

Splints Available for Stroke Treatment

	The Long Arm Single Chamber Splint, two lengths 70cm	Ref: 70 002 0
	The Long Arm Single Chamber Splint, two lengths 80cm	Ref: 70 001 0
	The Long Arm Double Chamber Splint, two lengths 70cm	Ref: 70 102 0
	The Long Arm Double Chamber Splint, two lengths 80cm	Ref: 70 101 0
	The Half Arm Single Chamber Splint, 53cm	Ref: 70 003 0
	The Half Arm Double Chamber Splint, 53cm	Ref: 70 103 0
	The Elbow Splint, 40cm	Ref: 70 004 0
	The Hand Splint Double Chamber, small 20cm	Ref: 70 005 0
	The Hand Splint Double Chamber, larger 30cm	Ref: 70 009 0
	The Leg Gaiter, two lengths, large 70cm	Ref: 70 006 0
	The Leg Gaiter, two lengths, small 60cm	Ref: 70 007 0
	The Foot Splint Single Chamber	Ref: 70 008 0
	The Foot Splint Double Chamber	Ref: 70 108 0

Precautions on Use

1. The splints must be orally inflated - warm air from the lungs ensures a perfect fit, moulding the splint to the patients limb to give all-over even pressure. Lung pressure will not cause tissue damage to the patient but pressure should never exceed 40mm Hg. (see 'Inflation of Splints' section of this leaflet). Pressure should be read when the limb is at rest.
2. A thin cotton sleeve should cover the patients limb whilst the splint is in use as a protection against sweat rash
3. The splint should not be worn in direct sunlight. Strong sunlight through the plastic can produce burns of the skin.
4. No splint shall be left on for more than one hour but shall be taken off and re-applied during a full morning treatment session. Splints should never be used for overnight positioning.
5. Sometimes a patient may have broken skin or a sore on a part to be covered by the splint. Splints may still be applied but if wound dressings are bulky, reduce the size leaving a smaller sterile dressing covering the affected area. After use, the splint should be cleaned as described in the 'Care of Splints' section of this leaflet. In this event, patients must have their own personal splint, clearly named and not used on other patients.
6. Dispose of splints by normal household rubbish bin. Do not burn on a domestic fire or electric incinerator.

Care of Splints

1. Before using for the first time, new splints should be inflated with the zip fastener open to ensure the two layers of plastic are separate. After fully inflating the splint, the valve should be opened and the splint rolled up to force all the air out. The splint is then straightened and is ready for use.
2. When not in use, the splint should be unfolded and kept lying flat, or hung up so that the inflation tube hangs downwards, ensuring that there is no strain where the tube joins the splint.
DO NOT USE THIS JUNCTION AS A HANDLE WHEN FITTING THE SPLINT.
3. The splints may be wiped over with a mild disinfectant to clean them, then dried with a towel. If necessary the valve may be disconnected and washed and the inflation tube cleaned with a test tube brush dipped in a mild disinfectant, allowed to dry and the reassembled. **DO NOT** let fluid run inside the splints as it cannot drain out.
4. Splints **SHOULD NOT** be stored in sub-zero temperatures. The recommended storage temperature is +5°C. For best results, splints should be allowed to achieve treatment room temperature before use.
5. Many patients prefer to have their own splints and when appropriate, carers and family members may be taught to use the splints by the therapist.
6. A personal detachable mouthpiece for inflation, easily fitted to the inflation tube is recommended (see below).

Inflation of Splints

The splints must be orally inflated - warm moist air from the lungs ensure a perfect mould of the splint to the patient's limb, giving all-over even pressure.

Lung pressure will not cause any tissue damage to the patient.

Inflation pressures should not exceed 40mm Hg. If in doubt then check the pressure of the splint with a manometer, using a 10cm connection between valve on splint and manometer.

Pressures should be read when the limb is at rest (see below).

Pressures comfortable for the patient should always be used.

Therapists quickly become accustomed to the feel of correct pressure.

A personal detachable mouth piece for inflation, easily fitted to the inflation tube and carried in the users pocket, is recommended (see below)

Mouth Pieces for Inflation

1. Mouth Piece - Ref: 75 000 0



A personal detachable mouth piece, easily fitted and carried in the user's pocket. May be washed and cleaned for frequent use.

2. Disposable Filter Bottle - Ref: 75 011 0



Contains crystals which absorb excess moisture. Easily fitted to the inflation tube and when detached carried in the user's pocket. Should be discarded when the crystals become dark red and hot.

