

Supplementary Table SIA. Examples of Impairment-Level Milestones

- Able to initiate shoulder flexion with elbow extension (move long handled duster forward) with stim for wrist ext. This translated to opening and closing a door 4 inches with hand placed onto doorknob
- Able to maintain grip on duster during seated reach activities without taping x22 reps
- Able to grasp and flip one card with left hand
- Able to activate shoulder flexors with elbow flexed (upper cut)
- Able to supinate with phone in hand with elbow flexed resting on table on first attempt
- Patient is able to initiate finger abduction and adduction
- Patient is able to abduct her thumb in an anti gravity position
- patient able to roll a golf ball in her hand with her thumb--opposition motion with thumb IP flexion/extension
- Patient is able to lift her index finger off of the table independently from the 3rd digit
- Patient is able to lift her third digit independently from the others
- Patient states that at home last evening, he reached out with the right hand and spontaneously grasped a glass on the bedside table. Could not reproduce volitionally
- Able to separate the movement of digits 2 and 3
- Husband reports patient is pushing her w/c at home without hand wrap or wrist support
- Carrying more objects in right hand at home.
- Husband notes less posturing into flexor tone at home and easier to relax arm
- increased willingness of patient to use arm for holding objects and lifting arm onto countertop
- Decreased tone this AM. Patient spent 30 minutes of weight bearing on elbow at home prior to arriving at clinic
- Patient walked 500 to clinic today"
- beginning to activate 5th digit abduction and extension
- Beginning to achieve active shoulder ER in supine with elbow flexed and shoulder abducted
- Beginning to extend wrist in a forearm neutral position
- Self-correcting posture with UE use to decrease fatigue and strain
- Shoulder flexion to near 90 degrees with elbow extension
- Able to hold phone without hand wrap during phone to ear motion practice
- Able to reach under left arm with right hand without assist
- Patient able to walk into hospital from car unassisted and get a wheelchair to travel to lab
- Patient states that she is able to sleep on left side without right arm propped on pillow No pain in right shoulder or morning stiffness
- Patient able to prop right elbow on table and rest her head in her hand without hand sliding(increased ROM and decreased tone)
- Able to grip hat brim with lateral pinch
- Trace finger extensor activation seen with small biofeedback unit
- Able to keep flat hand on mat for weight bearing without assistance
- Able to use arm ergometer for one minute without assist for grip

- Consistent elbow extension during closed chain activities (arm ergometer, pulleys, standing push-ups)
- Able to supinate past neutral with arm at side (supination with shoulder neutral and elbow extension)
- Able to maintain grip on tongs without taping for grasp and release activity
- Able to actively supinate to 70 degrees while supine (shoulder adduction, elbow extension with supination)
- Able to keep thumb adducted for key grip without assistance and maintain for several reps
- Able to reach with open and relaxed hand and grasp object oriented horizontally
- Able to keep right arm supinated for bilateral bicep curl with cane x50 reps
- Able to keep grip on vacuum handle while pushing and pulling for 1-2 minutes
- Able to do biceps curl with right forearm supinated with 2-5# weights
- Able to do a small amount of wrist flexion with the forearm supinated
- Patient reports being able to sleep through the night without wrist hurting/cramping
- Attempting to reach into cupboard with the right hand--needed to assist with the left. Patient able to grasp objects but difficulty releasing
- Used taping for subluxation not shoulder sling
- attempted to eat with right hand but patient related it was sloppy""
- Able to relax hand after grip sufficient to release hole punch and spring loaded scissors
- Able to release thumb flexors after activation in a lateral pinch activity (turtle toggle)
- Able to use right hand to wash left side in the shower
- Using right hand partially to eat
- Using right hand partially to brush teeth
- Able to fully extend elbow with forward reach on the shoulder slide without stim to triceps
- trace volitional wrist flexion after stim
- Patient able to get phone to ear by concentrating on ER at the shoulder first and then flexion in an upper cut manner
- Patient able to flex shoulder to 150 degrees without abduction but with forearm in pronation
- Patient reports tingling in forearm over the weekend--arm waking up""
- Patient perceives increased sensation in LUE over the last month

Supplementary Table SB. Examples of Functional and Life Role Participation Milestones

