



## Upper Limb Reimbursement Packet

## Upper Limb Documentation Packet

February 28, 2020

### Table of Contents

- ❖ Documentation Checklist (to add to your chart)
- ❖ Documentation Guide (instructions for checklist)
- ❖ Documentation Fax Request (use to request physician's documentation)
- ❖ Justification for a Myoelectric Device: Ruling Out a Body Powered Prosthesis
- ❖ Daily Activity Chart (chart patient's functional activities)

If you need help:

---

### Contact the Ottobock Reimbursement Team

- Call 800-328-4058 and ask for reimbursement, or
- Email your request to [Reimbursement911@Ottobock.com](mailto:Reimbursement911@Ottobock.com)

Ottobock Reimbursement North America  
P 800 328 4058 F 800 962 2549  
[professionals.ottobockus.com](http://professionals.ottobockus.com)  
[professionals.ottobock.ca](http://professionals.ottobock.ca)  
[reimbursement911@ottobock.com](mailto:reimbursement911@ottobock.com)

# Documentation Checklist for UL Prosthetics (add to chart)

January 2020

Patient Name: .....  
Date: .....  
Completed by: .....

## FROM THE PHYSICIAN

- a. History of amputation
  - Cause, date, affected side, level of amputation(s)
  - Clinical course, intervention & results, prognosis
- b. Physical examination
  - Height, weight, recent loss
  - Cognitive ability to use and care for prosthesis
  - Cardiopulmonary, musculoskeletal, neurological, arm & leg strength & ROM, balance, coordination
  - Condition of residual Limb
- c. Functional limitations (and why these medical conditions will not affect patient's ability to use new device)
  - Musculoskeletal, neurological, cardiopulmonary, other
- d. Ambulatory Assistance
  - Temporary, permanent, or situational?
- e. Define the functional state
  - Patient's activities prior to amputation
  - Patient's current activities & impact of limitations
  - Desired & potential activities using new prosthesis
  - Functional potential? Explain why
- f. Current Prosthesis
  - Condition of each component
  - Reason for replacement
  - Condition Changed? Issue with current prosthesis
  - Damage or Loss? Describe incident
- g.  Prosthetic Components Tried in Past & Result
- h. For Repair, Replacement or Liner/Socks Refill
  - Continued need (MD), Continued use (prosthetist)
- i.  Desire and Motivation to use new prosthesis
- j.  Recommendation for new prosthesis/components
  - State rationale based on prior activities, current condition, and motivation
  - Functional potential? Need treatment plan and timeframe to achieve new level

*Physician demographics (NPI okay for Medicare), signature & date on each note, Signature Log/Attestation, Patient's name on each page (MBI okay for Medicare)*

## DISPENSING ORDER not required for Medicare eff. 1/1/20

- Patient's name
- Date of order (date from prescription/date of call)
- Description of item being dispensed
- Printed name and signature of physician/person who took the call.
- Meets your state's requirement for orders

## STANDARD WRITTEN ORDER (SWO) eff. 1/1/20

- Patient name on ea. Page (MBI okay for Medicare)
- Date (on/before delivery date okay for Medicare)
- Description of items being ordered
- Quantity
- LT/RT for each component -recommended
- Physician demographics (NPI okay for Medicare)
- Physician's signature
- Meets your state & credentialing requirements for orders

## PROSTHETIST'S DOCUMENTATION

- a. Functional Evaluation
- b. K-Level Activities
  - Activities prior to amputation
  - Current Activities
  - Potential future activities
  - Explanation for the difference (if applicable)
- c.  History of Prosthetic use over time (brand, how long used, result)
- d. History of Current components
  - History of components being replaced (age, condition, result)
  - Description of Labor
  - Reason for Replacement
- e. Recommendation for type and brand of prosthesis
  - Based on physician's recommendation
  - Rational for decision
  - Medical Necessity and Justification for each component
- f.  Patient's desire and motivation to use new prosthesis
- g.  Chart note for each visit
  - Printed name, signature, credential & date on each note
  - Signature Log/Attestation
- h. Patient's name on each page