3. Manometer for Reading Inflation Pressure - Ref: 75 040 0



To monitor oral inflation pressures, use the Air Splint Manometer 300mm Hg.

Summary

These splints are made of a unique and specially developed PVC sheeting, were pioneered by Margaret Johnstone. A specific series of splints have been developed for the treatment of Strokes.

These splints are seen as a vital aid in the rehabilitation of stroke patients and are used during therapy sessions by Physiotherapists and Occupational Therapists. Nurses may also be taught to use them.

They inhibit spasticity by controlling tonal patterns and allow a motor retraining programme to develop along the same lines as the motor development of the infant. They increase sensory input and give the stability necessary for early weight bearing.

The infant rolls before he crawls, crawls before he kneels, and kneels before he stands; he also rolls before he sits and sits before he stands. This gives the developmental sequence used in balance training in stroke rehabilitation. This training includes the whole body and gives the hemiplegic arm every chance of recovery.

Recovery begins with rotation of head, neck and trunk, leading to regaining trunk stability and spreading to shoulder and hip recovery before progressing down each limb.

The patient must be taught and supervised in constant (day and night) positioning of the body in the spasticity inhabiting patterns. The aim is to give back to the brain damaged patient inhibitory control over abnormal patterns of movement. The purpose is to restore postural control. Successful treatment depends on control of the distribution of muscle tone at all times while a planned and advancing motor development programme is undertaken. Restoration of the postural reflex mechanism with normal muscle tone and normal movement is the ultimate aim.

To cue orally inflated air splints into the recovery programme, using them to give limb stability, to control unwanted associated reactions and to divert tonal flow into the spasticity inhabiting patterns while rehabilitation is undertaken is to make this ambitious programme not only possible but frequently leads to a high standard of recovery and an excellent quality of life.

Teaching Videos are Available

The Urias® Stroke Splint Programme:

Part 1: Splint Demonstration

Part 2: Out-Patient and Home Care

These may be purchased from splint distributors or can be viewed via our website:

www.arden-medical.com

Symbol Explanation



Use By



Batch Code

REF

Catalogue Number



Attention, See Instructions for Use



Manufactured By:

Arden Medical Ltd,
Arden Road, Arden Forest Industrial Estate,
Alcester, Warwickshire B49 6HN, England

Urias[®] Air Splints

Non-Sterile Stroke Rehabilitation Air Splints



Arden Medical



The Long Arm Splint (Single Chamber)

Applied over a thin cotton sleeve.

Method of Application

Apply with the patient lying in the total spasticity inhibiting pattern, that is with head extended and rotated towards the affected side, hip flexed and rotated towards the sound side, shoulder in outward rotation with extension of elbow, wrist and fingers and thumb abducted.

- The zip fastener is closed, the therapist puts the splint on her own arm, clasps the patient's hand and draws the patient's arm into the splint, ensuring that the arm is in outward rotation with elbow, wrist and fingers extended and the thumb abducted.
- The zip fastener must be on the same side as the patient's little finger with the fingertips well back from the end of the splint.
- The splint consists of an inner and outer sleeve. The sleeve is next inflated by mouth. Warm air from the operator's lungs softens and moulds the inner sleeve to closely fit the patient's limb and to give all over even pressure to maintain the inhibiting position. Pressure must not exceed 40mm Hg.

The Long Arm Splint (Double Chamber)

Applied over a thin cotton sleeve.

