



CIGNA MEDICAL COVERAGE POLICY

The following Coverage Policy applies to all health benefit plans administered by CIGNA Companies including plans formerly administered by Great-West Healthcare, which is now a part of CIGNA.

Subject Sacral Nerve Stimulation For Urinary Voiding Dysfunction and Fecal Incontinence

Effective Date 8/15/2011
Next Review Date..... 8/15/2012
Coverage Policy Number 0404

Table of Contents

Coverage Policy	1
General Background	1
Coding/Billing Information	9
References	10
Policy History	14

Hyperlink to Related Coverage Policies

Biofeedback
 Electrical Stimulators
 Extracorporeal Electromagnetic Stimulation for Urinary Incontinence
 Injectable Bulking Agents for Urinary Conditions
 Surgical Interventions for Urinary Incontinence
 Transanal Radiofrequency Therapy for Fecal Incontinence (e.g., Secca® Procedure)

INSTRUCTIONS FOR USE

Coverage Policies are intended to provide guidance in interpreting certain **standard** CIGNA HealthCare benefit plans. Please note, the terms of a customer's particular benefit plan document [Group Service Agreement (GSA), Evidence of Coverage, Certificate of Coverage, Summary Plan Description (SPD) or similar plan document] may differ significantly from the standard benefit plans upon which these Coverage Policies are based. For example, a customer's benefit plan document may contain a specific exclusion related to a topic addressed in a Coverage Policy. In the event of a conflict, a customer's benefit plan document **always supercedes** the information in the Coverage Policies. In the absence of a controlling federal or state coverage mandate, benefits are ultimately determined by the terms of the applicable benefit plan document. Coverage determinations in each specific instance require consideration of 1) the terms of the applicable benefit plan document in effect on the date of service; 2) any applicable laws/regulations; 3) any relevant collateral source materials including Coverage Policies and; 4) the specific facts of the particular situation. Coverage Policies relate exclusively to the administration of health benefit plans. Coverage Policies are not recommendations for treatment and should never be used as treatment guidelines. In certain markets, delegated vendor guidelines may be used to support medical necessity and other coverage determinations. Proprietary information of CIGNA. Copyright ©2011 CIGNA

Coverage Policy

CIGNA covers sacral nerve stimulation (SNS) as medically necessary for the treatment of urinary voiding dysfunction following failure of, contraindication to, or intolerance to conservative medical management after a 50% improvement in symptoms is observed in response to a percutaneous screening trial of SNS for ANY of the following indications:

- urinary urge incontinence
- nonobstructive urinary retention
- urinary urgency/frequency syndrome

CIGNA does not cover SNS for the treatment of any other indication including fecal incontinence because it is experimental, investigational or unproven.

General Background

Sacral nerve stimulation (SNS), also known as sacral nerve neuromodulation, involves the implantation of a permanent device that modulates the neural pathways. The exact mechanism of action is unclear (Mellgren, 2010). SNS applies a low amplitude electrical current to a sacral nerve through an electrode that is placed through a corresponding sacral foramen. The stimulation of the sacral nerves leads to recruitment of the pelvic floor musculature and pelvic organs, leading to improvement in pelvic floor function. The third sacral foramen is the level at which an optimal response is most commonly elicited. The third sacral nerve root contains afferent sensory and efferent autonomic motor nerves and voluntary somatic fibers, which may, alone or in harmony, create the beneficial effect elicited by SNS (Mellgren, 2010).

Prior to the implantation of a permanent SNS system, patients are screened for potential therapeutic benefit by undergoing a trial in which a temporary electrode is percutaneously introduced into the left or right sacral nerve foramen and an external device provides continuous stimulation. The length of the screening trial varies. The patient must demonstrate a positive therapeutic response to qualify as a candidate for permanent implantation (Peeren, 2005).

When the screening trial demonstrates successful results, permanent SNS system placement can be performed by means of an implantable pulse generator (IPG) which is positioned surgically in the upper buttock region. The IPG is connected to an electrical lead in contact with one side of the appropriate sacral nerve root, most often the S3 vertebra. Implantation is considered to be a minimally invasive procedure and is performed under general anesthesia. Complications to SNS include device-related pain, need for revision, infection, and neurologic complications.

SNS has been proposed for the treatment of urinary voiding dysfunction, including intractable urinary urge incontinence, nonobstructive urinary retention, and urinary urgency/frequency syndrome in adults, and several other indications including fecal incontinence.

Urinary Voiding Dysfunction

Urinary voiding dysfunction is usually defined as the inability to control urination. Urinary voiding disorders are generally divided into five types, depending on the pathophysiology involved: urge incontinence—a subtype is urgency-frequency syndrome, overflow incontinence, also known as urinary retention, stress incontinence, mixed incontinence, functional incontinence.

Treatment options for urinary voiding disorders may include behavioral strategies, pharmacological interventions, temporary electrical stimulation, or reconstructive surgery. Less invasive modalities are generally used initially before irreversible, reconstructive surgery is considered.

SNS may be indicated in patients who demonstrate at least 50% urinary incontinence symptom relief during percutaneous test stimulation and who have failed or not tolerated more conservative treatments (e.g., behavioral strategies, pharmacological interventions). The criteria for a positive response vary slightly; however, at least a 50% improvement in one or more primary symptoms is considered the standard for a clinically significant response (Schmidt, 1999). It is not proposed for the treatment of stress incontinence, the most common type of urinary dysfunction (Hassouna, 2000).

The precise mode of action of neuromodulation on the lower urinary tract is unclear. When a nerve is stimulated, signals travel both toward the periphery and toward the central nervous system (Herbison, 2009).

According to the manufacturer of the InterStim[®] System for Urinary Control (Medtronic, Inc., Minneapolis, MN), SNS is not intended for patients with mechanical obstruction such as benign prostatic hypertrophy, cancer, or urethral stricture. Medtronic also states that the safety and effectiveness of SNS has not been established for bilateral stimulation, patients with neurological disease origins (e.g., multiple sclerosis), pregnancy and delivery or for children under the age of 16 (Medtronic, Inc., 2010).

Sacral nerve stimulation is considered an appropriate treatment option for individuals with refractory voiding dysfunction, with failure of, or contradiction or intolerance to conservative medical management after a 50% improvement is noted in response to a percutaneous screening trial.

