cell free DNA testing is chosen it is sufficient as a prenatal screening approach. Like any other genetic testing, cell free DNA testing is a procedure that involves risk that accompanies its potential benefits. The clinician and the patient should consider the balance of risks and potential benefits before testing is pursued through informed consent. As with any procedure, the clinical utility of the genetic test must be considered along with its psychological and sociologic implications.[1] Genetic counselors provide a patient-centered contribution to the care of individuals who are undergoing genetic testing. Genetic counseling is a communication process aimed at helping people understand and adapt to the medical, psychological, and familial implications of genetic contributions to disease.[2] Genetic counselors have advanced training in medical genetics and counseling which helps guide and support patients seeking more information about how inherited diseases and conditions might affect them or their families. This expertise is also applied to interpret genetic test results based on an individual's personal and family history. Genetic counselors are often specialized in prenatal testing and counseling.

The current literature demonstrates the clinical value of genetic counselor involvement in service delivery, including improvements in clinical management and positive psychological impact along with increased patient engagement. Physicians have varying levels of knowledge on how to interpret genetic and genomic information, and often express low confidence and high uncertainty in counseling about genetic testing findings.[3] Professional genetic counselors add unique value to the existing care team. For example, a study of the accuracy of routine prenatal genetic screening in patients referred for genetic counseling found that genetic history obtained by the referring provider was missing detail in over half, and of these approximately 40% had their clinical care changed by discovery of this information by a genetic counselor.[4] Genetic testing services are now delivered both in person and via telehealth, and counselors may be employed not only by healthcare

institutions but also by laboratories working under various distinct business models. The use of genetic counseling by professionals not employed by testing laboratories is strongly recommended for prenatal testing.

Genomic technologies generate large amounts of data, and this increases the potential for uncertainty in managing and adapting to this information. Clinicians are tasked with accurately interpreting and communicating information about test validity and the reliability of test results, as well as the probability for individual patient benefit.[5] Uncovering incidental findings and being overwhelmed with information are important barriers to genetic testing, particularly among vulnerable patient subgroups.[6] Genetic counseling is an invaluable resource for patients undergoing genetic testing, but there are practical limitations because of the scarcity of genetic counselors relative to the current need. Clinicians are often required to stretch their skillsets and play a role in providing basic counseling about genetic testing and will need more training and skills to do so effectively. Further research is needed regarding the use of clinical practice tools to enhance patient care and uphold the clinical and ethical ideals of medical care in this complicated realm of care delivery.

Clinical Indications

General Requirements

Prenatal testing using cfDNA should occur only once per fetus per pregnancy.

Condition-Specific Requirements

Viable singleton or twin pregnancy

Prenatal testing using cell free DNA (cfDNA) is considered **medically necessary** as a screening test in viable singleton or twin pregnancy ≥ 9 weeks gestation for **ANY** of the following chromosomal abnormalities:

- Trisomy 13
- Trisomy 18
- Trisomy 21
- Sex chromosome aneuploidies: affecting the X or Y chromosome or x-linked disorders

Not Medically Necessary (see NMN code list)**:**

The use of this testing for routine screening and evaluation of chromosomal abnormalities other than those listed is considered **not medically necessary** including, but not limited to, the following:

- Fetal sex determination
- Higher order multiple gestation pregnancies (≥ 3 fetuses)
- Twin zygosity (i.e., differentiating between monozygotic and dizygotic twins)
- When the current pregnancy is affected by a fetal demise, vanishing twin, or one or more abnormalities detected in the fetus(s)
- Screening for single gene (monogenic) disorders
- Aneuploidies of other autosomal chromosomes
- Microdeletions or microduplications
- Whole genome or exome screening
- Fetal RhD status
- Non-viable pregnancies
- Testing associated with serum screening (either concurrent or follow up)
- Testing in conjunction with other biomarkers

Note: Some of the tests listed above have a role in care under certain circumstances, but they should not be routinely offered.

Rationale

Chromosomal abnormalities (aneuploidy, translocations, duplication, or deletions) are present in approximately 1 in 150 live births, with 3% to 5% of pregnancies ultimately complicated by birth defects or genetic disorders.[7] For various reasons, some patients choose to pursue screening for underlying genetic disorders with decisions about such testing and possible subsequent actions being driven heavily by patient values. Various screening techniques are available, and the field is rapidly evolving. Techniques in the first trimester include serum screening using markers (such as beta human chorionic gonadotropin, alpha-fetoprotein, inhibin A, and unconjugated estriol), and ultrasound testing to assess nuchal translucency. Integrated screening techniques produce a detection rate of about 96% with around 5% false positives.[7]