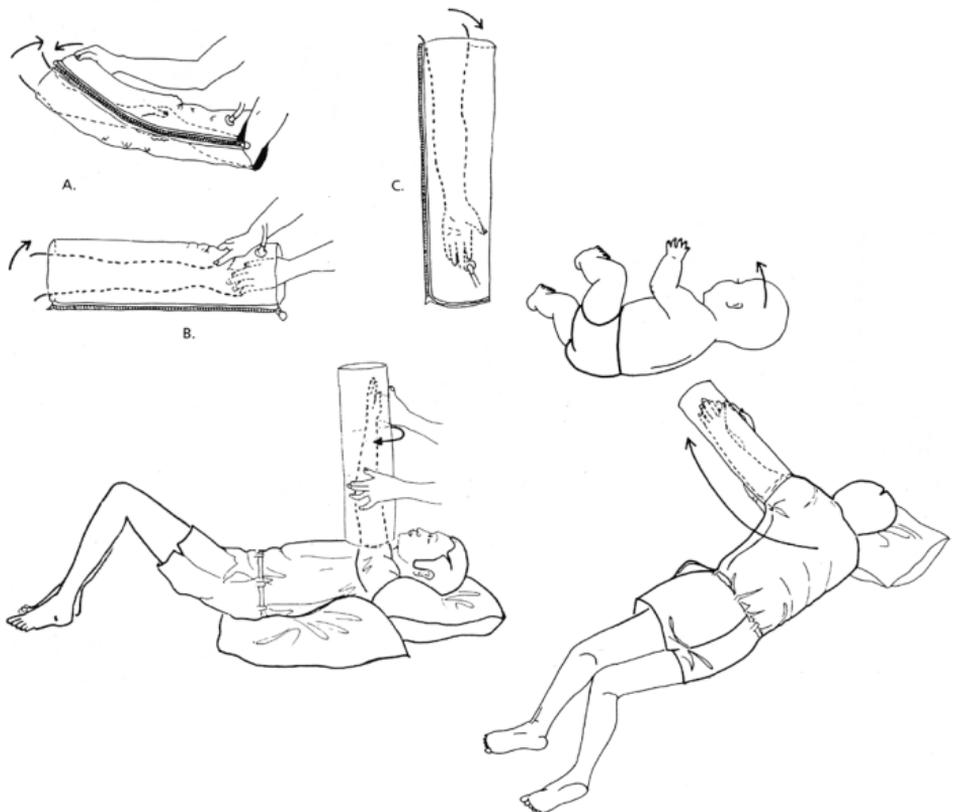
This splint is designed with two chambers, one to cover the posterior aspect of the arm, the other to cover the anterior aspect of the arm.

Method of Application

Apply with the patient lying and positioned as described for the single chamber long arm splint. However, with the double chamber splint, make sure that one chamber covers the posterior aspect of the arm while the other chamber covers the anterior aspect.

- Inflate the posterior chamber first to hold the inhibiting extension pattern of the forearm and hand. This will elicit an extensor response, »place your demand where you want your response«.
- Put a little air into the anterior chamber to stabilise and give cushioned comfort.
- Finally check that the posterior chamber is not now over inflated

Warning: The pressure which is added to the anterior chamber will increase the posterior pressure. Always check that the posterior pressure is not excessive, adjust if necessary.



Uses (for both the single and the double chamber long arm splints)

1. To control the distribution of muscle tone, controlling associated reactions and diverting tonal overflow into the weak tonal pattern while rehabilitation is undertaken.
2. To give the stability necessary for early weightbearing stimulating joint proprioceptors and increasing the low tonal pattern.
3. To maintain total inhibiting arm pattern and should be used from the earliest days to prevent developing spasticity. This only applies to the single chamber splint.
4. The double chamber splint is particularly useful where developing spasticity has become a problem e.g. treatment has not been started early enough. It should be emphasised that this splint is usually only required for very late treatment where strong spasticity has become a problem

Footnote: Always make sure the fingertips are well back from the open end of the splints.

The Foot Splint (Single Chamber)

Applied over a thin cotton sock or bare foot.

Method of Application

This foot splint must be applied **with the patient's heel right back into the heel of the splint** making an angle of 90° in the ankle joint. It should not be used for standing or walking; It's main use is to maintain the inhibiting foot position when undertaking mat work and following motor development patterns as seen in the infant. It must not be used unless it can be correctly applied with the patient's heel right back in the heel of the splint so that there is no strong pressure under the forefoot.

The Foot Splint (Double Chamber)

This splint has a **weightbearing sole** and is applied on top of the patient's footwear - trainers are suitable. The double chambers are used to increase inhibitory support around the ankle in standing and walking. For example, increasing the pressure on the lateral aspect of the ankle with a lesser pressure on the inner side can greatly assist rehabilitation in walking by offering support to the weak lateral muscles of the ankle joint.

Note: This double chamber foot splint has a walking sole. Make sure the sole of the patient's trainer (or suitable flat-heeled shoe*) is correctly positioned over the sole of the splint and that the patient's heel is again well back in the splint. This splint should only be used for walking practice in the house or on an even floor.

See also Therapeutic Splints - an Aid to Rehabilitation for further information.

*Care must be taken to ensure shoes have no sharp parts that would damage the splint.



The Half Arm Splint (Single Chamber)

Applied over a thin cotton sleeve.

