PLATELET DERIVED GROWTH FACTORS FOR TREATMENT OF WOUNDS

Protocol: WOU005
Effective Date: May 1, 2017

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INSTRUCTIONS FOR USE

This protocol provides assistance in interpreting UnitedHealthcare benefit plans. When deciding coverage, the enrollee specific document must be referenced. The terms of an enrollee's document (e.g., Certificate of Coverage (COC) or Evidence of Coverage (EOC)) may differ greatly. In the event of a conflict, the enrollee's specific benefit document supersedes this protocol. All reviewers must first identify enrollee eligibility, any federal or state regulatory requirements and the plan benefit coverage prior to use of this Protocol. Other Protocols, Policies and Coverage Determination Guidelines may apply. UnitedHealthcare reserves the right, in its sole discretion, to modify its Protocols, Policies and Guidelines as necessary. This protocol is provided for informational purposes. It does not constitute medical advice. This policy does not govern Medicare Group Retiree members.

UnitedHealthcare may also use tools developed by third parties, such as the MCG™ Care Guidelines, to assist us in administering health benefits. The MCG™ Care Guidelines are intended to be used in connection with the independent professional medical judgment of a qualified health care provider and do not constitute the practice of medicine or medical advice.

COMMERCIAL & MEDICAID COVERAGE RATIONALE

Recombinant-Human Platelet Derived Growth Factors
When used according to U.S. Food and Drug Administration (FDA) approved indications, becaplermin (Regranex® Gel) is medically necessary for the treatment of lower extremity diabetic neuropathic ulcers.

In June 2008, the U.S. Food and Drug Administration (FDA) announced the addition of a boxed warning to the labeling of becaplermin (Regranex Gel). Refer to the U.S. Food and Drug Administration section for more information.
Platelet Rich Plasma
Autologous platelet rich plasma (e.g., Procuren®, AutoloGel®, or SafeBlood®) is not medically necessary for the treatment of wounds.

The better designed studies do not demonstrate that autologous platelet rich plasma such as Procuren, AutoloGel or SafeBlood improves health outcomes in patients with wounds. The remaining studies have design flaws that do not allow confidence in analyzing final study results. The clinical utility of autologous platelet rich plasma remains to be determined in larger well-designed controlled clinical trials comparing their use with standard wound care.

MEDICARE COVERAGE RATIONALE

Medicare covers platelet rich plasma when criteria are met. Refer to the National Coverage Determination (NCD) for Blood-Derived Products for Chronic Non-Healing Wounds (270.3). Local Coverage Determinations (LCDs) for Nevada do not exist at this time. Accessed March 2017.

Blood Derived Products for Chronic Non Healing Wounds (NCD 270.3)
Indications and Limitations of Coverage
Nationally Covered Indications
Effective August 2, 2012, upon reconsideration, The Centers for Medicare and Medicaid Services (CMS) has determined that platelet-rich plasma (PRP) – an autologous blood-derived product, will be covered only for the treatment of chronic non-healing diabetic, venous and/or pressure wounds and only when the following conditions are met:

The patient is enrolled in a randomized clinical trial that addresses the following questions using validated and reliable methods of evaluation. Clinical study applications for coverage pursuant to this National coverage Determination (NCD) must be received by August 2, 2014.

The clinical research study must meet the requirements specified below to assess the effect of PRP for the treatment of chronic non-healing diabetic, venous and/or pressure wounds. The clinical study must address:

Prospectively, do Medicare beneficiaries that have chronic non-healing diabetic, venous and/or pressure wounds who receive well-defined optimal usual care along with PRP therapy, experience clinically significant health outcomes compared to patients who receive well-defined optimal usual care for chronic non-healing diabetic, venous and/or pressure wounds as indicated by addressing at least one of the following:

a. Complete wound healing?
b. Ability to return to previous function and resumption of normal activities?
c. Reduction of wound size or healing trajectory which results in the patient’s ability to return to previous function and resumption of normal activities?