## PROOF OF DELIVERY

- Delivery Date
- Patient's Name
- Delivery Address
- Quantity, RT LT
- Description of items delivered
- Signature and Printed name of signee
- Relationship to patient and reason why patient cannot sign

## BENEFICIARY AUTHORIZATION

## ABN IF REQUIRED

# Documentation Guide for Upper Limb (UL) Prosthetics

January 2020

## Medical Necessity

Medicare does not have a policy specific to upper limb. Following is Medicare’s standard criteria, which also can be found in other medical coverage policies. All 6 of the criteria below must be documented in the contemporaneous medical record.

Medical necessity for prosthetic components or additions to the prosthesis is based on:

1. The functional capability before and after the amputation
2. The patient’s current condition [residual limb and any medical conditions that might affect patient’s ability to use the new prosthesis], and
3. Desire to use the new prosthesis and get back to those previous activities.

A upper limb prosthesis is covered when:

4. Prescribed by a referring physician
5. The member will reach or maintain a defined functional state within a reasonable period of time, and
6. The member is motivated.

In addition, if a Myoelectric prosthesis is being considered most payers look for the following:

7. Standard body-powered prosthetic devices cannot be used or are insufficient to meet the functional needs of the individual
8. The remaining musculature of the arm(s) contains the minimum microvolt threshold to allow operation of a myoelectric prosthetic device; and
9. The patient has demonstrated sufficient neurologic and cognitive function to operate the prosthesis effectively.

- ➔ You should have on file chart notes reflecting the need for the care (e.g. evaluation, treatment plan, history and physical, etc.) from the patient’s medical records charted contemporaneously, in other words when the patient is present.
- ➔ To be on the safe side, it is recommended that this information be collected up-front to be sure the documentation supports the claim.
- ➔ All documents that support medical necessity must be signed and dated prior to the delivery date.

## Item 1. Physician Documentation:

Recent physical examination (focus should be on the amputation, prosthesis, comorbidities, and difficulties with daily activities).

### a. History of the amputation

- Date of amputation(s)
- Affected side (s) and level of amputation(s)
- Cause of amputation(s)
- Clinical course , therapeutic interventions and results, prognosis

### b. Physical examination relevant to functional limitations

- Height, weight, recent loss/gain
- Cognitive ability to use & care for new prosthesis
- Description of the residual Limb ( e.g. local and/or phantom pain; wound healing issues; skin irritation, breakdown, infection; limb volume changes or swelling; weight fluctuations; muscle atrophy or contractures; osteoarthritis, or other arthritic conditions of the residual limb joint(s)).

# Documentation Guide for Upper Limb (UL) Prosthetics

January 2020

- Cardiopulmonary, musculoskeletal, neurological, arm and leg strength, ROM, gait, balance, coordination

## c. **Functional limitations:**

Describe the nature and extent of functional limitations whether from current condition or comorbidities.

- **Musculoskeletal** (e.g. osteoarthritis, spinal stenosis, severe low back pain).
- **Neurological** conditions that cause impairments in coordination (e.g. MS, stroke, SCI, Parkinson’s, peripheral nerve lesions, lumbar disc herniation with motor paresis, dementia/Alzheimer’s disease, depression, psychiatric disorders/diseases).
- **Cardiopulmonary** conditions that might limit the patient’s capacity [e.g. congestive heart failure (CHF), coronary heart disease (CHD), endocarditis, myocarditis, arrhythmias, peripheral arterial (occlusive) disease (PAD/PAOD), chronic venous insufficiency (CVI) with recurring ulcers, lymphedema].
- **Other comorbidities** (e.g. chronic kidney failure, chronic liver failure, cancer with chemotherapy/radiation, general deconditioning).

d. **Ambulatory Assistance currently used** (e.g. cane, walker, wheelchair, care giver). Is this temporary or permanent? Situational?