Literature Review

Several systematic reviews, randomized clinical trials (RCTs) and retrospective analyses have demonstrated >50% improvement in incontinence symptoms, decrease in the number of daily catheterizations required, an increase in the volume of urine obtained per void, and a decrease in postvoid residual urine volume with the use of sacral nerve stimulation (SNS). Adverse events reported include changes in stimulation sensation, loss of efficacy and pain at the IPG site, and the need for intravenous antibiotics (Herbison, 2009; White, 2008; van Kerrebroeck, 2007, Sutherland, 2007; Brazelli, 2006; Everaert, 2004; Chartier-Kastler, 2004).

In a systematic review by Herbison et al. (2009), involving twelve reports of eight randomized studies of 500 adults with urge urinary incontinence, overactive bladder syndrome (i.e., urgency or frequency), and urinary retention, about 50% of patients in the stimulation group achieved complete continence or an improvement greater than 90% of the main incontinence symptoms. Eighty-seven percent of patients achieved a 50% improvement. In all reports, participants had failed conventional treatments before randomization. It is unclear whether the studies all used the same implant. The authors noted that several long-term studies had poor rates of follow-up. Thirty percent or more potentially eligible patients were not implanted and 30% or more of those implanted did not gain benefit. Overall continuous stimulation offers benefits for carefully selected individuals with overactive bladder syndrome and for those with urinary retention but no structural obstruction.

White et al. (2008) retrospectively examined long-term efficacy and durability of SNS for refractory urinary retention in 40 patients who had previously undergone SNS. At a mean follow-up of 40.03 months, 85.7% of patients demonstrated sustained improvement in symptoms. Among those with complete retention, significant improvement occurred in the number of catheterizations/day and the volume/catheterization ($p < 0.001$). Among those with incomplete retention, significant improvement occurred in the postvoid residual urine volume ($p < 0.001$).

Van Kerrebroeck et al. (2007) reported long-term results of a five-year prospective multi-center study evaluating the safety and efficacy of SNS in patients with refractory urge incontinence, urgency frequency, and retention. One hundred sixty-three patients enrolled in the study and after undergoing test stimulation 152 underwent SNS implantation. Implanted devices varied between patients. Three-day voiding diaries were collected annually for five years—diary variables differed according to the type of urinary disorder. Simple uroflow and quality of life questionnaires, such as the Short Form-36 and the Beck Depression Inventory were used. Detailed data were also collected on any concomitant treatment for the urological condition and on any therapy or patient related complications. Clinical success was defined as $\geq 50\%$ improvement in baseline. For patients with urge incontinence mean leaking episodes per day decreased from 9.6 to 3.9 at five years. For patients with urgency frequency, mean voids per day decreased from 19.3 to 14.8 and mean volume voided per void increased from 92.3 ml to 165.2 ml. For patients with retention the mean volume per catheterization decreased from 379.9 ml to 109.2 ml, and the mean number of catheterizations decreased from 5.3 to 1.9. All changes were statistically significant ($p < 0.001$). No life threatening or irreversible adverse events occurred; however, in 102 patients 279 device or therapy related adverse events were observed. At five years after implantation, 68% of patients with urge incontinence, 56% with urgency frequency and 71% with retention had successful outcomes.

The Agency for Healthcare Research and Quality (AHRQ, 2007) reported results of a systematic review of several small RCTs, three large RCTs and one prospective cohort of adults in a community setting to determine the benefit of sacral nerve root neuromodulation for urinary incontinence. The review suggested that implantation of a multiprogrammable neurostimulator cured 47% of participants with urge urinary incontinence compared to standard medical therapy. Sacral root neuromodulation resulted in urge continence more than nine times more often than conservative management with medications or pelvic floor muscle training. Evidence from these studies suggested that sacral nerve root neuromodulation can improve predominantly urge incontinence in adults but that curative results are not consistent.

Brazelli et al. (2006) performed a systematic review on the efficacy and safety of SNS in patients with urge urinary incontinence in four RCTs and 30 case series. Results from the randomized trials ($n=120$) showed that 80% of participants achieved continence or >50% improvement in their main incontinence symptoms after SNS compared with 3% of the controls who received conservative treatments. The case series studies showed similar results, with 67% of patients becoming dry or achieving a >50% improvement in symptoms. There were adverse events documented in 27 studies, most commonly involving pain, migration of lead, and replacement or repositioning of the IPG.

Sacral nerve stimulation (SNS) is considered an appropriate treatment option for individuals with refractory voiding dysfunction, with failure of, or contradiction or intolerance to conservative medical management after a 50% improvement is noted in response to a percutaneous screening trial.

Professional Societies/Organizations

American College of Obstetricians and Gynecologists (ACOG): Regarding sacral nerve stimulation for chronic urinary voiding dysfunction, ACOG Guideline No. 51 (2004) notes “Sacral nerve stimulation is beneficial in the treatment of chronic voiding dysfunction.”

American Urological Association (AUA): Recommendations by the AUA (2000) note: “There is sufficient evidence both from randomized, controlled trials as well as from objectively performed nonrandomized, control data, which would support the utilization of sacral nerve stimulation as an intervention for refractory motor urgency incontinence as well as urinary urgency, frequency, and urinary retention in the treatment of voiding dysfunction of the lower urinary tract.” The AUA recommends SNS as a standard therapy for patients with refractory voiding dysfunction (motor urge incontinence, urinary urgency and frequency, and urinary retention) in those patients who have failed behavioral therapies (fluid restriction, dietary modification, voiding re-training, and/or specific pelvic floor physiotherapy) and anticholinergic agents, either due to an inability to tolerate those agents, or due to persistent symptoms despite those agents.

European Association of Urology (2010): Consensus Guideline notes “Sacral neuromodulation appears to have benefit for patients with urgency incontinence, as well as urgency and frequency.”

National Institute for Clinical Excellence (NICE): Regarding SNS for urinary voiding dysfunction, NICE notes that current evidence on the safety and efficacy of sacral nerve stimulation for urge incontinence and urgency-frequency appears adequate to support the use of this procedure. The diagnosis should be defined as clearly as possible and the procedure limited to patients who have not responded to conservative treatments such as lifestyle modifications, behavioral techniques and drug therapy. Patients should be selected on the basis of their response to peripheral nerve evaluation (2006).

U.S. Food and Drug Administration (FDA)

The InterStim[®] System for Urinary Control (Medtronic, Inc., Minneapolis, MN) received premarket approval from the FDA “for the treatment of urinary urge incontinence, urinary retention, and significant symptoms of urgency/frequency in patients who have failed or could not tolerate more conservative treatments.” In August 2001, the FDA approved the Model 3550-03 Twist-Lock Screening Cable and Model 3550-05 Percutaneous Extension and Tunneling Tool Kit for temporary SNS as part of a staged implant screening technique for patients who had inconclusive results following standard percutaneous testing (FDA, 2002).