The required randomized clinical trial (RCT) of PRP must adhere to the following standards of scientific integrity and relevance to the Medicare population:

a. The principal purpose of the RCT is to test whether PRP improves the participants’ health outcomes.
b. The RCT is well supported by available scientific and medical information or it is intended to clarify or establish the health outcomes of interventions already in common clinical use.

c. The RCT does not unjustifiably duplicate existing studies.

d. The RCT design is appropriate to answer the research question being asked in the study.

e. The RCT is sponsored by an organization or individual capable of executing the proposed study successfully.

f. The RCT is in compliance with all applicable Federal regulations concerning the protection of human subjects found at 45 CFR Part 46.

g. All aspects of the RCT are conducted according to appropriate standards of scientific integrity set by the International Committee of Medical Journal Editors (http://www.icmje.org).

h. The RCT has a written protocol that clearly addresses, or incorporates by reference, the standards listed here as Medicare requirements for coverage with evidence development (CED).

i. The RCT is not designed to exclusively test toxicity or disease pathophysiology in healthy individuals. Trials of all medical technologies measuring therapeutic outcomes as one of the objectives meet this standard only if the disease or condition being studied is life threatening as defined in 21 CFR §312.81(a) and the patient has no other viable treatment options.

j. The RCT is registered on the ClinicalTrials.gov website by the principal sponsor/investigator prior to the enrollment of the first study subject.

k. The RCT study protocol specifies the method and timing of public release of all pre-specified outcomes to be measured including release of outcomes if outcomes are negative or study is terminated early. The results must be made public within 24 months of the end of data collection. If a report is planned to be published in a peer reviewed journal, then that initial release may be an abstract that meets the requirements of the International Committee of Medical Journal Editors (http://www.icmje.org). However a full report of the outcomes must be made public no later than three (3) years after the end of data collection.

l. The RCT protocol must explicitly discuss subpopulations affected by the treatment under investigation, particularly traditionally underrepresented groups in clinical studies, how the inclusion and exclusion criteria effect enrollment of these populations, and a plan for the retention and reporting of said populations on the trial. If the inclusion and exclusion criteria are expected to have a negative effect on the recruitment or retention of underrepresented populations, the protocol must discuss why these criteria are necessary.

m. The RCT protocol explicitly discusses how the results are or are not expected to be generalizable to the Medicare population to infer whether Medicare patients may benefit from the intervention. Separate discussions in the protocol may be necessary for populations eligible for Medicare due to age, disability or Medicaid eligibility.

Consistent with §1142 of the Social Security Act (the Act), the Agency for Healthcare Research and Quality (AHRQ) supports clinical research studies that CMS determines meet the above-listed standards and address the above-listed research questions.

Any clinical study undertaken pursuant to this NCD must be approved no later than August 2, 2014. If there are no approved clinical studies on or before August 2, 2014, this CED will expire. Any clinical study approved will adhere to the timeframe designated in the approved clinical study protocol.
C. Nationally Noncovered Indications

1. Effective December 28, 1992, the Centers for Medicare & Medicaid Services (CMS) issued a national non-coverage determination for platelet-derived wound-healing formulas intended to treat patients with chronic, non-healing wounds. This decision was based on a lack of sufficient published data to determine safety and efficacy, and a public health service technology assessment.

2. Effective July 23, 2004, upon reconsideration, the clinical effectiveness of autologous PDGF products continues to not be adequately proven in scientific literature. As the evidence is insufficient to conclude that autologous PDGF in a platelet-poor plasma is reasonable and necessary, it remains non-covered for treatment of chronic, non-healing cutaneous wounds. Also, the clinical evidence does not support a benefit in the application of autologous PRP for the treatment of chronic, non-healing, cutaneous wounds. Therefore, CMS determines it is not reasonable and necessary and is nationally non-covered.