## e. **Define the Patient’s Functional State:**

Describe patient’s functional capabilities as they relate to daily activities. These should be “real life” activities that require the use of both hands and specifically the prosthetic hand (e.g. gripping, grasping, pinching, holding, carrying,

pushing, pulling, releasing, etc.) that with training the patient will be able to perform. Following is what must be included when defining the functional state:

- **Patient’s activities prior to the amputation.** Identify prior activities that required the use of both hands.
- **Patient’s current activities.** Include the impact of the limitations identified above. Is the patient more limited by his/her medical conditions or by the function of the current prosthesis?
- **Activities that patient desires to get back to** (and has the potential for) using the new prosthesis. If patient has potential for higher functional level, an explanation for the difference is required.

## f. **Document the Current Prosthesis:**

- **The condition of each component** (e.g. socket, shoulder, elbow, wrist, terminal device) should be documented.
- **Reason for replacement.** One of the following reasons should be documented for each component being replaced.

*Reasons allowed by most payers:*

- Patient’s functional needs have changed
- Due to physical changes the component no longer fits
- Device is irreparably worn

*Additional reasons allowed by Medicare*

- Device is lost or damaged beyond repair
- Cost to repair will be greater than 60% of the cost (Medicare allowable) to purchase a new device.

# Documentation Guide for Upper Limb (UL) Prosthetics

January 2020

- **If the patient's condition has changed,** describe why the current prosthesis is no longer appropriate. (e.g. weight gain/loss, decreased stability, etc.)
- **If the device was damaged or lost,** describe the incident.

g. **Previous prostheses:**

- Document patient's past experience with prosthetic components (what has been tried, and the result).

h. **For a repair, replacement, or refill:**

- Document that patient continues to use the prosthesis
- And the prosthesis is medically necessary

i. **Desire and motivation:**

- Document patient's desire use the new prosthesis.
- Document patient's motivation to ambulate

j. **Recommendation for the type of new prosthesis/component(s)** and the medical reason for your decision.

- The recommendation should be based on patient's prior activities, current condition, desire & motivation.
- The Brand name of the prosthetic components is not required.
- **Important:** If the patient has the potential to reach a higher functional level in the future, include a treatment plan to achieve the increase in functional level, and document what it will take to get there (e.g. occupational therapy, physical therapy, etc.)

For Medicare, the plan should specify in your opinion approximately how long \_\_\_\_ it will take the patient to reach the potential functional level.

## Item 2. Initial Order (Prescription)

---

- ➔ **Effective January 1 2020:** For Medicare the initial order is no longer required for prosthetics and orthotics; however, a signed Standard Written Order (SWO) must be obtained prior to billing.
- ➔ If an initial order is required by the insurance payer, state, or credentialing agency, the initial order can either be verbal and documented in the patient's chart OR written by the ordering physician.
- ➔ It is the supplier's responsibility to ensure compliance with pertinent insurance criteria, credentialing, and state laws.

Elements included on a typical initial order/prescription when required (best practice):

- a. **Patient's name**
- b. **Date of order**
  - For written order: use the date on the prescription
  - For verbal order: use the date the call was received
- c. **Description of item(s)**
- d. **Signature**
  - For written order: Physician's signature and date , printed name and credential
  - For verbal order: Printed name of person taking order, signature, date, time.

# Documentation Guide for Upper Limb (UL) Prosthetics

January 2020

## New Item 3: Standard Written Order (SWO)

---

- ➔ The SWO replaces the DWO
- ➔ The provider may write the SWO; however, the physician must review and sign it.
- ➔ An initial order can be used as a SWO if it contains all of the elements required below.
- ➔ The SWO must meet state prescribing, credentialing and/or other applicable laws.

### Minimum elements must be included on a supplier generated SWO

#### Effective January 1, 2020:

- a. **Patient name** on each page. (New: MBI may be used in place of patient name for Medicare)
- b. **Order date** New: The SWO must be dated on/prior to the date of delivery
- c. **Describe what is being ordered** (list all items, options or additional features that will be separately billed or require an upgraded code.