Fecal Incontinence (FI)

FI is the inability to control bowel movements leading to feces leaking from the rectum (American Academy of Family Physicians [AAFP], 2011). According to the AAFP, fecal incontinence may be caused by several factors including muscle damage, such as that experienced after childbirth, or after rectal surgery, or from damage to the nerves that control the anal muscle or regulate rectal sensation. Additionally, FI may be caused by a reduction in the elasticity of the rectum, which shortens the time between the sensation of the stool and the urgent need to have a bowel movement. Surgery or radiation injury can scar and stiffen the rectum. Inflammatory bowel disease can also make the rectum less elastic (AAFP, 2011).

The treatment of FI depends on the cause of the incontinence and may include dietary changes, drug therapy, bowel training, or surgery (AAFP, 2011). Fecal incontinence remains a therapeutic problem in many patients when conservative measures, such as dietary advice, pelvic floor exercises and medical therapy with bulking agents, fails and sphincter repair is unsuccessful or inappropriate (Chan, 2008; Leroi, 2005; Jarrett, 2004). Severe FI can be socially isolating as an individual with the condition may alter his/her lifestyle to accommodate the likelihood of bowel leakage. Sacral nerve stimulation (SNS) has been proposed for the treatment of fecal incontinence.

The exact mechanism of action of SNS for fecal incontinence remains unclear. According to Gladman (2008), “Although it was initially thought that SNS would directly augment anal sphincter function and improve FI, the observation that improved continence occurs without change in anal sphincter function has led to the suggestion that SNS has predominantly suprasphincteric effects. The mechanism of action of SNS is not conclusively

proved and may involve direct effects peripherally on colorectal sensory or motor function, or central effects at the level of spinal cord or brain.”

Indications and patient selection for the use of sacral nerve stimulation (SNS) for the treatment of fecal incontinence (FI) continue to evolve. Initial study eligibility included patients with a functionally deficient but morphologically intact anal sphincter. More recently, inclusion criteria has been extended to include those with external and internal sphincter defects, secondary to cauda equina syndrome, scleroderma, rectal prolapse repair, low anterior resection of the rectum, and (partial) spinal injuries (Gladman, 2008; Jarrett, 2004).

Literature Review

In a number of prospective and retrospective case series (Michelson, 2010; Matzel, 2009; Chan, 2008; Melenhorst, 2006; Matzel, 2004) including randomized controlled trials by Leroi (2005), and Tjandra (2008) improvements have been noted in the frequency of incontinence episodes and quality of life measures as self-reported in bowel diaries and quality of life scales. However, data are limited regarding the effect of SNS on the frequency of urgency episodes, the delay in postponing defecation, the number of bowel movements per week, and effects on anal manometry outcomes.

In a prospective uncontrolled trial investigating the effectiveness of SNS for fecal incontinence, Wexner et al. (2010) evaluated 285 patients. One hundred thirty-three patients underwent peripheral nerve stimulation and 120 of those individuals received permanent SNS. Mean follow-up was 28 months. Study participants were requested to complete a five-question bowel diary at baseline, during test stimulation, and at three, six, and 12 months and annually after study closure. Quality of life and well-being were also assessed by additional questionnaires. At 12 months, 83% achieved therapeutic success defined as achieving $\geq 50\%$ reduction in the number of incontinent episodes per week compared to the baseline; 85% achieved therapeutic success at 24 months. Forty percent of those receiving SNS achieved 100% improvement in incontinent episodes per week and incontinent days per week at 12 months. Incontinence episodes decreased from a mean of 9.4 per week at baseline to 1.9 at 12 months, and 2.9 at two years. Adverse event (AE) rates were high with 696 AEs reported. Three hundred seven AEs in 96 patients were related to the device or therapy. Twenty-six AEs were considered serious and included implant site pain, hematomas, lead fractures, lead migrations or dislodgments, extremity pain, skin irritation, paresthesias, implant site infection, change in sensation of stimulation, urinary incontinence, and diarrhea. 10.8% of patients experienced implant site infection and 5.8% required surgical removal of the implant. Study limitations include an uncontrolled, nonrandomized design and short-term follow-up.

Mellgren et al. (2011) reported results of a three-year follow-up assessment. Of 120 patients receiving chronic SNS, eighty-three patients completed part or all of the assessment, with 86% of patients reporting $\geq 50\%$ reduction in the number of incontinent episodes per week compared with baseline. Perfect continence was reported by 40% of study participants. Improvements in the Fecal Incontinence Quality of Life scale were reported at 12, 24, and 36 months of follow-up. Device- or therapy-related adverse events included implant site pain (28%), paresthesia (15%), change in the sensation of stimulation (12%), and infection (10%). Limitations include an uncontrolled, nonrandomized study design.

Tjandra et al. (2008) published outcomes of the largest randomized controlled trial (RCT) to date involving 120 patients; 60 were randomized to the SNS group and 60 patients were randomized to best supportive therapy (i.e., pelvic floor exercises, bulking agents, dietary modifications). Inclusion criteria for the RCT included involuntary passage of solid or liquid stool at least once per week, and refractory to medical therapy and to pelvic floor exercises. Fifty-four patients in the SNS group had $\geq 50\%$ improvement in continence during the screening period with 53 patients undergoing SNS implantation. Follow-up was 12 months. Both groups were assessed at baseline, three, six, and 12 months.

The control group met with therapists for instruction in pelvic floor exercises for 20 minutes generally every month for the first three months, then at two month intervals for the second six months. Biofeedback with digital guidance was provided. Patients were asked to perform sets of 50 contractions twice a day at home. The control group demonstrated no significant improvements in fecal continence as assessed by bowel diary, the Wexner score, and several quality of life scales. There were no statistically significant changes in the maximum resting and squeeze anal canal pressures in either group. In the SNS group, incontinent episodes per week significantly improved from a mean of 9.5 at baseline to 4.2 at six months and to 3.1 episodes at 12 months. Urge and passive incontinence also improved. Ability to defer defecation improved significantly but the ability to completely empty the bowel was not affected. One hundred percent fecal competence was achieved in 47.2% of

patients. According to the authors, improvement in quality of life was noted immediately after implantation of the SNS. None of the patients had worsening of fecal continence as a result of SNS. Adverse events in the SNS group included seroma, pain at the implant site and tingling in the vaginal area. In the control group six patients complained of constipation due to Immodium use. Short-term follow-up limits the ability to determine if outcomes are durable in the long-term.