3. Effective April 27, 2006, coverage for treatments utilizing becaplermin, a non-autologous growth factor for chronic, non-healing subcutaneous wounds, remains nationally non-covered under Part B based on section 1861 (s)(2)(A) and (B) of the Social Security Act because this product is usually administered by the patient.

4. Effective March 19, 2008, upon reconsideration, the evidence is not adequate to conclude that autologous PRP is reasonable and necessary and remains non-covered for the treatment of chronic non-healing, cutaneous wounds. Additionally, upon reconsideration, the evidence is not adequate to conclude that autologous PRP is reasonable and necessary for the treatment of acute surgical wounds when the autologous PRP is applied directly to the closed incision, or for dehiscent wounds.

D. Other

In accordance with section 310.1 of the National Coverage Determinations Manual, the routine costs in Federally sponsored or approved clinical trials assessing the efficacy of autologous PRP in treating chronic, non-healing cutaneous wounds are covered by Medicare.

For Medicare and Medicaid DeterminationsRelated to States Outside of Nevada:
Please review Local Coverage Determinations that apply to other states outside of Nevada.
http://www.cms.hhs.gov/mcd/search

Important Note: Please also review local carrier Web sites in addition to the Medicare Coverage database on the Centers for Medicare and Medicaid Services’ Website.

DESCRIPTION OF SERVICES

Recombinant-Human Platelet-Derived Growth Factors: Platelet-derived growth factors are applied directly to the wound surface to promote growth of skin, soft tissue, and blood vessels. Recombinant DNA technology has been used to produce a recombinant human platelet-derived growth factor (rPDGF, rPDGF-BB, or rhPDGF-BB). Becaplermin (tradename Regranex Gel) is not an autologous product, but is a commercially prepared biotechnology product with recombinant PDGF as the active ingredient. The growth factor is produced in the laboratory by inserting a gene into yeast.
Platelet Rich Plasma: Platelet Rich Plasma (also known as platelet-enriched plasma, platelet-rich concentrate, autogenous platelet gel, or platelet releasate) is being evaluated as an enhancement for soft-tissue healing by placing supraphysiologic concentrations of autologous platelets at the site of tissue damage. AutoloGel and SafeBlood are autologous preparations in which blood is drawn from the patient and centrifuged to create platelet-rich plasma that is applied to the wound. Procuren® an autologous product that has been used as treatment in the past for chronic wound healing, but it is no longer manufactured or commercially available.

**CLINICAL EVIDENCE**

**Becaplermin**

The earlier studies evaluating recombinant PDGF or becaplermin for chronic diabetic ulcers were well-designed with large sample sizes. Results of these studies demonstrate that becaplermin, in conjunction with good wound care, is efficacious in accelerating wound closure of chronic diabetic ulcers (Embil et al., 2000; Ehrlich and Freedman, 2002). Significant increases in the incidence of complete wound closure and decreases in the time to achieve complete wound healing were observed in patients receiving the study medication compared with those receiving placebo.

A total of 922 patients with full-thickness diabetic neuropathic ulcers were entered into 1 of 5 randomized prospective blinded clinical trials comparing treatment of recombinant PDGF with placebo gel. Results showed that patients treated with PDGF had a significant increase in complete healing and decreased time to complete healing compared with patients given placebo (Steed, 2006).

Buchberger et al. (2011) assessed the safety, efficacy and effectiveness of growth factors alone or in combination with other technologies in the treatment of diabetic foot ulcers (DFU). The authors identified 25 studies comparing becaplermin, rhEGF, bFGF and metabolically active skin grafts (Dermagraft and Apligraf) with standard wound care (SWC) alone or extracellular wound matrix. Study duration ranged from 12 to 20 weeks and the study population comprised between 17 and 382 patients. Treatment with becaplermin, rhEGF, Dermagraft and Apligraf resulted in a higher incidence of complete wound closure and shorter time to complete wound healing with statistically significant differences. The authors concluded that add-on therapy with growth factors for treating uncomplicated DFU could be an alternative to SWC alone.

