

Pushchairs

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Abstract

Pushchairs for adults are used by two distinct groups: the high dependency users who cannot walk or use a self-propelling chair and the occasional users who may be able to walk indoors but are unable to walk significant distances outdoors. In the past, both disparate groups were provided with similiar wheelchairs described as Model 9 or Model 10 in the United Kingdom. For the high dependency user the wheelchair may be individually adapted to accept specialized supportive seating and pressure relief cushions. The standard wheelchair without adaptation is supplied to the occasional user.

For disabled children, the UK wheelchair service provides about 1200 pushchairs and buggies. About 400 of those are the more specialized type such as the Avon, while the rest are standard children's buggies, openly available at a High Street shop. The continued free supply of the standard buggy through the UK Wheelchair Service is questionable.

A recent survey carried out by the UK Wheelchair Service showed that prescribers were not aware of the importance of lightness, foldability and appearance to parents and carers and conversely that parents often did not understand the necessity for supportive seating.

The prevention of deformities in children by providing correctly supportive wheelchair seating is accepted. The Disablement Services Authority in the UK is investigating the possibilities of producing children's wheelchairs that will satisfy the requirements of user, parent and prescriber.

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Introduction

Pushchairs have very different connotations for adults and children. In general, when prescribed for an adult a pushchair symbolises another unfortunate milestone in the progress of a chronic medical condition. Children however, are transported in "normal" buggies until they master the skills of ambulation. Those who never learn to walk look upon buggies initially and wheelchairs later as a means of reducing their handicap. Many in this group of children may use a self-propelling wheelchair or an electric wheelchair whilst only the most severely disabled rely entirely on a pushchair. Prescribers of wheelchairs must be aware of these different perceptions and not only prescribe the correct hardware but also introduce the pushchair at the most propitious stage in the course of the medical condition.

Adult pushchairs

Adult pushchairs are indicated for two quite different groups: the high dependency user and the occasional user.

The high dependency user

This user group being unable to walk is dependent on a wheelchair at all times. While able to use a powered wheelchair indoors some require a pushchair for outdoors only, others more severely disabled use a pushchair all the time.

The commonest conditions that warrant a pushchair are:-

- a) The progressive neurological conditions such as multiple sclerosis, Parkinsons disease and the severely damaged stroke patient.

- b) The mentally handicapped with associated mobility problems.
- c) The late stage musculoskeletal conditions such as rheumatoid arthritis.

This high dependency group uses their pushchair for between 40 and 100 hours per week. Just over 33% of all pushchair users come into this category (Internal DHSS Survey).

The occasional user group

This group is less disabled and most can walk very short distances. The wheelchair is required for outdoor excursions and the user does not have the strength or stamina to use a self-propelling wheelchair. It would be fair to say that many would derive great benefit from having an electric outdoor wheelchair, were they available.

The vast majority of occasional users are elderly but the group also includes those with limited mobility resulting from end stage cardio-respiratory disease, strokes and major joint arthropathies. The pathologically obese are increasingly included in this category.

Occasional users make up 67% of all pushchair users and in 1987 accounted for 32,000 prescriptions in England and Wales (Internal DHSS Survey).

It is a sad reflection of the inadequate research into the requirements of pushchair users that, in Britain identical models are prescribed to both the high dependency and occasional user. The range is small but the general purpose design has undergone considerable mutation so as to achieve a compromise that is fairly cost effective.

The original design specification stated that the pushchair should be comfortable for the occupant and also carer (pusher) friendly. It should be foldable, transportable in a modern car, and easily stored in today's compact house. Most manufacturers have opted for the traditional design of two side frames held together by cross braces. The seat and backrest are made of polyvinyl cotton fabric which is waterproof and flame retardant.

In the UK the commonest pushchairs are the Model 9 and the Model 10. The Model 9 (Fig. 1) with very minor variations, is manufactured by various companies. The Model 10 is manufactured by the Barrett Company (Fig. 2). Its major feature is its ability to be transported in the boot of a Mini car when folded (Fig. 3). In addition, the Model 10 has a lower seat to ground height and a somewhat easier tipping mode. In both models the sling seat may be improved by using a cushion with a rigid base, or, if desired, any other proprietary cushion may be used.

There are other less commonly used pushchairs. The Everest and Jennings or Carters



Fig. 1. The Model 9.



Fig. 2. The Model 10.

heavy duty wheelchair is indicated when the occupant weighs over 88 kg. The Newton lightweight has a scissor type of cross brace with detachable rear wheels. In practice, some find it difficult to operate.

A great deal of modification and adaptation is possible to any of these wheelchairs. Suffice to say that the customisation is only limited by the imagination of the prescriber and the available resources. The pushchair is often modified for use as the carriage of specialised seating systems such as by use of a moulded seat (Fig. 4). It is worth remembering that a self propelling wheelchair (with large rear wheels) makes a more efficient pushchair when the kerbs are deeper, the cobbles larger, and the terrain more difficult.

The Trends

The demand for pushchairs is increasing at a faster rate than can be explained by demographic trends alone. Population studies confirm that there will be an increase in the elderly population for the first 10 or 15 years of the next century. This will be reflected by a greater demand for pushchairs and Table 1 confirms a much greater uptake after the age of 80 years (Internal DHSS Survey). More importantly, the determination of the elderly disabled to become mobile, together with, a more accepting attitude of society at large to accommodate the wheelchair user, has heightened demand.