Mowatt et al. (2008) performed a systematic review of three randomized studies involving a total of 38 patients. One study included 34 patients; each of the other studies included two patients. Thirty-one patients received sacral nerve stimulation (SNS). Two studies assessed the effects of SNS for fecal incontinence (n=36); one assessed the effects of SNS on constipation (n=2). All three studies had a double-blinded crossover design. According to the authors the very limited evidence suggest that for some selected patients, SNS can reduce episodes of fecal incontinence and urgency, and improve the ability to defer defecation, leading to a better quality of life. However, a minority may get worse despite apparently successful testing before permanent implantation.

Chan et al. (2008) reported the results of a prospective trial of 60 consecutive patients with FI who underwent screening with peripheral nerve evaluation testing; 53 proceeded to SNS. All patients, regardless of the presence of external anal sphincter defects, had improvement in fecal continence and quality of life scores after chronic SNS. Improvement was noted to be evident immediately after the implantation, and sustained during the follow-up period and was demonstrated by a decrease in Wexner score and reduction in the number of incontinent episodes, incontinent days, staining, and use of pads per week as self-reported by study participants. Eight patients achieved 100% improvement in weekly incontinent episodes; seven patients achieved 75% to 99% improvement at 12-month follow-up. Significant improvement in bowel continence and quality of life in association with FI was found in patients with intact external anal sphincter after SNS. Data regarding anorectal manometry and the SF-12 quality of life scale did not demonstrate changes after SNS, irrespective of the presence of external anal sphincter defect. The authors noted that the extent of improvement in continence and quality of life after SNS was not as good as in the testing phase (i.e., sub chronic phase). AEs included seroma, pain at implant site, and excessive tingling in the vaginal region, which subsided after reprogramming the device. The authors noted that as indications are evolving, more randomized, clinical studies are warranted.

Meurette et al. (2008) reported outcomes of 15 patients with fecal incontinence who underwent SNS matched with 15 patients who underwent artificial bowel sphincter (ABS) in a previous period (control group). Mean follow-up was 15 months in the SNS group and 43 months in the ABS group. The mean quality of life (QOL) score results showed no differences between the two groups regarding physical function, social function, physical role, emotional role, mental health, vitality, bodily pain and general health. At the end of the follow-up, there was a significant difference in the Cleveland Clinic score of incontinence between the two groups with a better score in the ABS group. One patient had the stimulator removed because of neurological pain. In the ABS group, eight patients underwent further surgical revision at least one time for ulceration/erosion of the anal canal or mechanical failures during the follow-up period. The parameters measured demonstrate that ABS resulted in more difficulty in evacuation and significantly more abdominal pain and bloating. This is limited by an uncontrolled study design and small patient numbers.

The Agency for Healthcare Research and Quality (AHRQ, 2007) reported results of a systematic review of several studies examining the effects of electrical stimulation or neuromodulation (i.e., SNS) on FI. AHRQ noted that individualized sacral nerve continuous stimulation improved FI in 89 % of patients with severe baseline FI compared to 17 percent after sham stimulation. However, the treatments did not improve quality of life with random differences after active and sham stimulation. All RCTs reported small inconsistent differences in anal manometry outcomes after active stimulation compared to the control. The significant relative improvement after sacral nerve stimulation in patients with severe baseline FI requires future confirmation in a large well designed RCT with long-term follow-up.

Regarding the use of self-report questionnaires to assess fecal incontinence, AHRQ also noted "Few validated questionnaires and instrumental methods were examined to detect the presence and baseline of causes for FI with no consensus on which test is the gold standard. Patient reports do not correlate well with anatomical and physiological measures and anal manometry does not correlate well with ultrasonography or sigmoidoscopy. The severity and impact of incontinence on quality of life can be estimated from self-reported frequency, amount of leakage, and restrictions on daily activities, but not from instrumental methods. However, treatment decisions

are made based on objective measures of incontinence. Instrumental physiological measurements that are associated with patient outcomes and may reflect better effects of different interventions should be analyzed in well designed experiments.”

Leroi et al. (2005) reported outcomes from a randomized double-blind crossover study involving 34 patients with fecal incontinence. All 34 patients received SNS; 27 patients were randomized to the crossover period, and 24 completed the study. Outcome measures were frequency of fecal incontinence (FI) and urgency episodes, delay in postponing defecation, score severity, feeling of improvement, preference for ON or OFF mode of stimulation, quality of life, and manometric measurements. Follow-up was 12 months. Patients initially underwent peripheral nerve evaluation testing and if $\geq 50\%$ improvement in incontinence was demonstrated they progressed to sacral nerve stimulation (SNS) implantation. After permanent implantation each patient had a one-to-three month period where the stimulator was turned to the ON mode. At the end of this period participants were randomized to receive SNS in an ON or OFF mode for one month. When this period was completed, the stimulator was turned to the other mode without the knowledge of the patients or investigators. At the end of the crossover period, while still blinded, each patient chose the period of stimulation they preferred and that mode was continued for three months. Throughout the study each patient had a handheld programmer to interrupt or to start stimulation or to increase or decrease stimulation, but was asked not to use it except in case of urgency and to inform the investigator of any use.

There was a significant treatment effect with a decrease in the median frequency of FI episodes between the ON and OFF periods; however, median FI episodes decreased in both the ON and OFF periods (90% versus 76%, respectively), as did defecation postponement (89% versus 63%, respectively). There was no significant change in the frequency of urgency episodes, the delay in postponing defecation, or the number of bowel movements per week between the periods of stimulation. There was improvement in the Cleveland Clinic incontinence score from baseline but no statistically significant difference between the ON and OFF periods. Additionally, there was no correlation between changes in the frequency of urgency episodes, delay in postponing defecation, Cleveland Clinic score, and changes in anal resting pressure, maximal squeeze pressure, squeeze pressure duration, threshold, constant sensation, and maximum tolerated volumes between the baseline and final periods. Additionally, no significant change in the maximum anal resting pressure, squeeze pressure increment, and duration of voluntary contraction was noted between the two stimulation periods. Maximum anal resting score was increased only in the ON period. This study was limited by small patient numbers and short-term follow-up.