Gilligan et al. (2015) sought to determine the long-term cost effectiveness of becaplermin gel plus good wound care (BGWC) vs. good wound care (GWC) alone in terms of wound healing and risk of amputation in patients with diabetic foot ulcers (DFUs). They conducted a 20-week retrospective study of subjects with DFU from the Curative Health Services database. A total of 24,898 subjects met the criteria for DFU, and were divided into two treatment groups: becaplermin (n=2,394) (i.e., becaplermin good wound care [BGWC]) and no becaplermin (n=22,504) (i.e., good wound care alone [GWC]). GWC included appropriate debridement of necrotic tissue, infection control, and local ulcer care with saline moistened gauze. A four-state Markov model was used to predict costs and outcomes of wound healing and risk of amputation for BGWC vs. GWC alone over 1 year in patients with DFU. Patients treated with BGWC had substantially more closed-wound weeks compared with GWC (16.1 vs. 12.5 weeks, respectively). More patients receiving BGWC had healed wounds at 1 year compared with those receiving GWC (48.1% vs. 38.3%). Risk of amputation was lower in the BGWC cohort (6.8% vs. 9.8%). Expected annual direct costs for DFU were $21,920 for BGWC and $24,640 for GWC. The
authors concluded that the results of this study indicate that becaplermin gel is an effective adjunct therapy to GWC. DFU patients treated with BGWC had a higher healing rate and lower risk of amputation during the treatment period relative to GWC alone. BGWC was economically dominant over GWC, providing better outcomes at a lower cost in patients with DFU.

Professional Societies

American Society of Plastic Surgeons
In a clinical practice guideline for chronic wounds of the lower extremity, the American Society of Plastic Surgeons indicates that there is evidence that recombinant human platelet-derived growth factor-BB (PDGF) may promote healing of chronic diabetic neurotrophic foot ulcers, when combined with basic preferred practices in wound care (American Society of Plastic Surgeons, 2007).

Wound Healing Society
In guidelines for the treatment of diabetic ulcers, the Wound Healing Society states that Platelet-derived growth factor (PDGF) is effective in treating diabetic neurotrophic foot ulcers (Level 1) (Lavery et al. 2016).

In guidelines for the treatment of pressure ulcers, the Wound Healing Society states that the use of growth factor therapy [this includes platelet-derived growth factor] should be considered for pressure ulcers that are not responsive to initial comprehensive therapy and/or before surgical repair (Level II) (Gould et al. 2016).

In guidelines for the treatment of venous ulcers, the Wound Healing Society states that cytokine growth factors [includes platelet-derived growth factor] have yet to be shown to demonstrate sufficient statistically significant results of effectiveness to recommend any of them for treatment of venous ulcers, although isolated reports suggest their potential usefulness (Level I) (Marston et al. 2016).

Platelet Rich Plasma
In a meta-analysis, Martinez-Zapata et al (2016) examined whether autologous platelet-rich plasma (PRP) promotes the healing of chronic wounds. Ten randomized controlled trials (RCTs) that compared autologous PRP with placebo or alternative treatments for any type of chronic wound in adults were included (442 participants.). Four RCTs recruited people with a range of chronic wounds; three RCTs recruited people with venous leg ulcers, and three RCTs considered foot ulcers in people with diabetes. The median length of treatment was 12 weeks. The authors concluded that the results were non-conclusive as to whether autologous PRP improves the healing of chronic wounds generally compared with standard treatment. Autologous PRP may increase the healing of foot ulcers in people with diabetes compared with standard care, but it is unclear if autologous PRP has an effect on other types of chronic wounds. Three studies reported wound complications such as infection or dermatitis, but results showed no difference in the risk of adverse events in people treated with PRP or standard care. These findings are based on low quality evidence due to the small number of studies and patients included, and their poor methodological quality.

