

Ergonomics for EMS

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Safe Patient Handling

What to consider when reviewing solutions for EMS

- Must be transportable
 - Easily stored and accessed
 - Does not take up too much space
- Must be quick and not complicated to operate
- Decontamination and maintenance must be quick and easy
- Multi-purpose. If can be used for more than one scenario, more likely to be accepted by workers since will be used more often rather than for unique situations.

Some solution ideas

The following list includes technology to assist with patient handling activities for EMS, a brief description of the technology and a website. Please check the website and contact the vendors directly to obtain cost and other details about the product. Please note: *We do not endorse* any of these products but feel they have features that would reduce the risk of musculoskeletal injury in Fire and EMS personnel. Please feel free to contact us to add or comment about items to this list. We would love to get feedback and see this list grow.

Bariatric ambulance with winch, ramp and special gurney: eliminates the need to lift the pt in the gurney into the ambulance

<http://www.transsafesystems.com/>

<http://www.ems.stryker.com/detail.jsp?id=9>

Stair chairs with tread: eliminates need to carry stair chair down stairs.

<http://www.ems.stryker.com/detail.jsp?id=5>

Hydraulic gurney: automatically raises and lowers gurney – also has an auto retract feature that raises the carriage when loading into ambulance.

<http://www.ems.stryker.com/detail.jsp?id=10>

http://www.ferno.com/product_content.aspx

Transfer flat: system with handles – secure way with appropriate handles for multiple people to assist in lifting. Does not eliminate lift though so is limited in reducing risk, but is better than nothing in certain circumstances.

<http://www.ems.stryker.com/transferflat.jsp>

Descent Control System: adds tread to gurneys to allow for transport down stairs without carrying gurney.

<http://evacuation.stryker.com/>

Patient Assist Lift: adds lightweight support and durable handles for moving patients in tight situations where other equipment is not possible, including in vehicle extrication.

<http://www.itecems.com/>

Lateral Transfer Aids: These reduce friction so allow workers to move a patient laterally from one surface to another (like the bed to a gurney) by sliding them instead of lifting them. There are many styles and products out there so departments should request samples to decide what personnel accept and what works best for them. Below is a table with contact information, approximate price and biomechanical ranking (with reference).

Device	Company	rank*	Comments
Lateral Transfer Aid	Phil-E-Slide www.phil-e-slide-us.com	1	Comes with attached or detached roller sheet & pull straps
Flat Sheet Set	Phil-E-Slide www.phil-e-slide-us.com	2	Flat sheet with pull straps
MaxiSlide	Arjo www.arjo.com	3	Same as flat sheet but no pull straps
Hovermatt	Patient handling technologies www.hovermatt.com	4	Air filled mattress
Airpal	Airpal patient transfer systems www.airpal.com	5	Air filled mattress
Easy Transfer System	Romedic	6	Tubular piece of material
MaxiTrans	Arjo www.arjo.com	7	Tubular piece of material
SLIPP	Inventive Products www.wrightproductsinc.com	8	Fluid filled sheet
Resident Transfer Assist	Hill Rom	9	Same as flat sheet but no pull straps
Ergosheet	ErgoSafe www.ergosafeusa.com	Not ranked	Same as flat sheet but no pull straps

Lloyd, J and Baptiste, A. “Biomechanical Evaluation of Friction-Reducing Devices for Lateral Patient Transfers”. AAOHN Journal, 54(3), 113-119.

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Lateral Transfer Aids

- One "job" is the lateral patient transfer



Drawsheet only

- Use of a device reduces the stress to the low back by reducing the friction.



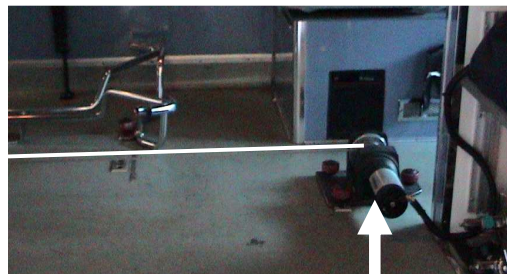
Drawsheet with lateral transfer device

No-Lift System

Ramp with special gurney



Bariatric Unit



Motorized winch & cable



EMS musculoskeletal health

In addition to patient handling activities, there are other activities and equipment that can pose musculoskeletal risk and should be evaluated for the impact of cumulative trauma.

Medical packs

The design and weight of medical packs can increase risk.

- Can packs be modular, lighter? Some medical packs are hard packs and can weigh more than newer lightweight materials that are easier to clean.
- Evaluate the contents of the packs and determine what the essentials are to eliminate carrying around additional weight on each call.
- Where is the pack stored and how it is removed and replaced on the vehicle?

Prolonged sitting

- Long transports
- Waiting for calls
- Vibration when driving

Potential Solutions for prolonged sitting

- Standing breaks if possible - extending backs to release the pressure on lumbar disks.
- Lumbar rolls to maintain the natural curve of the low back when seated.
- Shock absorption to reduce whole body vibration which has been linked to back pain.

Design of ambulance

Assess what activities done most often inside ambulance, where worker is relative to patient when giving care and where equipment is stored.

Other things to think about

- Appropriate work heights when restocking/ checking equipment or decontamination
- Promote good postures
- Administrative controls
- Staffing
- Hours/shifts