

Plan for Disaster Transportation of Vulnerable Populations

Scope of Plan

The plan describes the application of transportation resources in a disaster used to move vulnerable populations out of the disaster area. The plan covers transportation by EMS services as well as other supplemental transport vehicles mobilized for disaster response. The plan does not include:

- Pre-Hospital Stabilization (covered in a separate document);
- Medical support of rescue operations (covered in a separate document); and,

Potential Scenarios

- Any scenario in which local vulnerable population transportation resources may be exceeded due to a local disaster – this includes local surge events such as an explosion or fire as well as wider events which may impact local areas (e.g., flooding, ice storm). It includes medical and non-medical transportation needs.
- Any scenario in which populations must be evacuated – this includes flooding, chemical or radiation release and includes evacuation of health care facilities through flood waters.
- Does NOT include pan surge events such as a moderate or severe influenza pandemic in which transportation resources are surged everywhere such that supplemental assistance is not available to a local area. (Refer instead to EMS Surge Plan for medical transportation adaptation.)

Vulnerable Population Transport Vehicles

Types of Vehicles Available

Some of the transport vehicles in use during a disaster may be different than those in use for daily operations. EMS personnel would operate ambulances, bariatric ambulances and ambuses. Non-EMS personnel would operate other vehicles but EMS may be called upon to assist in patient care of persons on multi-patient vehicles during patient transport.

Disaster transport vehicles include:

- Ambulances;
- Bariatric ambulances - Two bariatric ambulances are available in North Dakota from local ambulance services in Grand Forks and Fargo. These are designed to carry very heavy patients whose girth may prevent them from being adequately secured in a non-bariatric ambulance.
- Wheelchair bus – Five school buses can be converted to carry wheelchairs, each holding up to 21 patients¹.
- Stretcher bus – Two school buses can be converted to carry up to 18 stretcher patients apiece.
- Ambuses – Two buses designed to carry up to 20 stretcher patients each are available through ambulance services in Bismarck and Fargo.
- Community or LTC institutionally owned buses for the disabled –These vehicles may be used to transport lower acuity patients such as evacuees from long term care facilities.

Vehicles Capability for High Water Movement (See Flood Plan re: evacuation through water)

The capacity of the above vehicles to move through standing water is as follows:

LMTV (NDNG truck) – 34 inches

School buses – 24 inches

¹ Bus seats, wheelchair and stretcher conversion kits can be mixed in the same vehicle, but at the cost of efficiency in number of patients per bus.

Buses for disabled – 6 to 18 inches depending on vehicle model
Ambulance – 6 inches
Ambuses – 6 inches

Multi-Passenger Vehicles

NDDoH has a contracts with commercial owners/operators of school buses to provide buses for rapid conversion to medical transport buses. Use of these resources is most likely to occur in a slowly developing event such as a flood in which pre-event preparation and resource placement is possible; albeit slow, buses can be converted and mobilized to a site in response to an unanticipated disaster as soon as conversion is complete. Bus conversion can take two hours per bus. The actual conversion requires removing all the seats except three which remain as jump seats for staff, and mounting the conversion kits (additional seats can be left for ambulatory patients if needed². The conversion kits will be installed by the bus company which keeps the conversion kits on-site; however, NDDoH also has personnel trained to be able complete this task. In a slowly developing event, the conversion will take place in advance of anticipated need and the converted buses may be pre-staged to the disaster area. The bus company will also provide a driver (and backup driver) who will be willing to drive the bus into flood areas for patient evacuation if needed and can keep the bus in operation 24/7. Buses transporting patients will also need medical personnel which will be mobilized to the staging area and assigned to specific vehicles at that point.

NDDoH currently has resources sufficient for 21 bus conversions (15 wheelchair and 6 stretcher).

Ambuses and bariatric ambulances are fixed resources belonging to ambulance services. For an event which permits pre-staging of resources, these resources will be mobilized with EMS crews to the Vehicle Staging Site for the impacted area prior when need is anticipated. Because they do not require conversion, they can be mobilized rapidly.