You may use **one** of the following methods:

- **Narrative description** (myoelectric controlled hand with articulating digits)
- **HCPCS code** (L6880)
- **HCPCS code narrative** [Electric hand, switch or myoelectric controlled, independently articulating digits, any grasp pattern or combination of grasp patterns, includes motor(s)]
- **Brand name/model number** (Ottobock Electric Wrist Rotator 10S17)

To avoid confusion, we recommend including brand name and model number for items with multiple HCPCS codes.

- d. **Quantity** to be dispensed
- e. **RT/LT** recommended
- f. **Physician's signature**
- g. **Physician demographics** (printed name, credential, address, phone, NPI) (New: NPI may be used in place demographics for Medicare)

## Item 4: Liners, Socks, Other Non-Consumable Items

---

- ➔ These are treated as a refill and covered under the original order.
- ➔ Note: keep in mind that Medicare and other large payers have medically unlikely edits established for liners and socks. Look up your code [here](#).
- ➔ Replace only when item is no longer functional and document condition with sufficient detail.
- ➔ For documentation requirements, see Item 5.f.

**The following items must be included in a liner, sock, or other non-consumable order** (information may be included on the SWO or separate).

- a. **Patient's name** (Effective January 1, 2020: MBI is allowed in place of name for Medicare)
- b. **Order date**
- c. **Description of item(s)** being ordered
- d. **Quantity** to be dispensed
- e. **RT/LT** (recommended)
- f. **Patient continues to use the orthosis**
- g. **Physician demographics** printed name, credential, address, phone, NPI (Effective January 1, 2020: only physician's name or NPI required for Medicare)
- h. **Physician's signature**

# Documentation Guide for Upper Limb (UL) Prosthetics

January 2020

## Item 5: Prosthetist's Documentation

- Medical records must support that the device is still medically necessary.
- Medicare expects that a lost/damaged item be reported to some authority (e.g. police, homeowners insurance, etc.) and requires that a copy of that report be available. If patient did not report the accident/loss, you will need a signed statement from the patient describing the incident.

### Elements in the prosthetist's documentation

- a. Functional evaluation** of the patient (functional level should match physician's documentation).
- b. Activities** (add detail to the physician's evaluation)
  - **Activities prior to amputation**
    - List activities that patient has done in the past and would like to get back to using a new device (e.g. home, work, therapeutic, & exercise).
    - Focus on real life activities that require the use of both hands and specifically the prosthetic hand/terminal device (e.g. gripping, grasping, pinching, holding, carrying, pushing, pulling, releasing, etc.) that with training the patient will be able to perform.
  - **Current Activities**
    - Focus on activities that the new prosthesis will allow that the current prosthesis does not.
    - Describe difficulties with current prosthesis.
    - How will patient be able to do it better with the new prosthesis?

- **Potential future activities.**
  - If these vary from prior activities, an explanation will be required)
- c. History of Prosthetic Use**
  - Your records should have a history of each prosthesis patient has used/trialed in the past.
    - Brand of component
    - How long did patient use it?
    - What was the result?
- d. Current Prosthesis:**
  - **History of each component being replaced** (age, condition, how did it work out?)
  - **Description of the labor involved** (e.g. casting, modification, time, tools used, materials used, where was material applied, etc.)
  - **Reason for replacement** (e.g. change in patient's condition, device no longer fits, device does not meet patient's functional needs, or item is worn and cannot be repaired. (Medicare and some payers also allow replacement when the cost to repair is greater than 60% of the Medicare allowable for a new device or item is lost or damaged beyond repair).
- e. Recommendation for the type and brand of the new prosthesis:**
  - Must be based on physician's recommendation
  - Include rationale for your decision
  - Include medical necessity and justification for each code that will be billed.
- f. Patient's motivation and desire** to use the new prosthesis.



