

Adult, Scanner with fiber optic

Statement of Medical Necessity and Equipment Justification Seating, Positioning and Mobility Assessment

DATE/S: 11/25/97, 2/16/98, 4/22/98

PATIENT'S NAME: Nathan Neither

AGE: 25 years old

MEDICAL DIAGNOSIS: Muscular Dystrophy

REFERRED BY: OVR (Office of Vocational Rehabilitation)

THERAPIST EVALUATING: Karen M. Kangas OTR/L

OTHERS PRESENT: Brian Brain (Adaptive Switch Labs), Lettie Lotty (USA's Best Medical), sister

Identification of Needs

Nathan is no longer able to utilize his joystick to drive his powered chair. He is interested in exploring options to manage it with the current amount of motion he has left in his right hand.

Medical Considerations

Nathan is currently on oxygen full time through the use of a Bi-pap machine which is used taped to the nostrils with the tubing up and over the head. This unit can be portable and would allow Nathan to move throughout his home.

Current seating

Nathan remains seated in his Invacare Action Arrow, with MKIII electronics and LaBac recline system. His chair has elevating legrests with calf pads, height adjustable armrests, and a high back with chest strap. His sister must position him carefully within the seating system. He sits upright, leaning forward into the chest strap, or leans back when reclined. He keeps one leg outside of the legrest for additional support when he is upright.

Current Drive Settings

	<u>Drive A</u>	<u>Drive B</u>
High	95	50
Low	70	65
High Turn	60	60
Low Turn	35	45
Acceleration	6.0	5.0
Sensitivity	.70	.60
Braking	40	35
Torque	80	100
Forward/ Reverse ratio	65	75
Short Throw	ON	ON

Equipment Trial

Date: 2/16/98

Equipment Used:

Adaptive Switch Labs:

1. Fiber Optic switches
2. Proximity Switches
3. Scanner system
4. w/MKIV electronics & ECU board

Time Used, Activities Used

We worked with Nathan twice trying various switch sites. He has very limited hand movement at this time. He must drop his hand down at the side of his armrest, and in that position he can abduct his thumb, and has some flexion at the proximal interphalangeal joint, too. When his thumb is in extension he has some movement at the MCP joint. He was unable to use two switch access because he could not move away from one switch without being in the beam of the other.

We could not utilize his current chair's electronics because he does not have an ECU interface which was needed to plug in the switches.

Results of Trial:

Both trials were fraught with frustration as we had difficulty getting all the interfaces compatible, and working together. However, we were able to demonstrate the use of a scanner, and we also were able to determine that Nathan will need to be able to access his system with a single switch, which means using a scanning system. That single switch will also be the fiber optic switch, placed within adjustable mounting, so that it can be attached to his armrest, and maneuvered stably for him to use.

Equipment Recommendations

1. Upgrade Invacare electronics to MKIV

Nathan needs to have his electronics upgraded to the **MKIV+** rather than using his MKIII electronics. First of all he does not have all the components available to use them with alternative switch access, and it is close to impossible to even find them any more since they are no longer manufactured (he would need an ECU board added to his current system, and a remote programmer.) The newer electronics also control the chair more adequately, which will be critical for Nathan since he cannot tolerate any jolting, and he will be using a single switch for access through scanning. The newer electronics have increased control over turning speed and response time as well as more accurate control of the chair itself.

With the MKIV+ electronics, a **digital interface** is needed to be able to utilize the alternative switch access, since a joystick will not be used. Also, a **variable speed recline box** from Invacare will be needed for Nathan's independent access to his powered recline. He will also need a **remote programmer** for setting up the parameters of the chair for driving.