Method of Application

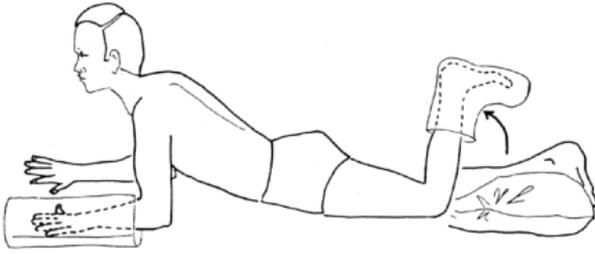
Applied below the elbow leaving the elbow free for movement. The zip fastener is on the side of the small finger and runs up the ulnar border of the forearm to make ulnar border leaning possible during exercise sessions. The fingertips are well back from the open end of the splint and the thumb is abducted. The splint is used to maintain the corrective extension of fingers, thumb and wrist during exercise sessions.

The Half Arm Splint (Double Chamber)

Applied over a thin cotton sleeve.

Method of Application

Applied below the elbow as the single chamber half arm splint, but make sure (as in the long arm splint) that one chamber covers the back of the forearm and the other chamber covers the front. **Inflate the posterior chamber first.** This will elicit an extensor response in the wrist and fingers. Next put a lesser pressure in the anterior section to give cushioned support. Finally, as in the long arm double chamber splint, check to make sure pressure in the posterior chamber is **not excessive**.



The Elbow Splint

Applied over a thin cotton sleeve.

The elbow splint - a short square splint applied with the zip fastener over the anterior aspect of the elbow joint and the splint is inflated to give a cushion of air behind the elbow to assist in maintaining elbow extension.

Use

To assist in elbow extension with stability during exercises involving weightbearing through a correctly positioned hand, for example, weightbearing on hands and knees and early crawling. Used in conjunction with the hand splint.

The Hand Splint (Double Chamber)

Applied to the bare hand.

Note: For obvious there is no single chamber hand splint

The double chamber hand splint comes in two lengths, 20cm for the small hand and 30cm for the larger hand. It is applied with the fingers and thumb in extension and the thumb abducted. The chamber over the posterior aspect of the hand is inflated first. This inflation initiates an extensor response in the fingers and thumb. A little air is then put into the anterior chamber for comfort and to give a suitable weightbearing base. Note that this splint is not used to control the wrist and should be applied with the fingertips well back from the open end.

Use

To assist in early weightbearing exercise through a correctly positioned hand to maintain the inhibiting hand position while exercise is undertaken, for example, early crawling, sitting propping on the affected arm, or standing leaning on the affected hand. It should also be used in the final stages of hand rehabilitation to control the thumb and fingers while wrist extension is practised.

Note: The fingers should not be spread out as this does not give a comfortable weightbearing base; the thumb should be fully abducted.



The Leg Gaiter

The patient should wear full length cotton stockings or light-weight trousers and properly fitting shoes.

Method of Application

This is a double chamber leg splint which is used to support the leg in standing. It is applied with the zip fastener down the lateral side of the leg. The patient should be standing comfortably with corrective arm positioning (splint controlled and weightbearing). The feet must be apart and turned straight forward or slightly inward. The upper edge of the splint should be up under the ischial tuberosity. The posterior chamber should be inflated first to a firm pressure and, as it inflates, the patient's weight must be transferred over onto the affected foot. If this is done correctly and the patient's foot is correctly positioned, this inflation will bring the knee into mild flexation and the patient will weightbear through a correctly positioned heel and, consequently, a correctly positioned hip. The patient is now weightbearing through the total inhibiting pattern. Finally, the anterior chamber is inflated minimally to give comfortable stabilising round the knee.

Use

The patient is now comfortably stabilised and ready to practise weight transfers through the affected half of the body:

1. Standing training trunk stability with inhibiting limb positioning so that associated reactions are fully controlled.
2. Gait training by stepping forwards, backwards and sideways **with the sound leg. The splinted leg does not move from the starting position.**
3. Practising weight transfers from side to side with both feet firmly on the floor.
4. Standing, feet still both firmly on the floor, both knees bending and stretching simultaneously **keeping the heels firmly on the floor.** This leads to standing on the affected leg alone and continuing with the affected leg bending and stretching.

Note: This method of gaiter application is used to control excessive extensor tone in the hemiplegic leg. But, very occasionally, the spasticity pattern in the leg does not fit the expected pattern and spasticity presents the flexion withdrawal syndrome where the patient stands only on the sound leg with the affected leg drawn firmly into flexion. In this case apply the gaiter as above but inflate the anterior chamber first and weight will be distributed through an extended knee to the forepart of the foot and so increase extensor tone. Assess tonal patterns carefully and treat what you find.