## Documentation Guide for Upper Limb (UL) Prosthetics

January 2020

- a. **Document Refill Requests** (e.g. liners, socks, other non-consumable items). This can be a written request from the patient or telephone contact between supplier and patient.

The following elements should be included on the refill request:

- **Patient's name** (or authorized representative and relationship)
  - **Date of request** (must be no sooner than 14 calendar days prior to delivery/shipping)
  - **Description** of each item requested
  - **RT/LT**
  - **Quantity and functional condition** of items being replaced
- Note:** Shipment/delivery may not occur sooner than 10 calendar days prior to current supply exhausting.

- g. **Chart note for each visit with patient** with printed name, credential, signature and date on each note.

- h. **Patient's name on each page.**

### Item 6: Proof of Delivery (POD)

---

- A signature date is no longer required; however, if there is one on the form, it must be the date of service on your claim.

Elements to be included on the POD when device is delivered direct to the patient:

- **Delivery Date**
- **Patient's name**
- **Address** where item is delivered (your office, patient's home, SNF, etc.)
- **Quantity** delivered for each item
- **Amputation side** for each item, LT/RT

- **Describe what will be delivered.** You may use **one** of the following methods:
  - **Narrative description** (myoelectric controlled hand with articulating digits)
  - **HCPCS code** (L6880)
  - **HCPCS code narrative** [Electric hand, switch or myoelectric controlled, independently articulating digits, any grasp pattern or combination of grasp patterns, includes motor(s)]
  - **Brand name/model number** (Ottobock Electric Wrist Rotator 10S17) \*

**Note:** To avoid confusion, we recommend including brand name and model number for items with multiple HCPCS codes.

- **Signature and printed name** of patient or designee. **Note:** If designee signs: Include the designee's relationship to the patient and the reason why patient could not sign. This person cannot have any financial connection to the provider.

### Item 7: Beneficiary Authorization

---

- A new authorization is required anytime a different prosthesis/component(s) is provided. In other words, a new authorization is required anytime a new HCPCS code is billed.
- This authorization should give you:
  - Permission to submit claims on behalf of beneficiary.
  - Permission to pay you directly (assigns the benefits to the provider).
  - Release to authorize the provider to obtain confidential medical information about the beneficiary in order to process the claim.

## Documentation Guide for Upper Limb (UL) Prosthetics

January 2020

### Example of an Authorization:

Name of Beneficiary:

HICN:

I authorize (supplier) \_\_\_\_\_ to submit claims to Medicare on my behalf. I request that payment of authorized Medicare benefits be made either to me or on my behalf to (supplier) \_\_\_\_\_ for any services furnished me by that supplier.

I authorize any holder of medical information about me to release to (supplier) \_\_\_\_\_ and/or the Centers for Medicare & Medicaid Services and its agents any information needed to determine these benefits or the benefits payable for related services.

Signature \_\_\_\_\_

Date \_\_\_\_\_



### Item 8: Advanced Beneficiary Notice (ABN) of non-coverage (if required)

NOTE: One cannot give an ABN to every patient, in anticipation that the payer might deny. ABNs are to be used on a case-by-case basis when there is a specific, identifiable, reason that the device will be denied as not medically necessary/not reasonable and necessary. With regard to prosthetics, an ABN is most commonly used when the patient does not meet the stated coverage criteria.

Ottobock Reimbursement North America  
 P 800 328 4058 . F 800 962 2549  
[professionals.ottobockus.com](http://professionals.ottobockus.com)  
[professionals.ottobock.ca](http://professionals.ottobock.ca)  
[reimbursement911@ottobock.com](mailto:reimbursement911@ottobock.com)

### References:

Joint DME MAC. Local Coverage Article: Standard Documentation Requirements for All Claims Submitted to DME MACs (A55426). Effective January 1, 2020.

CGS and Noridian Supplier Manuals. Revised Summer 2019.