A Cochrane Database systematic review was performed by Marti-Carvajal et al. (2015) to assess the benefits and harms of growth factors for foot ulcers in patients with type 1 or type 2 diabetes mellitus. They identified 28 randomized clinical trials involving 2365 participants. The cause of foot ulcer (neurologic, vascular, or combined) was poorly defined in all trials. The trials evaluated 11 different
experimental growth factors compared with several different control interventions. The authors found that any growth factor compared with placebo or no growth factor increased the number of participants with complete wound healing (345/657 (52.51%) versus 167/482 (34.64%). Data on quality of life was not reported. Safety data was poorly reported. The authors concluded that they found evidence suggesting that growth factors may increase complete healing of foot ulcers in people with diabetes. However, this conclusion is based on randomized clinical trials with high risk of systematic errors (bias). Half of the trials were sponsored by the pharmaceutical industry that produces these growth factors. Well-designed trials are required to assess the benefits and harms of growth factors in the treatment of diabetic foot ulcers. The studies should report how many of the participants’ ulcers healed and how long the healing took; any level of amputation in the foot; quality of life; ulcer-free days following treatment; and harms caused by treatment.

Carter et al. (2011) conducted a systematic review and meta-analysis to evaluate the use of platelet-rich plasma (PRP) for the treatment of cutaneous wounds compared to standard wound care. Twenty-four studies met inclusion criteria. These studies included 3 systematic reviews, 12 randomized controlled trials, 2 prospective cohort studies, 3 prospective comparative studies and 4 retrospective reviews. The results of the meta-analysis suggested that PRP therapy can positively impact wound healing and associated factors such as pain and infection in cutaneous wounds. Limitations of the studies included heterogeneous patient populations, lack of long-term follow-up, and pooling of data on different types of PFG products and regimens. Several of the studies included in the meta-analysis had conflicting results.

Litmathe et al. (2009) performed a prospective, double-blind study in 44 high-risk patients for wound healing complications (e.g., obesity, diabetes, smokers, peripheral vascular disease, heart failure) after cardiac surgery. The study group was treated with autologous platelet gel (APG). The control group underwent conventional wound treatment. The incidence of major and minor wound complications at the thoracotomy, as well as in the area of saphenous vein harvesting, was not pronounced in either of the groups. The authors concluded that despite promising results in other fields of surgery, APG shows no beneficial effect in high-risk patients undergoing cardiac surgery.

Saad Setta et al. (2011) investigated the efficiency of platelet releasate on the healing of chronic diabetic ulcers in comparison with platelet-poor plasma (PPP). This study included 24 patients with chronic diabetic ulcers. They were systematically randomized into two groups: PRP group (n=12) and PPP group (n=12). The results showed that healing in PRP group was significantly faster. The authors concluded that PRP enhances healing of chronic diabetic foot ulcers. These findings require confirmation in a larger study.

Lawlor et al. (2011) evaluated whether incision application of platelet-rich plasma (PRP) decreased postoperative wound complications in vascular surgery patients. A prospective, randomized trial randomized 81 incisions in 51 patients who underwent femoral artery exposure for elective revascularization procedures or endovascular abdominal aneurysm repairs. Using the ASEPSIS wound classification system, the researchers found no difference in incidence of wound infection. Wound complications occurred in 9 (23%) of 40 of PRP group and 9 (22%) of 41 of non-PRP. Severe wound complications developed in 5 (13%) PRP and 6 (5%) of non-PRP. In multivariate analysis, there were no predictors for wound infection. According to the researchers, platelet-rich plasma did not decrease the incidence of groin wound complications in these patients.
A prospective, randomized, controlled, blinded multicenter study initially included 72 patients with diabetic foot ulcers who were treated with autologous platelet-rich plasma gel or control (saline gel). Thirty-two patients were excluded from the final protocol because of protocol violations and failure to complete treatment. Significantly more wounds healed in patients treated with platelet-rich plasma gel (13 out of 16 or 81.3%) than patients treated with control gel (8 out of 19 or 42.1%) (Driver, 2006). Study limitations include small sample size, study supported by manufacturer, protocol violations occurring during the study period, and high rate of patient dropouts.