2. Adaptive Switch Laboratories' Alternative Switch Access

Since Nathan has lost hand function and has only enough active movement to use a single switch, and even that is for a minute distance, he needs to use a **scanner, and a single fiber optic switch** to access his powered chair and the powered recline

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independently. The **switch will be mounted** through a special flexible, yet stable tubing and mounted on his armrest, where the joystick now resides. The fiber optic switch is a switch which requires no pressure; it is a small single beam of light (about the radius of a pencil point) which must be covered to act as a switch closure. For Nathan, with the special tubing, he can rest his wrist and finger near or around the tubing and subsequently control the posture of his singular finger movement.

The **scanner's display** can then be placed wherever Nathan feels he can see it best. Essentially the chair will be driven with a single switch. The scanner will automatically "scan" or move through all options of control of the chair, 4 directions, a "select" switch (which will be for choosing the reclining function). This scanning is noticed by the user through a display with small LED's (light emitting diodes/5 small red lights). As the scan goes around the display when it hits the "select" key, and Nathan hits his switch, the chair will then be in drive mode, and any next selection will be control of the directions, left turn, right turn, forward, or reverse. If the select switch is chosen again, the right switch will control the recline going DOWN, and the left switch will control the recline coming UP.

A **remote attendant control** will also be helpful in case Nathan either becomes too weak to move at a particular time of the day, or has a particularly bad day, or if he needs help in a new situation. ASL makes this remote to be used near the chair, and it controls the same functions Nathan's scanner controls. It can be hand held, and is not attached to the chair by a cable, making it extremely useful to the attendant. It can also be used to re-position the chair, once Nathan is in bed at night.

*****Please note:** *These specific items are the exact items that this person needs. The specifications and brands themselves should **not** be changed. They have been chosen with great care, for durability, ease of use, compatibility, and accessibility and for this individual's own particular needs. (These prices are not exact but, approximate and current as of the time of the report, actual prices will come from the manufacturers, themselves, at the time of purchase.)*

1. Electronics Upgrade

MKIVA with digital interface SNP Display, #1554M4	\$2527.
Variable Speed Recliner Box, #1815M4	\$ 889.
Easy Remote Programmer, #1813M4	\$ 316.

From: Invacare, 899 Cleveland St., Elyria, OH 44036-4028; 1-800-333-6900

Local Vendor: Allied Services Medical Equipment Center, 5 Morgan Highway, Scranton, PA 18508; 800-225-8563; Attn: Michael Dicello

2. Switches & Interfaces

Single Switch Scanner, #ASL101	\$1975.
Flex Tube Switch Mounting Bracket Kit, #ASL609	\$ 350.
Remote Attendant Control, #ASL520BG	\$ 585.

From: Adaptive Switch Labs, Inc., 125 Spur 191, Suite C, Spicewood, TX 78669; 800-626-8698

Local Vendor: Allied Services Medical Equipment Center, 5 Morgan Highway, Scranton, PA 18508; 800-225-8563; Attn: Michael Dicello

3. Delivery Assembling, Instruction, Training

This is the critical part of these electronics working. This system must be SAFE and FIT Nathan exactly. This is the final customization and one of the most important parts of the entire process.

Both the therapist and the dealer/vendor need to be involved, working together.

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4. Choosing a medical supplier/dealer.

We have chosen USA's Best Medical as the local dealer, represented in this report for two reasons. First of all, their representative, Lettie Lottie has had a great deal of experience in seating and positioning, and their biomedical engineer, Manny Nanny are both able to complete this installation and customization. They provide excellent technical and more local service support.

If there are any questions regarding the costs of the components, please call Ms. Lottie first, and/or the manufacturers. I have chosen the components based on my expertise as a therapist dealing with assistive technology and seating and positioning of difficult or complicated patients. The choice of items is mine, the delivery and putting together is both the vendor/dealer's and my responsibility. Any cost questions are for the vendor. I choose products as to the patient's needs and the match between the features of the product and the needs of the patient, not their cost, but their value. If there are products which have equal characteristics and a price variation is noticeable, cost effectiveness is always considered.

If there are any questions concerning this report, please do not hesitate to contact me.

Karen M. Kangas, OTR/L Occupational Therapist Date

Physician Date