FEP 1.04.04 Myoelectric Prosthetic and Orthotic Components for the Upper Limb. Effective policy date: July 1, 2019

<b>Fax to:</b>		<b>Fax from:</b>	
<b>Company:</b>		<b>Company:</b>	
<b>Phone:</b>	<b>Fax:</b>	<b>Phone:</b>	<b>Fax:</b>
<b>Patient Name:</b>		<b>Date of Birth:</b>	<b>No. Pages:</b>

## Documentation Request for an Upper Extremity Prosthesis

Please be advised the determination of medical necessity for a prosthesis is generally based on information in the physician's records. Therefore we need the following information from your contemporaneous medical records in order to be in compliance and provide a prosthesis to your patient that allows him/her to live a mobile and independent life to the greatest extent possible.

1. **History of Amputation:** Cause, date(s), side(s), and level(s) of amputation(s) ; Clinical course; Therapeutic interventions and results; and Prognosis.
2. **Physical Examination:**
  - a. Weight, Height, Weight Loss/Gain; Cognitive ability to use and care for prosthesis.
  - b. Condition of residual limb: pain, wound healing, skin irritation, breakdown, infection; limb volume changes; swelling, weight fluctuation, muscle atrophy, contractures, arthritis.
3. **Functional Limitations:** List any medical conditions (e.g. neuromuscular, peripheral vascular or musculoskeletal, cardiopulmonary conditions). Are these conditions stable enough to allow patient to attain the desired functional state?
4. **Define the Patient's Functional Capability:**
  - a. Patient's **activities prior to amputation in terms of functional capabilities**. What activities does patient want to get back to? This should be "real life" activities (e.g. home, work, therapeutic, exercise, etc.) that require the use of both hands and specifically the prosthetic hand/terminal device (e.g. gripping, grasping, pinching, holding, carrying, pushing, pulling, releasing, etc.) that with training the patient will be able to perform.
    - If this is a new amputee, explain why a body powered device did/will not meet patient's functional needs.
    - If there is a current device and it is not meeting the patient's needs, include activities that the new prosthesis will allow or facilitate that the current prosthesis does not.
  - b. Patient's **current activities and future potential activities** (if different) in terms of the functional capabilities. For future potential, an explanation for the difference is required (e.g. deconditioned state is reversible by physical training/therapy).
  - c. Document the **Condition/Status of the Current prosthesis**. If worn/broken, describe the condition of each component that needs to be evaluated. If patient's physical condition or functional needs have changed, describe why prosthesis/component no longer meets his/her needs.
  - d. Describe **Previous Prostheses/Components**. Describe what has been tried in the past and the results.
  - e. **For continuing care (e.g. replacement, repair, or refill)** document continued medical necessity and continued use.
  - f. Describe patient's **desire and motivation** to use the new prosthesis.
  - g. **Treatment plan** that includes recommendation for new prosthetic components appropriate for the patient's current/potential functional capability. Include your rationale for ordering this (based on items 1-4).
  - h. **Prognosis** that includes statement that [in your opinion] patient will reach the defined functional capability within a reasonable [**must be specified**] amount of time using the new prosthesis.

**Please FAX the signed and dated Medical Necessity documents to:**

\_\_\_\_\_ at ( \_\_\_\_\_ ) \_\_\_\_\_

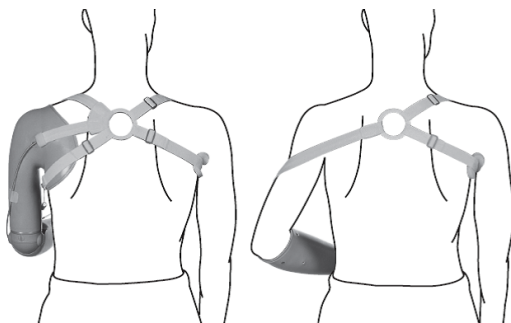
**PRIVACY NOTICE:** The documents accompanying this transmission may contain confidential health information that is legally protected. This information is intended only for the use of the individual or entity named above. The authorized recipient of this information is prohibited from disclosing this information to any other party unless permitted by law or regulation. If you are not the intended recipient, you are hereby notified that any use, disclosure, copying, or distribution of these documents is strictly prohibited. If you have received this information in error, please notify the sender immediately and arrange for the return or destruction of these documents. 45 CFR 164.530 *et seq*