In a systematic review Jarrett et al. (2004) analyzed the safety and effectiveness of SNS for the treatment of fecal incontinence. Six patient series and one double-blind crossover study involving 266 patients who had failed maximum conservative therapy and had undergone peripheral nerve testing as a screen for SNS eligibility were assessed. Fifty-six percent of the patients underwent permanent SNS. Complete continence was reported in 41% to 75% of patients, and there was $\geq 50\%$ improvement in the number of incontinence episodes in 75% to 100% of patients after permanent implantation. The assessment noted that overall, anal resting pressure does not appear to be significantly changed in patients with permanent SNS, but an increase in maximal squeeze pressure has been shown in some studies. Patients undergoing permanent implantation reported having 19 adverse events, including lead migration, pain, and infection. The authors note several study limitations including that most of the data reviewed came from patient series, rather than controlled studies, and follow-up is generally short-term. According to the authors, data was probably prospective but it was unclear from the reports. Additionally, no study compared SNS directly with another treatment for fecal incontinence or constipation. Nonetheless, the authors noted that evidence from the included studies suggest that permanent SNS substantially improves continence in patients with severe fecal incontinence resistant to medical treatment.

Matzel et al. reported outcomes of 37 patients who underwent a positive test stimulation with permanent SNS placement in 24 patients. Effect on continence was assessed by daily bowel-habit diaries over a three-week period, and on quality of life (QOL) by the disease-specific American Society of Colon and Rectal Surgeons (ASCRS) questionnaire and the standard short form health survey questionnaire (SF-36). Median follow-up was 23.9 months. Every patient served as his or her own control. Frequency of incontinent episodes fell per week as did the number of days of incontinence per week. Episodes of staining and pad use also declined. The ability to postpone defecation was enhanced at 12 months. Social functioning as a measure of QOL was improved. After implantation of the complete neurostimulation system, 12 patients had 19 device-related adverse events with pain the most frequent complication.

Rosen et al. (2001) reported the results of a study assessing the effects of SNS on FI. Twenty patients were evaluated and 16 subsequently had implantation. Follow-up was performed at monthly intervals, and continence diaries were collected. All patients who had shown a positive visual response during acute testing and who had received a permanent implant revealed a marked reduction in their incontinence episodes. Assessment of QOL scales using the American Society of Colorectal Surgeons questionnaire after 6 months showed significant improvement compared with preoperative values on all scales in patients with permanent implantation. Results of preoperative and postoperative anal manometry revealed a statistically significant increase in the maximal resting and squeeze pressures in the group of patients with neurologic incontinence but did not reach statistical significance in the group with idiopathic incontinence. Of 20 total patients, 16 (80%) reported improvement of continence after acute testing and in the early postoperative period after permanent implantation.

While there are some data to suggest that sacral nerve stimulation (SNS) may improve the number of incontinence episodes and quality of life measures as self-reported by study participants undergoing SNS, there are limited data to inform health outcomes regarding the benefit of this therapy on objective anomanometric measures, such as the anal resting and maximal squeeze pressures, and the correlation of these pressures with reported improvements in incontinence. Randomized controlled trial (RCT) data are very limited which precludes generalizing outcomes to standard clinical practice. Additionally the number of adverse events reported in some studies was not insignificant with infection rates of 6-10.8%, stimulator removal rates as high as 12%. There is a lack of long-term results to demonstrate whether short- or medium-term benefits can be maintained over time. At this time there is insufficient evidence to support the safety and effectiveness of SNS for the treatment of fecal incontinence.

U.S. Food and Drug Administration (FDA)

In March 2011, Medtronic, Inc. (Minneapolis, MN) received premarket approval from the FDA for the Medtronic® InterStim® Therapy System. This device is indicated for the treatment of chronic fecal incontinence (FI) in patients who have failed or can not tolerate more conservative treatments (FDA, 2011). Medtronic is required to continue follow-up of the patients enrolled in the premarket InterStim trial for five years.

Professional Societies/Organizations

American College of Gastroenterology (ACG, 2004): On behalf on the ACG, Rao et al. published consensus guidelines regarding the diagnosis and management of FI. Rao notes "An alternative treatment may be sacral nerve stimulation. However, the precise indication for SNS, its comorbidity, its long-term outcome, its efficacy, remain to be defined."

American Society of Colon and Rectal Surgeons (2007): Guidelines note that SNS is a promising modality for fecal incontinence.

International Consultation on Urologic Diseases/International Scientific Committee (2010): On behalf of the International Consultation on Urologic Disease, Abrams et al. (2010) published the Fourth International Consultation on Incontinence, Recommendations of the International Scientific Committee: Evaluation and Treatment of Urinary Incontinence, Pelvic Organ Prolapse, and Fecal Incontinence. Regarding fecal incontinence the Consultation notes "The surgical approach to the incontinent patient is dictated by the presence and magnitude of an anatomic sphincter defect. If no defect is present, the patient should undergo percutaneous nerve evaluation (PNE), which, if successful, should lead to SNS."

The Recommendations further note "For patients with sphincter defects of less than 180 degrees, sphincteroplasty has been conventional therapy. However, as long-term outcome of sphincteroplasty appears to deteriorate with time, and SNS has been proven effective in many patients with sphincter defects, there is a trend towards initial evaluation by PNE followed by, if successful, SNS. Patients with sphincter defects of greater than 180 degrees or major perineal tissue loss require individualized treatment. In some cases, initial reconstruction can be performed. Should incontinence persist, alternatives include stimulated muscle transposition, artificial anal sphincter implantation, or SNS. For patients who remain incontinent following sphincteroplasty, repeat endoanal ultrasound should be undertaken to reassess the status of the repair. If there is a persisting sphincter defect, repeat sphincteroplasty can be considered. Alternatively, such patients can undergo individualized therapy, including sacral nerve stimulation." "For patients who remain incontinent despite a satisfactory sphincteroplasty, sacral nerve stimulation is recommended. Patients who have failed sacral nerve stimulation can be considered for sphincteroplasty if a sphincter defect is present."

National Institute for Clinical Excellence (NICE): Regarding the use of SNS for the treatment of FI, NICE (2007) notes, “A trial of temporary SNS should be considered for people with FI in which sphincter surgery is deemed inappropriate. These may be patients with intact anal sphincters, or those with sphincter disruption. In those with a defect, contraindications to direct repair may include atrophy, denervation, a small defect, absence of voluntary contraction, fragmentation of the sphincter or a poor-quality muscle.” “All individuals should be informed of the potential benefits and limitations of this procedure and should undergo a trial stimulation period of at least two weeks to determine if they are likely to benefit. People with fecal incontinence (FI) should be offered sacral nerve stimulation (SNS) on the basis of their response to percutaneous nerve evaluation during specialist assessment, which is predictive of therapy success.”