Within a prospective randomized study, Buchwald et al. (2008) evaluated whether intraoperative use of autologous platelet gel on the leg during a coronary artery bypass graft (CABG) could reduce the incidence of postoperative wound healing disturbances. The application group (AG) included 35 patients and was compared to a control group (CG) that also had 35 patients. The platelet gel, as well as the thrombin required to activate the platelets, was prepared from autologous patient blood during the operation. Wound healing was photographically documented after surgery, and the patients were contacted by telephone on day 50 after surgery to obtain information on wound healing status. During the primary clinical stay, no statistically significant differences were recorded in the number of hematomas, postoperative leg swelling, or pain level. Large-area hematomas were less frequent in the application group. In the follow-up 51 days after surgery, 17.6% (6/34) of the patients from the AG and 31.4% (11/35) of the patients from the CG showed leg wound healing disturbances. The investigators concluded that despite optimum application of the autologous platelet gel to the wound, no clinically relevant differences were found between the groups, either during the primary clinic stay or in the follow-up period.

Kazakos et al. (2008) conducted a study to assess the benefits of using autologous platelet-rich plasma (PRP) gel in the treatment of acute limb soft tissue wounds. Fifty-nine patients with acute wounds (open fractures, closed fractures with skin necrosis and friction burns) were randomized into two groups. Group A (32 patients) were treated with conventional dressings and Group B (27 patients) were managed with local application of PRP gel. The rate of wound healing rate was significantly faster in Group B at week 1, 2 and 3. The investigators concluded that PRP gel treatment can be a valuable and effective aid in the management of acute trauma wounds. The value of this study is limited by the small sample size.

Almdahl et al. (2010) evaluated if spraying of wounds after open long saphenous vein harvesting with platelet-rich plasma might reduce the frequency of harvest site infections. A total of 140 patients undergoing first-time coronary artery bypass grafting were randomized into two groups of 70 patients. Both groups had standard surgical leg wound closure and care except topical application of platelet-rich plasma as adjunctive treatment in the active treatment group. End points were wound infection and cosmetic result at 6 weeks. The follow-up was 100% complete. Nine patients (13%) in the treatment group and eight (11%) in the control group experienced harvest site infection. The overall cosmetic result was also similar between the groups, but the top score was borderline and more frequent in the treatment group. The investigators concluded that topical application of autologous platelet-rich plasma on vein harvest wounds did not reduce the rate of surgical site infection.

Córdoba-Fernández et al. (2010) analyzed the use of autologous platelet gel in the surgical treatment of ingrown toe nails in a within-patient clinical trial. Thirty-five healthy volunteers (70 feet) underwent surgical treatment for bilateral ingrown hallux nails. Recovery time (days), postoperative pain (analog
chromatic scale), and inflammation (digital circumference) at 48 hours postoperative were the outcomes of interest. Recovery time and postoperative pain were less in the experimental group, although the differences of means were not statistically significant. The investigators concluded that local application of APG in surgical ingrown toenail wounds may produce a slight increase in acute inflammatory phase dermal wound healing, but it does not cause a statistically significant reduction in recovery times or postoperative pain.

Villela and Santos (2010) systematically reviewed evidence regarding the use of platelet-rich plasma (PRP) for the topical treatment of chronic leg ulcers. The systematic review of the literature was performed according to the steps recommended by the Cochrane Collaboration with studies published until July 2008. Among 18 selected studies, 7 (39%) of these studies were randomized clinical trials. Five of the seven randomized clinical trials studied ulcers of diabetic etiology. The results of meta-analysis showed that PRP favors the healing process (95% CI: 2.94-20.31). According to the reviewers, the present systematic review and meta-analysis show that there is scientific evidence regarding favorable outcomes of the use of PRP for the treatment of diabetic ulcer. The reviewers stated that the sample size of the studies analyzed was small.