# Justification for a Myoelectric Device Ruling out a Body-Powered Prosthesis

## Coverage Criteria for Myoelectric Devices

One of the main coverage criteria found in upper extremity prosthesis medical coverage policies is “body-powered prosthetic devices cannot be used or are insufficient to meet the functional needs of the individual in performing activities of daily living.” This guide is designed to help you document if your patient meets this criteria.

Generally a harness is used with a body-powered prosthesis. The harness cable connects the prosthesis to the opposite side of the body. Using the sound side, the amputee applies exaggerated movements, which the harness cable captures, and in turn operates the prosthesis, opening and closing the prosthetic hand or terminal device (TD) and/or bending and locking the elbow. The gross movement that is captured is called “excursion.”



Above Elbow  
Figure 8  
Harness

Below Elbow  
Figure 9  
Harness

A body-powered prosthesis is primarily controlled via movement of the shoulders, chest and residual limb. In order to generate enough excursion to operate a body-powered prosthesis, the amputee must have sufficient control, range of motion, and strength.

# Justification for a Myoelectric Device Ruling out a Body-Powered Prosthesis

## Gross/Exaggerated Body Movements Required for Excursion

- ➔ Biscapular abduction
- ➔ Glenohumeral flexion
- ➔ Shoulder depression and elevation

## Excursion Requirement for Upper Extremity Prostheses

- ➔ **Below Elbow Body-Powered:** The amount of excursion required to open a terminal device is only 2 inches; however, both glenohumeral flexion and biscapular abduction movements are required.
- ➔ **Above Elbow Body-Powered:** The amount of excursion required to fully flex a body powered elbow and open a hook fully at the mouth is 4.5 inches. Gross body movements required include biscapular abduction, glenohumeral flexion shoulder depression, and shoulder elevation.
- ➔ **Below/Above Elbow Body Powered with presence of neck or shoulder pain:** Amputees with neck/shoulder pain cannot do the necessary excursions and/or produce the necessary force due to pain. Forcing them into a body-powered prosthesis could further increase damage and pain.
- ➔ **Shoulder Disarticulation Body-Powered** amputees only have biscapular abduction in the range of 1.5 to 2.5 inches. They physically cannot produce the amount of excursion required to operate a fully body-powered system.
- ➔ **Above Elbow Hybrid** systems reduce the excursion requirement by operating some components with cable excursion and others with myoelectric input. Controlling one of the components myoelectrically allows the excursion to be used to control other components. Gross body movements required will depend on patient's capability.
- ➔ **Full Myoelectric Systems** require no excursion or cable pulling of any kind and are a good option for someone who either lacks excursion to capture gross body movements or is not strong enough to produce the excursion required to operate their terminal device to perform their required activities.

## Justification for a Myoelectric Device Ruling out a Body-Powered Prostheses

### Grip Force Requirement (independent of the patient's strength or ROM)

- ➔ **Body-Powered:** Grip force using a body powered prostheses is dependent on the patient's input to the harness with up to a 50% loss of efficiency as an acceptable situation. In other words, if the patient needs 10 lbs. of pinch force routinely, he/she may have to pull constantly against 20 pounds of force because of efficiency loss.
  - Maximum grip of hook = number of rubber bands x 1 lb.
  - Maximum grip of myo hand = 22 lbs. of grip force regardless of patient ability
  - Maximum grip of Greifer = 36 lbs. of grip force
- ➔ **Full Myoelectric Systems:** A weak patient can achieve full graded grasping (prehension) using a myoelectric hand, because grip force can be adjusted to the patient's signal, so it is possible to achieve maximum output with minimal input.