Converted Bus Equipment

Medical equipment will be transported to the bus companies and loaded onto the vehicle at the time of conversion, with securing of the equipment to the side rails installed with the conversion where needed. Equipment will include:

- DOC issued cell phone for en-route communications with the DOC;
- K cylinders of oxygen - two per side (7700 liters per cylinder) for stretcher buses and one per side for wheelchair buses (with oxygen distribution equipment for wheelchair buses);
- Kit with medical equipment and ALS support equipment, including cardiac monitor;
- PPE for standard precautions, wipes and hand sanitizer;
- Linen and soiled linen storage;
- Waste and medical waste collection bags;
- Bottled water;
- Limited amount of food for patients.

Oxygen will continue to be stored for the buses at the bus vendor, in part due to difficulty transporting oxygen due to hazardous transport requirements. When the call goes to a bus company for bus conversion, NDDoH will arrange transport of other material to the vehicle staging area for the disaster.

² Alternate configurations may need to be considered for specific communities. For example, evacuation of an assisted living facility may have more ambulatory patients than other long term care facilities so a greater number of bus seats might preferably be left in the vehicle when converted.

When the bus reports to the vehicle staging area, the remaining material will be put on the bus. The footprint of the material is great enough that it will need to be moved by trailer from the warehouse to the vehicle staging area. In an urgent response for the buses to an evacuation need, the bus would not be delayed in order to take on medical equipment; most of the material would not be needed on the bus except for long distance transport and urgent evacuation will likely move patients to a nearby patient staging area (since inadequate time to achieve alternative placement sites is likely). Consequently, travel distances are expected to be short in that scenario.

Medical Transport Venues – EMS and non-EMS

During a localized disaster, regular medical transport missions that are unrelated to the disaster will continue, although the resources for performing those routine transport missions may be substantially impaired due to need for local EMS to assist with disaster transport demands or by displacement of EMS workers from the area by the disaster. In addition, if local health care facilities are closed due to the disaster, routine transport of patients to hospital ERs may be at much greater distance. Consequently, EMS services for routine medical transport may have to be supplemented with disaster response resources³.

Disaster-related medical transport missions and transport destinations may be substantially different than routine transport destinations. New destinations may include:

Location	By EMS or Non-EMS	Origin or Destination	Description
Pre-Hospital Stabilization Sites (PHSS)	EMS	Either	These sites are setup to act as a ground-based ambulance sites capable of holding multiple patients in a stabilized setting pending transport to definitive hospital care. The intent of PHSS is to maintain fast offload times and decrease time that available EMS units spend in long distance transport to health care facilities out of the disaster area.
Air Transport Stations (new or existing)	Typically EMS but non-EMS possible	Destination	This destination may be a temporary helicopter landing sites as well as existing airports supporting rotor and fixed wing craft for long distance transport of patients to health care facilities out of the disaster area. Usual transport would be acute patients brought by ambulance for medical evacuation. Non-EMS transport could bring low acuity patients (e.g., LTC) for air transport to distant cities as occurred in 2009 flood. Helicopter-based facility to facility transfer (e.g., “Lifeflight”) would not make use of air stations.

³ Pre-hospital stabilization sites provide capacity for short term ALS care of patients and would be in place if available hospital and emergency room capacity were non-functioning or inadequate to provide all needed care in an affected city. However, a pre-hospital stabilization site is not a substitute for an ER; the site can allow definitive transport to a hospital to be delayed, but the transport still must take place.

Alternative Care Sites	EMS	Either	This could include temporary health care facilities such as a DMAT site or out-of-jurisdiction facilities which become nearest available care.
Patient Staging Sites	Either	Either	Some public buildings / auditoriums may become temporary holding sites for evacuated patients who need to be staged locally until they can be transported to a distant health care facility.
Triage sites	Either	Origin	These sites would receive evacuating populations which need to be sheltered in order to separate those needing general sheltering, specialty sheltering (e.g., medical sheltering) or acute care. EMS transport may be needed for persons needing acute care. Non-EMS transport would be needed to move triaged patients to distant shelters.
HCF Repatriation	Either	Destination	Following the acute phase of a disaster involving evacuation, EMS may also be engaged in repatriating patients to the health care facility of origin (e.g., a long term care facility).