Other Indications: Less commonly SNS has been proposed for the treatment of various other conditions; however, data are limited and there is insufficient evidence in the peer-reviewed scientific literature to support safety and effectiveness. At present, the role of SNS for indications other than urinary voiding dysfunction has not been established.

Summary

Evidence in the published, peer-reviewed scientific literature supports the safety and effectiveness of sacral nerve stimulation (SNS) for the treatment of urinary voiding dysfunction following failure of, contraindication to, or intolerance to conservative medical management after a 50% improvement in symptoms is observed in response to a percutaneous screening trial of SNS for any of the following: urinary urge incontinence, nonobstructive urinary retention, or urinary urgency/frequency syndrome. Several systematic reviews, randomized clinical trials and retrospective analyses have demonstrated >50% improvement in incontinence symptoms, a decrease in the number of daily catheterizations required, an increase in the volume of urine obtained per void, and a decrease in postvoid residual urine volume with the use of SNS.

Although there is a growing body of evidence evaluating SNS for other indications including fecal incontinence, clinical utility has not been established and SNS is not yet considered a standard treatment option. Much of the published data evaluating fecal incontinence specifically, consists of uncontrolled case series; randomized controlled clinical trials involving large sample populations and evaluating long-term outcomes are lacking. Self-reported outcomes in the medical literature include decreased episodes of incontinence and improved quality of life; however, the effectiveness of SNS for improving anomanometric measures, such as anal resting and maximal squeeze pressures has not been demonstrated. Furthermore SNS has been associated with adverse events, such as infection rates of 6%-10.8% and stimulator removal rates of 12%. There is a paucity of evidence in the medical literature evaluating SNS for any other indication. At this time clinical utility for SNS has only been established for the treatment of urinary voiding dysfunction (i.e., urinary urge incontinence, nonobstructive urinary retention, urinary urgency/frequency syndrome).

Coding/Billing Information

Note: This list of codes may not be all-inclusive.

Covered when medically necessary:

CPT®*	Description
64561	Percutaneous implantation of neurostimulator electrodes; sacral nerve (transforaminal placement)
64581	Incision for implantation of neurostimulator electrodes; sacral nerve (transforaminal placement)
64590	Insertion or replacement of peripheral or gastric neurostimulator pulse generator or receiver, direct or inductive coupling

HCPCS Codes	Description
A4290	Sacral nerve stimulation test lead, each
C1767	Generator, neurostimulator, implantable, non-rechargeable

C1778	Lead, neurostimulator, implantable
C1897	Lead, neurostimulator, test kit (implantable)
L8680	Implantable neurostimulator electrode, each
L8681	Patient programmer (external) for use with implantable programmable neurostimulator pulse generator, replacement only
L8686	Implantable neurostimulator pulse generator, single array, non-rechargeable, includes extension

ICD-9-CM Diagnosis Codes	Description
788.20	Unspecified retention of urine
788.21	Incomplete bladder emptying
788.31	Urge incontinence
788.29	Other specified retention of urine
788.30	Unspecified urinary incontinence
788.41	Urinary frequency
788.63	Urgency of urination
V53.02	Fitting and adjustment of other device; Neuropacemaker (brain) (peripheral nerve) (spinal cord)

Experimental/Investigational/Unproven/Not Covered:

ICD-9-CM Diagnosis Codes	Description
625.6	Stress incontinence, female
787.60-787.63	Incontinence of feces
788.32	Stress incontinence, male

*Current Procedural Terminology (CPT®) ©2010 American Medical Association: Chicago, IL.

References

1. Abrams P, Andersson KE, Birder L, Brubaker L, Cardozo L, Chapple C, et al. Fourth international consultation on incontinence recommendations of the International Scientific Committee: evaluation and treatment of urinary incontinence, pelvic organ prolapse, and faecal incontinence. *Neurourol Urodyn.* 2010;29(1):213-40.
2. Agency for Healthcare Research and Quality. Evidence Report Technology Assessment. No 161. Prevention of Urinary and Fecal Incontinence in Adults. Dec 2007. Accessed Jul 18, 2011. Available at URL address: <http://www.ahrq.gov/downloads/pub/evidence/pdf/fuiad/fuiad.pdf>
3. American Academy of Family Physicians. Fecal incontinence. Accessed Jul14, 2011. Available at URL address: <http://familydoctor.org/online/famdocen/home/seniors/common-older/067.printerview.html>
4. American Urological Association (AUA) Position Statement Regarding Sacral Nerve Stimulation for Urinary Incontinence. Oct 18, 2000. Accessed Jul 11, 2011. Available at URL address: <http://www.auanet.org/content/legislative-and-regulatory/washington-news/comments-and-testimony/news/medicare/sacralNerve00.cfm>
5. Brazzelli M, Murray A, Fraser C. Efficacy and safety of sacral nerve stimulation for urinary urge incontinence: a systematic review. *J Urol.* 2006 Mar;175(3 Pt 1):835-41.