Frykberg et al. (2010) conducted a prospective case series to evaluate how a physiologically relevant concentration of an autologous platelet-rich plasma (PRP) gel affects initial wound healing trajectories of chronic, nonhealing wounds of various etiologies. Using convenience sampling methods, 49 patients with 65 nonhealing wounds (mean duration 47.8 weeks) were prescribed PRP gel. The most common wounds were pressure ulcers (n = 21), venous ulcers (n = 16) and diabetic foot ulcers (n = 14). Mean wound area and volume were 19 cm² and 36.2 cm³, respectively. Following a mean of 2.8 weeks with 3.2 applications, reductions in wound volume (mean 51%, SD 43.1), area (39.5%, SD 41.2), undermining (77.8%, SD 28.9), and sinus tract/tunneling (45.8%, SD 40.2) were observed. For all wound etiologies, 97% of wounds improved. According to the investigators, the results of this study suggest the application of this PRP gel can reverse nonhealing trends in chronic wounds. These findings require confirmation in a statistically robust randomized controlled trial.

Marquez De Aracena Del Cid et al. (2009) evaluated the efficiency of the subconjunctival application of autologous regenerative factor-rich plasma (RFRP) in a study of 35 patients with different degrees of ocular alkali burns. The patients were classified into moderate and relevance groups according to the severity of the burn. A control group underwent conventional topical medical treatment. A further group was added to the severe chemical burn group, which received autohemotherapy. The clinical evolution of the lesions and the period in which the pathology prevented the patient from working were studied; monitoring was carried out until the patient had healed. In the moderate chemical burns, there was a significant reduction in corneal and conjunctival epithelization times, sick leave duration, and healing time when the patients were treated with RFRP in comparison to the control group. With regard to the severe burns, significant reduction in time to corneal scarring in those treated with RFRP in comparison to traditional treatment was reported. RFRP showed, at least as effective and less side effects than the autohemotherapy. The limitation of this study is small sample size.

Spyridakis et al. (2009) evaluated 52 patients with pilonidal sinus disease who underwent open excision and secondary closure of the surgical wound (n = 22) or additional local postoperative infusion of platelet-derived growth factors (n = 30). Duration of total wound healing and time to return to normal activities were evaluated. Wound-healing rates were much greater for the platelet group.
Complete healing of the surgical wound required 24 days for the platelet group while the respective time for the control group was more than 30 days. According to the investigators, the study provides evidence that the use of platelet-derived growth factors directly to the surgical wound enhances the healing process resulting in faster recovery of patients surgically treated for pilonidal sinus disease. Study limitations include lack of blinding or randomization.

de Leon et al. (2011) investigated clinical outcomes in chronic nonhealing wounds following the short-term use of a platelet-rich plasma (PRP) gel (AutoloGel System). The study design was a large, observational case series using a multicenter registry database (all wounds included), which compared different populations within the database. Thirty-nine centers contributed to the registry. The target population included 285 chronic wounds (patient n = 200). Wound etiologies included diabetic, pressure, or venous ulcer; dehisced, surgical, or traumatic wound; and wounds of other etiologies. Clinical relevance was determined by analyzing outcomes in wounds that responded to treatment. A positive response occurred in 96.5% of wounds within 2.2 weeks with 2.8 treatments. In 86.3% of wounds, 47.5% area reduction occurred, and 90.5% of wounds had a 63.6% volume reduction. The authors concluded that in chronic wounds recalcitrant to other treatments, utilization of PRP gel can restart the healing process. The lack of a comparison group limits the conclusions that can be reached from this study.