Vehicle Staging – See Overview of Vehicles and Personnel Staging document

Assignment of Patients to Transport Vehicles

Prior to the actual onset of an expected event (e.g., spring flooding), most patients in hospitals, LTC facilities, assisted living facilities and congregate living sites will have been assessed for transport requirements. Assessment will use EMS criteria. That is, a LTC resident who is ambulatory with a walker would not be considered ambulatory for the purposes of evacuation (the patient would not be able to move quickly to a vehicle embarkation point and climb into a bus). Each person will be assigned to one of the following categories:

- Ambulatory
- Wheelchair
- Bariatric wheelchair
- Stretcher
- Bariatric stretcher.

Patients are identified and matched with their need in the patient tracking system using a wrist band barcode assigned to each patient. All patients that can be are pre-populated into the system (hospital patients in particular may be incomplete due to rapid population turnover). The transport status of each patient will be designated as “Pending” until they embark a transport vehicle for evacuation. In addition a field called “Division” will be populated with the current location, a static “Home” field will designate the permanent place of residence and a destination field will designate where the patient is to go. If the destination facility for a patient changes, it must be changed in the patient tracking system to reflect the correct destination. The patient tracking system will be used to determine the destination of each patient as they are placed on transport vehicles so errors in destination field may result in patients being transported to wrong locations.

In the event of a pre-emptive evacuation of a health care facility, the DOC will direct the VSS to release specific transportation resources to that facility⁴. Patients will have been assigned to a specific resource and when they are placed on that transport vehicle, their status in the patient tracking system is changed to “Active.” From there patients will be taken to a pre-designated destination. This may be a patient staging site where patients stay until transport for definitive placement in a health care facility can be made (if the evacuation is urgent) or patients may be transported along a pre-designated route, with patients disembarked at specific facilities along that route (if multi-patient vehicle). At the time the patient is removed from the transport vehicle at his or her destination, the transport status in the patient tracking system is changed to “Complete” and the division field changed to reflect current location. Once the vehicle has been emptied it will return to the VSS site for re-assignment. Re-assignment may be no new assignment at that time, return to same facility for additional patients or assignment to a new facility to assist evacuation.

Loading of Patients on to Transport Vehicles

Each patient will be assigned a transport vehicle. If the patient has not been assigned pre-event, he or she will be assigned at the time and provided with a barcoded wrist band. Facility staff will bring the patients to the transport vehicle for loading. The vehicle crew will use the patient tracking system scanner to scan the patient’s barcoded wrist band; this will bring up the patient including destination and assigned vehicle. The staff member will then scan the correct vehicle placard barcode and the patient will be loaded into the vehicle. Once all patients are loaded and away, the patient ceases to be the responsibility of the origin facility. Patients will be under the care of NDDoH until they are unloaded at their destination facility and turned over to the staff of that facility.

Patient Possessions

For slowly evolving events, each evacuation facility will be issued a transport bag for each patient into which the facility will place patient possessions, needed medications, bottled water and a tyvek folder containing the patient’s medical records. In an emergency event for which the facility does not have transport bags, the facility should use whatever is available such as a pillowcase to serve as a patient possession bag. The possession bag will remain with patient at all times.

Additional material which needs to be transported is likely (e.g., wheelchairs, additional patient luggage). A cargo van will be arranged to transport the additional material to the destination along with the bus. The van will come from the motor pool and the driver will be an NDDoH employee assigned to the driver team if an EPR staff member is unavailable.

Staffing of Multi-Patient Transport Vehicles

For a slowly progressing event, NDDoH will identify specific bus crews for each of the converted buses. When they are needed on standby, they will be dispatched to the VSS where they can meet up with the vehicle for mission assignment. The local site commander of the vehicle staging site has the authority to determine the staffing for specific mission vehicles (e.g., higher acuity patients may need more highly skilled staff). Staffing for buses will have the following minimum configuration:

- Wheelchair bus – three staff including one EMT basic (may include physician, paramedic, nurse or CNA)
- Stretcher bus – three staff including one paramedic with other staff at least EMT basic (may include physician, nurse, additional paramedics or CNA).