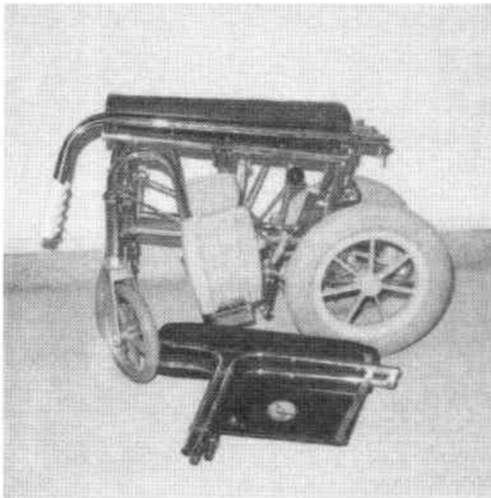


Fig. 3. The folded Model 10.

Table 1. Wheelchair uptake in the elderly population.

	1982	1985
Age 70 - 80 years	1:115	1:70
Age 80+ years	1:50	1:40

The McColl report (DHSS, 1986) recommended the introduction of a pushchair designed specifically for the elderly occasional user. The report estimated a large uptake and savings of £3 million to the Wheelchair Service. Manufacturers were invited to produce a low cost disposable wheelchair and so far 4 models have been evaluated. These new wheelchairs have not improved on the existing Models 9 and 10 and the expected savings have not been achieved.

Children's Pushchairs

The commonest indications for prescribing a child's pushchair are:-

- a) Neurological conditions with associated musculoskeletal pathology as seen in Cerebral Palsy, Spina Bifida and Muscular Dystrophy.
- b) Mental Handicap.
- c) Long term immobilisation, for example the child in frog plasters while undergoing treatment for congenital dislocation of the hip.

The first group is the most demanding and requires accurate assessment, prescription and



Fig. 4. Moulded seat in a pushchair.

follow up. It is often the case that the severity of the physical disability will not allow the child to exploit his or her mental abilities until satisfactory seating is achieved. It is also the case that these children are under the care and supervision of many professionals such as a Neurosurgeon, Orthopaedic Surgeon, Physiotherapist, Speech Therapist, etc, who may place contrasting requirements on the seating position. However, it is equally important to consider the views of the user, parent, carer and teacher with regard to comfort, communication, environment of use, transfers and transport, feeding, toileting and all the other tasks of daily living. There is no merit in prescribing a wheelchair system unless the user and carers are convinced of its benefits and the practicality of its use.

Most professionals agree that a firm yet padded seat and backrest together with options for head and thoracic supports are required. Users, parents and carers value lightness, foldability, transportability, modern cosmesis and a simple easy to use harness. Most want a "comfortable" position for the child which in effect implies an upright position when static and a more reclined position for transportation, feeding or taking a nap. A satisfactory children's pushchair must attempt to balance these sometimes conflicting aspirations, and reach a sensible compromise.

The wheelchair service in the UK currently provides about 12,000 children's vehicles a

year. About 500 of these are the more specialised models such as the Avon and the Thames Tilt and Relax, while the remaining 11,500 are simple buggies which are readily available at most high street stores.

The Avon (Fig. 5) was designed and is manufactured by the Newton Company (a subsidiary of the Spastics Society). It has a padded wooden frame providing a 90 degree seat/backrest angle. The entire seat may be reclined and a wide range of support pads is available. It is unfortunately a large cumbersome vehicle, best suited for purpose built institutions and extremely awkward in the average British house. Furthermore, its inability to fold makes transportation in a family car very difficult. The Thames Tilt and Relax is of similar design.

The standard buggies supplied are the Cindico and McLaren range though some other brands may also be available. For the larger child the McLaren Major Buggy (Fig. 6) will carry a load up to 40 kg. The lightness and compactness of these folding buggies is self evident but there are adverse long term effects of the sling seat on the posture and seating position.

Recently a wider range of children's buggies has been introduced onto the market. These have a well upholstered seat with firm base and backrest. They have more modern design profile and a robust construction that permits a high degree of outdoor activity. The Sulky and



Fig. 5. The Avon



Fig. 6. The McLaren Major Buggy

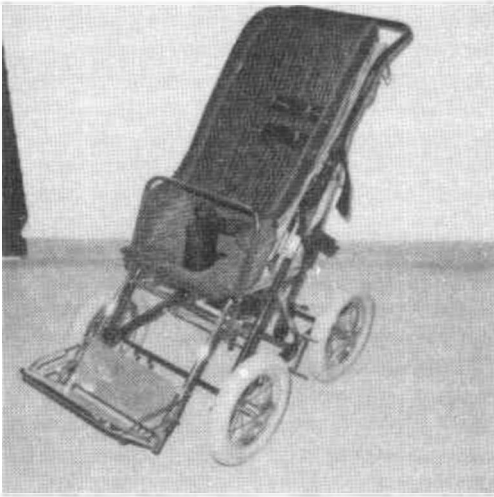


Fig. 7. the Alvema

the Alvema range (Fig. 7) are good examples. They are all heavier than might be desired and may be awkward to fold. Unfortunately, their

exorbitant cost will restrict their routine issue through the Wheelchair Service.

It remains a challenge to the Wheelchair Manufacturers to design a correctly supportive, adjustable child's pushchair that meets the requirements of the user while remaining cosmetically attractive and affordably priced. There are encouraging signs that this challenge is now being taken seriously by some UK manufacturers.

(This article represents the authors personal views which are not necessarily the views of the Disablement Services Authority.)

REFERENCES

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