Negative Pressure Wound Therapy (NPWT)

Data Specification

This specification is for analytic teams conducting a population cost study comparing adherent and non-adherent NPWT patients. This document defines the study population, inclusion and exclusion criteria, codes required to capture all costs associated with a Diabetes (DM) diagnoses and wound vacuum use.

Chronic wound populations carry significant downstream costs including repeat debridement, infection-related admissions, amputation risk, and prolonged skilled nursing facility stays.

The resulting data pull allows for comparison of expenditures between two groups of patients using wound vacuums for NPWT: confirmed device new starts that were adherent to NPWT therapy (intervention group) and those were non-adherent to NPWT therapy (control group). Adherence is defined as at least 22 hours per day of continuous device use (standard Medicare and manufacturer guidelines - 2 or more hours per day of non-use results in wound dressings losing their seal). The goal is to build a cost-of-healthcare (COHC) narrative as a data-supported case that demonstrates the financial impact of adherence on DM-related medical and pharmacy spend. This evidence base is the foundation of a value-based program conversation between the at-risk organization and wound vac provider.

Definition and measurement parameters

Parameter	Specification
Study type	Retrospective cohort study using paid claims data
Population	Insured members with confirmed DM diagnosis and paid NPWT device claim
Adherence	≥22 hours/day of continuous device use
Measurement Window	90 days with a minimum 3-month paid claim runout
Index Date	Date of first NPWT claim
Prior enrollment	Minimum 6 months continuous enrollment prior to index date

Inclusion Criteria

Criterion	Definition/Rationale
Qualifying Wound Diagnosis	At least one paid medical claim with a qualifying wound ICD-10 diagnosis code
NPWT Paid Claim	At least one paid HCPCS NPWT claim during the study window (POS 12)
Continuous Enrollment	No gap in eligibility/coverage during the measurement period

Exclusion Criteria

Criterion	Definition/Rationale
Prior NPWT Claims	No NPWT claims within the preceeding 6 months of the Index Date
Inpatient-only NPWT use	Claims for inpatient NPWT only (POS 21)
Pediatric members (age <18)	Wound etiology and cost patterns differ materially in pediatric populations
Denied claims only	Members whose NPWT claims were entirely denied are not confirmed device recipients

Diagnosis, procedure, and device codes

Qualifying Wound Diagnosis Codes - ICD-10-CM

ICD-10 Code	Description
E08.621	Diabetes mellitus due to underlying condition with foot ulcer
E08.622	Diabetes mellitus due to underlying condition with other skin ulcer
E09.621	Drug or chemical induced diabetes mellitus with foot ulcer
E09.622	Drug or chemical induced diabetes mellitus with other skin ulcer
E10.621	Type 1 diabetes mellitus with foot ulcer
E10.622	Type 1 diabetes mellitus with other skin ulcer
E11.621	Type 2 diabetes mellitus with foot ulcer
E11.622	Type 2 diabetes mellitus with other skin ulcer
E08.621	Diabetes mellitus due to underlying condition with foot ulcer
E08.622	Diabetes mellitus due to underlying condition with other skin ulcer
E09.621	Drug or chemical induced diabetes mellitus with foot ulcer
E09.622	Drug or chemical induced diabetes mellitus with other skin ulcer
E10.621	Type 1 diabetes mellitus with foot ulcer
E10.622	Type 1 diabetes mellitus with other skin ulcer
E11.621	Type 2 diabetes mellitus with foot ulcer
T87.81	Dehiscence of amputation stump
L89	Pressure ulcer
L97	Non-pressure chronic ulcer of lower limb, not elsewhere classified
S21	Open wound of thorax
S31	Open wound of abdomen, lower back, pelvis and external genitals
S41	Open wound of shoulder and upper arm
S51	Open wound of elbow and forearm
S61	Open wound of wrist, hand and fingers
S71	Open wound of hip and thigh
S81	Open wound of knee and lower leg
S91	Open wound of ankle, foot and toes
S48	Traumatic amputation of shoulder and upper arm
S58	Traumatic amputation of elbow and forearm
S68	Traumatic amputation of wrist, hand and fingers
S78	Traumatic amputation of hip and thigh
S88	Traumatic amputation of lower leg
S98	Traumatic amputation of ankle and foot
L02	Cutaneous abscess, furuncle and carbuncle
L03	Cellulitis and acute lymphangitis
L05	Pilonidal cyst and sinus
L08	Other local infections of skin and subcutaneous tissue
I83.0	Varicose veins of lower extremities with ulcer