⁴ One facility will be evacuated at a time.

After completion of the mission, the vehicle will return to the VSS where it will be cleaned according to standard EMS procedures. Soiled laundry will be collected for transport to Central Laundry in Bismarck (or nearer contract facility if available).

During patient care, staff are expected to follow standard precautions. Hand washing while en-route will be limited, but wipes and alcohol hand sanitizer will be available.

Patient Care during Long Distance Transport

Some of the patient transports may be lengthy, but staff are expected to provide on-going care for the patients while in transit.

Special Care Instructions

Prior to leaving, the team lead for the patient care team will determine from facility staff any specific care instructions for specific patients being transported (e.g. fluid restriction for a renal patient). Special care instructions may include "Do Not Resuscitate" (DNR) orders"

Medical Problems

Any problems arising during transport that cannot be managed by the crew en-route should be referred to the DOC. If a problem is beyond the medical ability of the care team to handle, the vehicle will be diverted to the nearest emergency room. The patient will be left at the emergency room and their "Division" field will be updated to reflect the patient's current location. Once the patient is capable of resuming travel, the holding facility can contact the DOC to arrange transport.

Tube Feedings

Tube feedings will be stopped during transport; patients unable to take oral fluids would not be given fluids during transport.

Toileting

On stretcher buses, caregivers would assist continent patients with bed pan use and linen for non-continent patient would be changed as needed. This may be difficult since having a person on each side of a stretcher is not possible. Keeping the patient as dry and comfortable as possible is the aim. On wheelchair buses, LTC facilities along the transport route may be asked to assist with the transported patients with toileting, bringing them into the LTC facility. The need for an en-route toileting stop will depend on the distance traveled, but arrangements for a stop should be made if the transportation route is greater than three hours. For patients transported long distances across state, NDDoH may use medical shelter capacity at University of Mary to hold patients until receiving facilities send a vehicle to transport the patient the remaining distance.

Death

If a patient is suspected of having died while in transport, the vehicle will continue to its destination where the receiving facility will manage the death and the death will be considered to have occurred in the destination county since the patient will not be pronounced dead until it reaches its destination. Resuscitation would be attempted unless the patient has a known DNR status. If resuscitation is attempted, the bus will contact the DOC for diversion to the nearest health care facility.

Hospice Patients

Hospice patients may need ongoing access to pain control medication during transport. When possible, hospice patients will be grouped together on the same transport vehicle and each patient's medication

will accompany the patient during transport with special care instructions for administration. An individual decision may be made for some hospice patients to transport them by ambulance rather than by bus.

Children

Children may be transported on a bus with adult residents. Parents will not be allowed to accompany the child. For a long term care resident child, the parent may elect to transport the child himself or herself, or may choose to meet the transport vehicle at the destination. Family transport would not be considered a reasonable option for hospital patients.

Psychiatric Patients

Psychiatric patients can be moved in buses (e.g., city, charter) much like any non-psychiatric population, but with staff care en route provided by the origin institution.

Prisoners

If a patient is a prisoner at the time of transport, the prison with custody of the patient must send a guard with the patient if the patient must be guarded; a guard will not be supplied by NDDoH. The guard may accompany the vehicle back after discharging care to another law enforcement agency. Law enforcement arrangements will be up to the law enforcement agencies.

Bariatric Patients

Bariatric stretcher patients will not be transported via bus. For the purposes of bus transport, a patient will be considered bariatric if over 350 lbs or large enough that personnel loading the patient are not sure they can load the patient into the racking system without risk of injury to themselves or the patient. This is likely to be much below 350 pounds. (More than two people are likely to be needed for patients at or above 200 pounds. It is anticipated that in most slowly developing events, large patients would have been evacuated early.