6. Center for Medicare & Medicaid Services (CMS). NCD for sacral nerve stimulation for treatment of urge urinary incontinence (230.18). 2002 Jan 1. Accessed Jul 11, 2011. Available at URL address: https://www.cms.hhs.gov/mcd/viewncd.asp?ncd_id=230.18&ncd_version=1&basket=ncd%3A230%2E18%3A1%3ASacral+Nerve+Stimulation+For+Urinary+Incontinence
7. Chan M, Tjandra JJ. Sacral nerve stimulation for fecal incontinence: external anal sphincter defect vs intact anal sphincter. *Dis Colon Rectum*. 2008 Jul;51(7): 1015-1025.
8. Chartier-Kastler EJ, Ruud Bosch JL, Perrigot M, Chancellor MB, Richard F, Denys P. Long-term results of sacral nerve stimulation (S3) for the treatment of neurogenic refractory urge incontinence related to detrusor hyperreflexia. *J Urol*. 2000 Nov;164(5):1476-80
9. Dudding TC, Hollingshead JR, Nicholls RJ, Vaizey CJ. Sacral nerve stimulation for faecal incontinence: patient selection, service provision and operative techniques.
10. ECRI Institute. Hotline response [database online]. Plymouth Meeting (PA): ECRI Institute; 2009 Jul 21. Implantable sacral nerve stimulator for fecal incontinence. 2009 Jul 21. Available at URL address: www.ecri.org
11. Everaert K, Kerckhaert W, Caluwaerts H, Audenaert M, Vereecke H, De Cuyper G, et al. A prospective randomized trial comparing the 1 stage with the 2 stage implantation of a pulse generator in patients with pelvic floor dysfunction selected for sacral nerve stimulation. *Eur Urol*. 2004 May;45(5):649-54.
12. Gladman MA, Knowles CH. Surgical treatment of patients with constipation and fecal incontinence. *Gastroenterol Clin North Am*. 2008 Sep;37(3):605-25. Accessed Jul 12, 2011. Available at URL address: <http://m.mdconsult.com/clinics/article.do?linkType=article&issn=0889-8553&eid=661802&sp=21007067&sid=0&uniqlid=5IQVXMaTC5catExgVdWiyz1#S0889855308000502>
13. Gourcerol G, Vitton V, Leroi A, Michot F, Abysique A, Bouvier M. How sacral nerve stimulation works in patients with faecal incontinence. *Colorectal Dis*. 2011 Mar 21. doi: 10.1111/j.1463-1318.2011.02623.x. [Epub ahead of print]
14. Hassouna M, Siegel S, Lycklama A; Sacral Nerve Stimulation Study Group. Sacral neuromodulation in the treatment of urgency-frequency symptoms: a multicenter study on efficacy and safety. *J Urol*. 2000;163:1849-54.
15. Herbison GP, Arnold EP. Sacral neuromodulation with implanted devices for urinary storage and voiding dysfunction in adults. *Cochrane Database Sys Rev*. 2009 Apr 15;(2):CD004202.
16. Hetzer FH. Fifteen years of sacral nerve stimulation: from an open procedure to a minimally invasive technique. *Colorectal Dis*. 2011 Mar;13 Suppl 2:1-4
17. Hetzer FH, Hahnloser D, Clavien PA, Demartines N. Quality of life and morbidity after permanent sacral nerve stimulation for fecal incontinence. *Arch Surg*. 2007 Jan;142(1):8-13.
18. Janec EM, Jonnalagadda S. Sacral spinal nerve stimulation for fecal incontinence: a viable therapeutic option for refractory incontinence. *Gastroenterology*. 2005 Jul;29(6): 388-9.
19. Janknegt RA, Hassouna MM, Siegel SW, Schmidt RA, Gajewski JB, Rivas DA, et al. Long-term effectiveness of sacral nerve stimulation for refractory urge incontinence. *Eur Urol*. 2001 Jan;39(1):101-6.
20. Jarrett MED, Mowatt G, Glazener CM, Fraser C, Nicholls RJ, Grant AM, et al. Systematic review of sacral nerve stimulation for faecal incontinence and constipation. *Br J Surg*. 2004 Dec;91(12):1559-69.
21. Jonas U, Fowler CJ, Chancellor MB, Elhilali MM, Fall M, Gajewski JB, et al. Efficacy of sacral nerve stimulation for urinary retention: results 18 months after implantation. *J Urol*. 2001;165:15-9.

22. Lentz GM. Anatomic defects of the abdominal wall and pelvic floor: abdominal and inguinal hernias, cystocele, urethrocele, enterocele, rectocele, uterine and vaginal prolapse, and rectal incontinence: diagnosis and management. In: Katz VL, Lentz G M, Lobo RA, Gershenson DM, editors. Katz: comprehensive gynecology. 5th ed. Philadelphia (PA): Mosby Elsevier, 2007.
23. Leroi AM, Damon H, Faucheron JL, Lehur PA, Siproudhis L, Slim K, et al. Sacral nerve stimulation in faecal incontinence: position statement based on a collective experience. *Colorectal Dis*. 2009 Jul 11(6):572-83.
24. Leroi AM, Parc Y, Lehur PA, Mion F, Barth X, Rullier E, et al. Efficacy of sacral nerve stimulation for fecal incontinence: results of a multicenter double-blind crossover study. *Ann Surg*. 2005 Nov;242(5):662-9.
25. Matzel KE, Kamm MA, Stosser M, Baeten CG, Christianse J, Madoff R, et al. Sacral spinal nerve stimulation for faecal incontinence: multicenter study. *Lancet*. 2004 April 17;363(9417):1270-6.
26. Matzel KE, Lux P, Heuerr S, Besendorf er M, Zhang W. Sacral nerve stimulation for faecal incontinence: long-term outcome. *Colorectal Dis*. 2009 Jul;11(6):636-41.
27. Medtronic, Inc. Sacral nerve stimulation (Interstim Therapy). Updated 5 Apr 2011. Accessed Jul 11, 2011. Available at URL address: <http://professional.medtronic.com/therapies/sacral-nerve-stimulation-interstim-therapy/index.htm>
28. Mellgren A. Fecal incontinence. *Surgical Clin of North Am*. 2010 Feb;90(1). Accessed Jul 12, 2011. Available at URL address: <http://m.mdconsult.com/clinics/article.do?linkType=article&issn=0039-6109&eid=731868&sp=22826886&sid=0&uniqlid=-yWOqpnGIEOqx99XcNyyWvM>
29. Mellgren A, Wexner SD, Collier JA, Devroede G, Lerew DR, Madoff RD, et al. Long-term efficacy and safety of sacral nerve stimulation for fecal incontinence. *Dis Colon Rectum*. 2011 Sep;54(9):1065-1075.
30. Mellenhorst J, Koch SM, Uludag O, Van Gerneret WG, Baeten CG. Sacral neuromodulation in patients with faecal incontinence: results of the first 100 implantations. *Colorectal Dis*. 2007 Oct;9(8):729-30.
31. Mowatt G, Glazener C, Jarett M. Sacral nerve stimulation for fecal incontinence and constipation in adults: a short version Cochrane review. *Neurourol Urodyn*. 2008;27(3):155-61.
32. Meurette G, La Torre M, Regenet N, Robert-Yap J, Lehur PA. Value of sacral nerve stimulation in the treatment of severe faecal incontinence: a comparison to the artificial bowel sphincter. *Colorectal Dis*. 2009 Jul;11(6):631-5.
33. National Institute for Clinical Excellence (NICE). Faecal incontinence: the management of faecal incontinence in adults. Published 2007. Accessed Jul 11, 2011. Available at URL address: <http://www.nice.org.uk/nicemedia/live/11012/36582/36582.pdf>
34. National Institute for Clinical Excellence (NICE). Sacral nerve stimulation for urge incontinence and urgency-frequency. Issue date: June 2004. Accessed Jul 11, 2011. Available at URL address: <http://www.nice.org.uk/nicemedia/pdf/ip/IPG064guidance.pdf>
35. National Institute for Clinical Excellence (NICE). Faecal incontinence: the management of faecal incontinence in adults.
36. Peeren F, Hoebeke P, Everaert K. Sacral nerve stimulation: Interstim therapy. *Expert Rev Med Devices*. 2005 May;2(3):253-8.
37. Rao SSC, American College of Gastroenterology Practice Parameters Committee. Diagnosis and management of fecal incontinence. American College of Gastroenterology Practice Parameters Committee. *Am J Gastroenterol*. 2004 Aug;99(8):1585-604.
38. Rosen HR, Urbarz C, Holzer B, Nov G, Schiessel R. Sacral nerve stimulation as a treatment for fecal incontinence. *Gastroenterology*. 2001;11(3):536-41.