ICD-10 Code	Description
I83.2	Varicose veins of lower extremities with both ulcer and inflammation
T87.4	Infection of amputation stump
T87.5	Necrosis of amputation stump
I87.31	Chronic venous hypertension (idiopathic) with ulcer
I87.33	Chronic venous hypertension (idiopathic) with ulcer and inflammation
I70.23	Atherosclerosis of native arteries of right leg with ulceration
I70.24	Atherosclerosis of native arteries of left leg with ulceration
I70.26	Atherosclerosis of native arteries of extremities with gangrene
I70.33	Atherosclerosis of unspecified type of bypass graft(s) of the right leg with ulceration
I70.34	Atherosclerosis of unspecified type of bypass graft(s) of the left leg with ulceration
I70.43	Atherosclerosis of autologous vein bypass graft(s) of the right leg with ulceration
I70.44	Atherosclerosis of autologous vein bypass graft(s) of the left leg with ulceration
I70.53	Atherosclerosis of nonautologous biological bypass graft(s) of the right leg with ulceration
I70.54	Atherosclerosis of nonautologous biological bypass graft(s) of the left leg with ulceration
I70.63	Atherosclerosis of nonbiological bypass graft(s) of the right leg with ulceration
I70.64	Atherosclerosis of nonbiological bypass graft(s) of the left leg with ulceration
I70.73	Atherosclerosis of other type of bypass graft(s) of the right leg with ulceration
I70.74	Atherosclerosis of other type of bypass graft(s) of the left leg with ulceration
T81.89	Other complications of procedures, not elsewhere classified
S22	Fracture of rib(s), sternum and thoracic spine, 7th character B (initial encounter for open fracture type I or II)
S42	Fracture of shoulder and upper arm, 7th character B (initial encounter for open fracture type I or II)
S52	Fracture of forearm, 7th character B (initial encounter for open fracture type I or II)
S62	Fracture at wrist and hand level, 7th character B (initial encounter for open fracture type I or II)
S72	Fracture of femur, 7th character B (initial encounter for open fracture type I or II)
S82	Fracture of lower leg, including ankle, 7th character B (initial encounter for open fracture type I or II)
S92	Fracture of foot and toe, except ankle, 7th character B (initial encounter for open fracture type I or II)

NPWT Device & Supply Codes - HCPCS

HCPCS Code	Description	Use
E2402	Negative pressure wound therapy electrical pump, stationary or portable	Device ID / Index date
A6550	Wound care set, for use with NPWT pump	Supply ID
A7000	Canister, disposable, used with NPWT pump, each	Supply ID
A7001	Canister, non-disposable, used with NPWT pump, each	Supply ID
A6021	Dressing, non-contact, island, pad size ≤16 sq in	Dressing / Supply ID
A6024	Dressing, non-contact, island, pad size >48 sq in	Dressing / Supply ID
97607	NPWT using durable medical equipment, ≤50 sq cm (CPT)	Procedure / therapy confirmation
97608	NPWT using durable medical equipment, >50 sq cm (CPT)	Procedure / therapy confirmation
97605	NPWT using disposable device, wound ≤50 sq cm (CPT)	Procedure / disposable device
97606	NPWT using disposable device, wound >50 sq cm (CPT)	Procedure / disposable device

Related Wound Procedures - CPT

CPT Code	Description	Use
97597	Debridement, open wound, first 20 sq cm	Wound severity / cost driver
97598	Debridement, open wound, each additional 20 sq cm	Wound severity / cost driver
97602	Wound care, non-selective debridement, without anesthesia	Wound care utilization
11042	Debridement, subcutaneous tissue, first 20 sq cm	Surgical debridement
11043	Debridement, muscle and/or fascia, first 20 sq cm	Surgical debridement
11044	Debridement, bone, first 20 sq cm	Surgical debridement — high cost
27880	Amputation, leg, through tibia and fibula	Amputation — high cost sentinel event
27882	Amputation, leg, through tibia and fibula, open, circular	Amputation — high cost sentinel event
28805	Amputation, foot, transmetatarsal	Amputation — foot

Comorbidity Flags - ICD-10-CM

Condition	ICD-10 Codes	Clinical relevance
Type 2 diabetes	E11.0–E11.9	Primary driver of chronic wound formation; significantly elevates non-healing risk and cost
Peripheral vascular disease	I73.9, I70.2XX	Impairs wound perfusion; strongest predictor of non-healing in NPWT populations
Congestive heart failure	I50.1–I50.9	Reduces peripheral circulation; complicates healing and elevates inpatient risk
Chronic kidney disease	N18.1–N18.6	Impairs tissue repair; common co-occurrence in diabetic wound populations
Osteomyelitis	M86.0XX–M86.9	Bone infection complicating wound; significantly increases surgical and inpatient cost
Sepsis / wound infection	A41.XX, L08.XX	High-cost complication of non-adherence; frequent ED and inpatient driver
Obesity	E66.XX	Increases wound complexity and healing time; relevant to cost stratification
Depression / anxiety	F32.X, F33.X, F41.X	Correlated with reduced adherence across wound care populations

Therapeutic Drug Classes

Therapeutic Class	ATC Code	Description
Antibiotics	J01	Antibacterials for systemic use; excludes antimycobacterials (J04)
Antibiotics	D06A	Antibiotics for topical use; excludes combinations in D06C and D07C
Diabetes medications	A10	Drugs used in diabetes; includes A10A insulins and analogues, A10B blood glucose lowering drugs (excludes insulins) A10X other

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