Over the past 10 years, the rapid advances in genomic medicine have brought new technology into use for prenatal screening. Non-invasive prenatal testing (NIPT) refers to sequence analysis of cell-free DNA (cfDNA) fragments that circulate in the blood of pregnant women, along with the translation of this method into screening for fetal chromosome abnormalities. Approaches for NIPT include shotgun whole genome and targeted sequencing.[8] The shotgun approach of whole genome sequencing generates short sequences from across the genome which are then aligned to a reference chromosome and counted. In contrast, targeted sequencing of the cfDNA is based on next-generation sequencing (NGS) and involves amplification of selected chromosomal loci on the chromosomes of interest.[9] the challenge of picking the diagnostic “needle” becomes greater as the size of the “haystack” shifts from targeted testing to the whole genome, and the number of variants that must be filtered out in practice because they are unrelated to the patient's phenotype is greater when more sensitive methodologies are used.[10] Of note, while NIPT methods can detect chromosomal abnormalities in pregnancy after 10 weeks gestation, they do not assess the risk of fetal anomalies such as neural tube defects or ventral wall defects.[9]

NIPT was initially validated as a clinical prenatal screen for pregnancies at high risk for trisomy 21, and it has since been approved to determine fetal sex and screen for fetal aneuploidy, including trisomies 13 (Patau syndrome), 18 (Edward syndrome), and 21 (Down syndrome) in high-risk and average risk pregnancies.[9] At any given maternal age, the rate of common trisomies is similar between singleton and twin pregnancies, and NIPT screening provides higher predictive values among twin pregnancies compared to traditional serum and nuchal translucency based techniques.[11] A systematic evidence review evaluating NIPT for screening in a general risk population found that it is the most effective screening approach for trisomies 13, 18, and 21 in singleton and twin gestations with both high detection and low false-positive rates.[12] Several professional society guidelines endorse genetic counseling prior to prenatal screening in order to explore the conditions being screened, the patient’s desire avidity for this information, and follow-up logistics and decision-making options. Definitive diagnosis of abnormalities detected on screening requires sampling of fetal tissue by chorionic villous sampling or amniocentesis for chromosomal array analysis.[9]

The position of the American College of Obstetrics and Gynecology (ACOG) and the Society of Maternal Fetal Medicine (SMFM) in 2020 is that “prenatal genetic screening (serum screening with or without nuchal translucency ultrasound or cell-free DNA screening) and diagnostic testing (chorionic villus sampling [CVS] or amniocentesis) options should be discussed and offered to all pregnant women regardless of maternal age or risk of chromosomal abnormality. After review and discussion, every patient has the right to pursue or decline prenatal genetic screening and diagnostic testing.”[13] The American College of Medical Genetics and Genomics (ACMG) position has also been favorable towards offering women the option of cell-free DNA screening, ultimately recommending that patients receive accurate and balanced information to promote patient-centered, nondirective decision-making.[14] The ACMG specifically recommends informing all pregnant women that cfDNA screening is the most sensitive screening option for common aneuploidies, does not recommend maternal age or risk of chromosomal abnormality as a basis to choose between aneuploidy testing approaches, and does not recommend having multiple screening methods performed simultaneously.[15]

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Codes

The following code list is not meant to be all-inclusive. Authorization requirements will vary by health plan. Please consult the applicable health plan for guidance on specific procedure codes.

Specific CPT codes for services should be used when available. Nonspecific or not otherwise classified codes may be subject to additional documentation requirements and review.

CPT/HCPCS

May Be Medically Necessary When Criteria are Met

81420	Fetal chromosomal aneuploidy (eg, trisomy 21, monosomy X) genomic sequence analysis panel, circulating cell-free fetal DNA in maternal blood, must include analysis of chromosomes 13, 18, and 21
81479	Unlisted molecular pathology procedure
81507	Fetal aneuploidy (trisomy 21, 18, and 13) DNA sequence analysis of selected regions using maternal plasma, algorithm reported as a risk score for each trisomy
81599	Unlisted multianalyte assay with algorithmic analysis [when specified as cell-free fetal DNA-based prenatal testing involving multianalyte assays and an algorithmic analysis for fetal aneuploidy]
0327U	Fetal aneuploidy (trisomy 13, 18, and 21), DNA sequence analysis of selected regions using maternal plasma, algorithm reported as a risk score for each trisomy, includes sex reporting, if performed

Not Medically Necessary

81422	Fetal chromosomal microdeletion(s) genomic sequence analysis (eg, DiGeorge syndrome, Cri-du-chat syndrome), circulating cell-free fetal DNA in maternal blood.
0060U	Twin zygosity, genomic targeted sequence analysis of chromosome 2, using circulating cell-free fetal DNA in maternal blood

ICD-10 Diagnosis

Refer to the ICD-10 CM manual

History

Status	Review Date	Effective Date	Action
Updated	n/a	11/05/2023	Split CPT code list into those considered medically necessary and not medically necessary.
Updated	n/a	10/01/2023	Added CPT code 81599.
Created	09/21/2022	02/12/2023	Independent Multispecialty Physician Panel (IMPP) review. Original effective date.