In a diabetic inpatient clinical guideline, the National Institute for Health and Clinical Excellence (NICE) recommends that autologous platelet-rich plasma gel and platelet-derived growth factor (PDGF) should not be offered as treatment for diabetic foot problems unless part of a clinical trial (NICE, 2015).

U.S. FOOD AND DRUG ADMINISTRATION (FDA)

In December 1997, the FDA approved becaplermin for the treatment of patients with lower extremity diabetic neuropathic ulcers that extend into the subcutaneous tissue or beyond and have adequate blood supply. According to FDA labeled indications, Becaplermin should be used in combination with standard ulcer wound care. This is the first FDA-approved biotechnology product to treat deep diabetic foot and leg ulcers. See the following website for more information: http://www.fda.gov/Drugs/DevelopmentApprovalProcess/HowDrugsareDevelopedandApproved/ApprovalApplications/TherapeuticBiologicApplications/ucm080471.htm. Accessed March 2017.

In June 2008, the FDA announced the addition of a boxed warning to the labeling of Regranex Gel 0.01% (becaplermin). The new labeling indicates that Regranex (becaplermin) Gel is contraindicated in patients with a known hypersensitivity to any component of this product (e.g., parabens) or a known neoplasm(s) at the site(s) of application. The warnings in the new labeling indicate that Regranex Gel contains becaplermin, a recombinant human platelet-derived growth factor, which promotes cellular proliferation and angiogenesis. The benefits and risks of becaplermin treatment should be carefully evaluated before prescribing. Becaplermin should be used with caution in patients with a known malignancy. Malignancies distant from the site of application have occurred in becaplermin users in both a clinical study and in post marketing use, and an increased rate of death from systemic malignancies was seen in patients who have received 3 or more tubes of Regranex Gel. See the following website for more information:

In April 2003, the FDA approved the use of the GPS™ Platelet Separation Kit. The GPS™ separation kit aids separation of the patient’s own blood components by density through the use of the GPS™-Thermo International Equipment Company (IEC) centrifuge. The GPS separation kit permits platelet rich plasma to be rapidly prepared from a small volume of the patient’s blood that is drawn at the time of treatment. The GPS Platelet Separation Kit is designed for use in the clinical laboratory or intraoperatively at point of care, for the safe and effective preparation of platelet poor plasma and platelet concentrate from a small sample (50-60 ml) of whole blood. See the following website for more information: http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpmn/pmn.cfm?ID=K030555. Accessed March 2017.

### APPLICABLE CODES

The following list(s) of procedure and/or diagnosis codes is provided for reference purposes only and may not be all inclusive. Listing of a code in this policy does not imply that the service described by the code is a covered or non-covered health service. Benefit coverage for health services is determined by the member specific benefit plan document and applicable laws that may require coverage for a specific service. The inclusion of a code does not imply any right to reimbursement or guarantee claim payment. Other Policies and Coverage Determination Guidelines may apply.

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<th>CPT® Code</th>
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<td>0232T</td>
<td>Injection(s) platelet rich plasma, any site, including image guidance, harvesting and preparation when performed</td>
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<th>HCPCS Code</th>
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<td>G0460</td>
<td>Autologous platelet rich plasma for chronic wounds/ulcers, including phlebotomy, centrifugation, and all other preparatory procedures, administration and dressings, per treatment</td>
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<td>S0157</td>
<td>Becaplermin gel 0.01%, 0.5 gm</td>
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<tr>
<td>S9055</td>
<td>Procuren or other growth factor preparation to promote wound healing</td>
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### REFERENCES


**PROTOCOL HISTORY/REVISION INFORMATION**

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Corporate Medical Affairs Committee

The foregoing Health Plan of Nevada/Sierra Health & Life Health Operations protocol has been adopted from an existing UnitedHealthcare coverage determination guideline that was researched, developed and approved by the UnitedHealthcare Coverage Determination Committee.