### Expanding the Functional Envelope.

- ➔ **Body-Powered Prostheses** can only be used in a limited space around the person where they are physically able to pull on the harness. Compensation movements are therefore required to position their body in front of the object to be manipulated. Due to the constraints of harness and cable control, there are positions in which the prosthesis can be placed where it is impossible for the user to activate the device
- ➔ **Full Myoelectric Systems:** The wearer of a myoelectric prosthesis can operate the prosthesis in any position where the muscles can be contracted (i.e., above the head or behind the back), eliminating the need for compensation movements.

# Justification for a Myoelectric Device Ruling out a Body-Powered Prostheses

## Control Patterned after Natural Body Functions.

- ➔ **Body-Powered prostheses** require gross body movements for control that have little association with opening/closing of a hand.
- ➔ **Myoelectric System:** The basic trans-radial myoelectric system with two site control will use the wrist flexor and extensor muscle to close and open the terminal device. In the case of a trans-humeral system, the elbow flexors and extensors can be used to operate a powered elbow. These muscles are fully associated with opening and closing a hand, or flexing and extending an elbow, respectively.
- ➔ **Myoelectric with Proportional Control:** In the proportional DMC system grip force and strength are directly related to the strength of muscle contraction. This is the same in the natural hand.

## Control of the Terminal Device

- ➔ **Myoelectric Terminal Devices** hold position and maintain grip strength after the control signals are relaxed. This grip force has very fine adjustability throughout the mechanical possibilities of any particular terminal device.
- ➔ **Body-Powered Terminal Devices:** To hold position and maintain grip strength in a body powered terminal device, the person must keep constant tension on the harness. The terminal device will only close once controls are relaxed. Without constant tension, full grip force may be achieved when relaxed in a voluntary opening system.
- ➔ **Body-Powered Terminal Devices** are either Voluntary Opening or Voluntary Closing but not both.
- ➔ **Myoelectric Terminal Device** are both Voluntary Opening and Voluntary Closing, which is dictated by the patient via myoelectric control.

# Justification for a Myoelectric Device Ruling out a Body-Powered Prostheses

## Less Energy Consuming

- ➔ **Myoelectric:** The energy required to cross the “ON” threshold of .54V electrode output is considerably less than the exertion used to activate a body-powered prosthesis through its harness. Additionally, this level of signal is much smaller now in comparison to myoelectric systems commercially available in 2002. Due to advanced amplification technology, even very low levels of signal can now be used to operate a myo system.

## Health Benefits of Myoelectric

- ➔ Less compensatory movements resulting in less injury and joint damage.
- ➔ Sound side limb is healthier due to absence of a harness, or allowance for a looser fitting harness when required for suspension alone.
- ➔ Residual limb musculature remains active and toned and therefore does not atrophy, especially when using a proportional system that requires higher muscle input than a digital system.

Ottobock Reimbursement North America  
P 800 328 4058 F 800 962 2549  
professionals.ottobockus.com  
professionals.ottobock.ca  
[reimbursement911@ottobock.com](mailto:reimbursement911@ottobock.com)



# Upper Limb Daily Activity Chart

Focus on real life activities that require the use of both hands and specifically the prosthetic hand/terminal device (e.g. gripping, grasping, pinching, holding, carrying, pushing, pulling, releasing, etc.) that with training the patient will be able to perform. If you will be fitting bebionic see the Reimbursement Guide for specific functions.

## Daily Activities

**Can patient do this activity with Current/Standard Prosthesis?** (Describe difficulties or potential difficulties)

**How will patient be able to do it better with the new prosthesis?** (What feature does the new prosthesis offer that will help your patient achieve the activity?)

Functional activities prior to the amputation

Current Activities that patient is struggling with that he/she could better with the new prosthesis.

Future/potential future activities (If these vary from prior activities, an explanation will be required)