39. Schmidt RA, Jonas U, Oleson KA, Janknegt RA, Hassouna MM, Siegel SW, et al. Sacral nerve stimulation for treatment of refractory urinary urge incontinence. Sacral Nerve Stimulation Study Group. *J Urol*. 1999 Aug;162(2):352-57.
40. Siegel SW, Catanzaro F, Dijkema HE, Elhilali MM, Fowler CJ, Gajewski JB, et al. Long-term results of a multicenter study on sacral nerve stimulation for treatment of urinary urge incontinence, urgency-frequency, and retention. *Urology*. 2000 Dec 4;56(6 Suppl 1):87-91.
41. Sutherland SE, Lavers A, Carlson A, Holtz C, Keshava J, Siegel SW. Sacral nerve stimulation for voiding dysfunction: One institution's 11-year experience. *Neurourol Urodyn*. 2007;26(1):19-28; discussion 36.
42. Tan JJY, Chan M, Tjandra JJ. Evolving therapy for fecal incontinence. 2007 Nov;50(11):1950-67.
43. Tjandra JJ, Chan MKY, Yeh CH, Murray-Green C. Sacral nerve stimulation is more effective than optimal medical therapy for severe fecal incontinence: a randomized, controlled study.
44. Tjandra JJ, Dykes SL, Kumar RR, Ellis CN, Gregorcyk SG, Hyman NH, et al. Practice parameters for the treatment of fecal incontinence. *Dis Colon Rectum*. 2007 Oct;50(20):1497-507.
45. United States Food and Drug Administration (FDA); Medical Devices. Medtronic™ Interstim™ Therapy System: P080025. Accessed Jul 11, 2011. Available at URL address: http://www.accessdata.fda.gov/cdrh_docs/pdf8/p080025a.pdf
46. United States Food and Drug Administration (FDA); Center for Devices and Radiological Health (CDRH). Medtronic™ Interstim™ System for Urinary Control: treatment of urinary retention and symptoms of urgency/frequency [approval order P970004/S004]. Accessed Jul 11, 2011. Available at URL address: <http://www.fda.gov/cdrh/pdf/P970004S004.html>
47. Vaizey CJ, Kamm MA, Roy AJ, Nicholls RJ. Double-blind crossover study of sacral nerve stimulation for fecal incontinence. *Dis Colon Rectum*. 2000 Mar;43(3):298-302.
48. van Kerrebroeck PE, van Voskuilen AC, Heesakkers JP, Lycklama a Nijholt AA, Siegel S, Jonas U, et al. Results of sacral neuromodulation therapy for urinary voiding dysfunction: outcomes of a prospective, worldwide clinical study. *J Urol*. 2007 Nov;178(5):2029-34.
49. van Voskuilen AC, Oerlemans DJAJ, Weil EHJ, de Bie RA, van Kerrebroeck PEVA. Long term results of neuromodulation by sacral nerve stimulation for lower urinary tract symptoms: a retrospective single center study. *Eur Urol*. 2006 Feb;49(2):366-72.
50. Wexner SD, Collier JA, Devroede G, Hull T, McCallum R, Chan M, et al. Sacral nerve stimulation for fecal incontinence: results of a 120-patient prospective multicenter study. *Ann Surg*. 2010 Mar;251(3):441-9.
51. Wexner SD, Hull T, Edden Y, Collier JA, Devroede G, McCallum R, et al. Infection rates in a large investigational trial of sacral nerve stimulation for fecal incontinence. *J Gastrointest. Surg*. 2010 Jul;14(7):1081-9.
52. White WM, Dobmeyer-Dittrich C, Klein FA, Wallace LS. Sacral nerve stimulation for treatment of refractory urinary retention: long-term efficacy and durability. *Urology*. 2008 Jan;71(1):71-4.
53. Wong MT, Meurette G, Rodat F, Regenet N, Wyart V, Lehur PA. Outcome and management of patients in whom sacral nerve stimulation for fecal incontinence failed. *Dis Colon Rectum*. 2011 Apr;54(4):25-32.

Policy History

Pre-Merger Organizations	Last Review Date	Policy Number	Title
CIGNA HealthCare	8/15/2008	0404	Sacral Nerve Stimulation for Urinary Voiding Dysfunction

GNA", "CIGNA HealthCare" and the "Tree of Life" logo are registered service marks of CIGNA Intellectual Property, Inc., licensed for use by CIGNA Corporation and its operating subsidiaries. All products and services are provided by such operating subsidiaries and not by CIGNA Corporation. Such operating subsidiaries include Connecticut General Life Insurance Company, CIGNA Health and Life Insurance Company, CIGNA Behavioral Health, Inc., CIGNA Health Management, Inc., and HMO or service company subsidiaries of CIGNA Health Corporation and CIGNA Dental Health, Inc. In Arizona, HMO plans are offered by CIGNA HealthCare of Arizona, Inc. In California, HMO plans are offered by CIGNA HealthCare of California, Inc. In Connecticut, HMO plans are offered by CIGNA HealthCare of Connecticut, Inc. In North Carolina, HMO plans are offered by CIGNA HealthCare of North Carolina, Inc. In Virginia, HMO plans are offered by CIGNA HealthCare Mid-Atlantic, Inc. All other medical plans in these states are insured or administered by Connecticut General Life Insurance Company or CIGNA Health and Life Insurance Company.