

NRRTS Best Practice for CRT Service, Preventative Maintenance, and Repair

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Background

Complex Rehabilitation Technologies (CRT) including custom fitted manual and power wheelchairs are crucial to the everyday lives of people with severe disabilities including those with spinal cord injuries, cerebral palsy, multiple sclerosis, and other diagnoses. As with all types of equipment, these devices and associated seating and positioning systems do require regular maintenance, repair, and the replacement of components to maintain user health, function, and participation. Device failures and subsequent adversities are well documented. Studies further show that most users are not aware their device needs maintenance and are often unable to perform these tasks. An understanding of best practice for repair and maintenance is crucial to decrease the amount of time it takes to intake, diagnose, document, and complete a repair to minimize the impact to the consumer, improve the documentation procedures in both content and speed, and establish a preventative maintenance program that catches potential problems before they happen. The purpose of this document is to guide the practice of CRT maintenance and repair. This is further intended to inform stakeholders including the public, consumers, practitioners, and policy makers.

Scope

For this document, service is defined as any inspections, maintenance, component replacements, or repairs performed on complex rehabilitation technologies.

These NRRTS Practice Guidelines for wheelchair service including repair and maintenance provide a guideline for registrants to achieve consumer safeguards and high-quality service. It further supports NRRTS and its registrants as valued members of the healthcare community. Such standards are also intended to facilitate consumer well-being, continuous quality improvement, and third-party policy.

- I. These practice guidelines address three (3) primary areas:
 - a. **Efficiency:** Support timeliness of service by decreasing burdens associated with intake, assessment, and completion of service.
 - b. **Documentation :** Standardized procedures for documentation and content.
 - c. **Prevention and Replacement:** Identify critical warning signs of component failure and establish preventative maintenance procedures to assure product reliability and provide replacement prior to failure.

CRT Service Methods

The practice guidelines methods to achieve the intended outcomes are:

- I. Intake Process
 - a. Maintain accurate records of each device that includes model of product, serial number, date of purchase, repair history. Such information is critical for understanding needs over time related to maintenance, repair, replacement, and recalls.
- II. Service Environment

- a. Service should occur in a setting conducive to the type of service being provided.
 - b. Whenever possible service should take place in a service facility to ensure:
 - i. Best ergonomic environment to prevent injury to the technician.
 - ii. Best access to necessary tools should any additional repairs or issues arise.
 - iii. Best access to additional parts if needed.
 - iv. Reduced appointment and travel time which in turn reduces overall repair time.
 - c. An acceptable option is a mobile repair van that functions as a repair facility on wheels. This achieves the above goals while reducing travel issues for the client.
 - d. Repair in the consumer's home should occur only when the consumer's and/or caregiver's ability to travel is restricted. This is for the benefit of both the consumer and the provider.
- III. Remote Technology – prior to service, a service request should be triaged to determine the best approach to addressing the service issue. This can be performed through a variety of strategies such as interactive video inspection.
- i. Utilize available remote strategies to monitor, assess and triage to resolve the problem or to schedule an in-person service encounter.
- IV. Service Encounter
- a. At the time of any in-person encounter the equipment should be inspected for any additional issues, preventing additional trips and loss of mobility for the consumer.
 - b. Complete any preventative maintenance items recommended by the manufacturer to prevent unnecessary service calls or loss of mobility to the consumer.
 - c. In the event of an extended repair cycle, an appropriately fitted temporary wheelchair should be provided if needed and if the applicable funding source provides an appropriate level of funding.
- V. Documentation
- a. Maintain appropriate documentation for the purpose of best practices.
 - b. Provide sufficient documentation of the services provided as well as the amount of time spent performing the service.
- VI. Quality assurance
- a. Collect all relative data regarding repairs by functional step. Intake, scheduling, repair time, travel time, documentation, and billing.
 - b. Routinely summarize the above data to understand where opportunities for improvement exist and where roadblocks to quicker repair times and reduced costs exist.
 - c. Routinely share data with employees in the pursuit of continuous improvement, with referral sources to encourage partnership in pursuit of better processes, and with payors to educate on their role in delaying shorter repair cycles.

Preventative Maintenance and Repair

Setting expectations for preventative maintenance service should be part of the delivery/fitting of the mobility system.

- I. Suppliers should go over their specific company policies with a leave behind written checklist and provide complete warranty information on the components including where this information can be found in the owner's manual and/or manufacturer's website.
- II. It is imperative that all information and expectations discussed at the time of delivery is provided in written format for future reference including who to contact. Instructions regarding consumer responsibilities should be tailored to the level of experience and ability of the consumer.
- III. Set preventative maintenance appointment schedule per manufacturers recommendations as well as consideration of both the environment and use case of the consumer.
- IV. Advise consumers on their RUL expectancy of components due to those factors.

Preventative Maintenance Guidelines

The preventative maintenance of wheelchairs applies to the mechanical and electrical components of the chair as well as its seating:

- I. Mechanical Components
 - a. The function and performance of the wheelchair's casters, wheels, brakes, footrests, armrests, headrests, and backs.
 - b. These items should be checked and replaced routinely as determined by their wear and use by the user to decrease failures.
- II. Electrical Components
 - a. The function and performance of the wheelchair's battery, joystick, controller, and other electronics.
 - b. These items should be checked and replaced routinely whenever signs of decline or malfunction are found.
- III. Drive Motors
 - a. The function and performance of the drive motors of power wheelchairs should especially be monitored due to its importance for overall wheelchair function.
 - b. Motors should be routinely checked, and any suspected issues should be addressed as soon as possible.
- IV. Seat Actuators
 - a. For users with seating functions in their wheelchair, seat actuators are another vital component that must be given specific attention.
 - b. Actuators should be routinely checked, and any suspected issues should be addressed as soon as possible.

It is not expected that all consumers of CRT wheelchairs will be able to perform many of the service or maintenance requirements. CRT level power wheelchairs especially are highly technical in their design and include motors, high level electronics, alternative drive controls and seat actuators which require servicing by trained and experienced technicians. An individualized service plan can be created that considers the preventative maintenance schedule and the consumer's ability to complete these tasks.

Consumer Responsibilities:

At the time of delivery, the consumer should be instructed on how to properly perform inspections as detailed in either the supplier's written instruction checklist or the manufacturer's owner's manual. (These instructions should be tailored to the consumer's level of experience and ability. When the experience and abilities exist, the consumer can be instructed to make minor repairs such as tire pressure, caster flutter, etc.) The frequency of these inspections and repairs and their reasoning should be clearly explained.

Provider Responsibilities

- Follow manufacturer's recommended guidelines for preventative maintenance and tailor that to the user's experience, ability, environment, and usage.
- Establish a recommended inspection and service guideline that covers all brands of CRT wheelchairs sold based on manufacturer's recommendations and the supplier's experience. Provide this in a written form to the consumer at the time of the CRT delivery or written instructions on where to access the information electronically.
- Train all technicians and RTSs on the procedures for instructing inexperienced consumers on how to thoroughly inspect their wheelchairs for potential problems.
- Encourage consumers to adhere to recommended preventative service and inspections.