- Used left hand to open mail and pay bills (stabilize sheet of paper with L while R wrote)
- Dressing independently including hooking bra by herself
- Held banana with left hand while peeling with right
- Able to carry lunch bag to MSL, heat lunch in microwave and carry lunch bag back to lab (carry object without dropping)
- opens oven door with left hand
- Able to hold small butter container with left hand while using knife in right hand at a restaurant
- Picked up laundry basket with clothes with BUE
- Used 2 hands to clean hair brush
- Used 2 hands to make a pinata (cut tissue paper with left hand and used 2 hands to decorate and clean up)
- used left hand to flush toilet
- Used left hand to assist in baking for first time since stroke
- used L hand to help clean her rings
- Able to write words with pen in Left hand
- Carried peanut butter jar to cupboard without dropping
- Used 2 hands to wrap a present
- Took off nail polish
- pIPnted a shrub using both hands
- Reported wrapping all presents with both hands
- Opened a sugar packet with 2 hands
- Able to hold dog collar and hook leash with 2 hands
- Able to break open an egg for cooking with 2 hands
- Able to rip a piece of aluminum foil off the box with the left hand(used to leave in the drawer to hold box and rip off with right)
- Able to squeeze toothpaste with left hand
- Able to open back door to house with left hand (door handle has thumb push button)
- Reported holding a toothbrush in the left hand to apply toothpaste.
- Patient is able to throw a ball overhead and hit target X3 at 10 feet away from target. Patient was a pitcher for a softball league and wishes to return if possible
- Patient was able to put a pony tail holder in her hair for the first time since the stroke.
- Patient returned to work full time. He is a long distance truck driver.
- Using 2 hands to hold water bottle and take a drink
- Able to switch position of 2 golf balls in L hand (like Chinese medicine balls) Hand manipulation skill
- Used left(affected) hand to assist right hand in fixing a wheelbarrow
- Using 2 hands to push lawn mower (using just right hand prior to this time)
- Using left hand to close the drivers side door (vs reaching across with the right to do this)
- Using left hand to hold railing on left side to go up and down stairs

- Return to work for part time lawn mowing position over the summer (was supervisor at the cemetery prior to stroke)
- Patient reports that he can don/doff a coat without assistance. Needed help prior to starting study.
- Patient reports that he can don/doff long-sleeved shirts without help.
- Patient moved into his own apartment. Patient was living with his daughter prior to this date.
- Lifted hand onto door knob at home
- Carried 20 oz. bottle of Gatorade for 100 feet x2 without dropping
- Patient reports walking Independently with cane to bathroom in apt. Prior to this needed CG/SBA
- Drinking water from water bottle with BUE
- Using right hand to carry objects at home
- opening refrigerator with right hand
- Using right hand to wash dishes while holding dish with left hand.
- Using right hand to help pull up pants
- Using right hand to assist in putting on shirt and bra
- Attempting to push vacuum with right hand
- Patient able to open hand and place hand onto door handle
- Patient able to tie tennis shoe using 2 hands with shoe placed on floor between his feet.
- Patient switched from velcro shoes to tie tennis shoes and is tying his own shoes with both hands
- Used knife independently for cutting activities in clinic
- Began to use right hand to feed himself with right elbow propped onto table(2-3 bites)
- brushing teeth with right hand
- Using right hand to wash left side of body
- Cut lamb ribs at a restaurant unassisted with right hand (using 2 hands together)
- Patient able to zipper pants extensions onto his pants unassisted (2 handed activity)
- Wheeled self to another area of the hospital for lunch
- Able to toilet self independently-significant other assisted previously
- Able to maintain grip on water bottle and cordless phone without dropping while walking short distances
- Able to hold water bottle with right and open with left
- tied shoe laces with shoe in lap
- Patient using built up fork at home to eat several bites per meal
- Able to pick up large paper clip from the table in sitting right hand only"
- Able to pick up a dime placed on a no-skid surface on with her right hand only the table
- Patient reports that she peeled several potatoes with the right hand over the weekend
- Able to tie shoe laces
- Able to cut meat with right hand
- Able to button small buttons on his shirt
- Able to lace and tie shoes while on feet
- Able to put shoes on at gym and tie them
- Able to translate knife in hand for better positioning without using l hand to assist

- Opened a can a beans and made beans and hot dogs for dinner
- Able to remove ring and lid on a canning jar
- Able to open the door with a key
- Cooked Sloppy Joes for dinner
- Patient states put hat on head with L hand
- Patient reports took full gallon of milk out of fridge with L hand
- Able to reach with open hand to grasp objects oriented vertically
- Able to open kitchen drawer with supinated forearm
- Able to bring cup to mouth with the right arm only to drink water without spilling or crushing a paper cup
- Able to tie shoe laces using both hands
- Patient reports trying to pick up spoon at dinner
- Patient reports opening doors with right hand pretty easy""
- Patient reports flushing toilet, opening/closing drawers, opening refrigerator with the right hand without using mitt on left
- Using right hand to eat a cereal bar (some forward head motion to accomplish)
- Ate mashed potatoes with right hand
- Ate stuffed cabbage with right hand
- Reported putting on shirt(T shirt?) this morning with both hands
- Ate a grape tomato with his right hand without assist
- patient reports using right hand to open a beer bottle using a bottle opener for first time since stroke
- Patient is able to push the button on a seat belt with his right hand and release seat belt
- Patient reports using right hand to open the refrigerator with slight assist to place hand correctly on handle
- Carried a full laundry basket with both hands (placed right hand on handle with left) up 13 steps with one rest break
- Carried objects (water bottle, plastic bag with water bottle) across room in left hand without dropping (first time since stroke)
- Held pill bottle with left hand and opened with right
- return to work as school teacher for 5th grade.
- Reports putting key into apartment door with right hand
- Patient states put clothes in and out of washing machine with right hand over weekend
- Patient reports eating 50% of meal with right hand
- Patient reports holding the newspaper with both hands at home
- Patient reports opening and closing cabinet doors with right hand
- Patient reports washing more of his body with the right hand in the shower
- Patient reports applying deodorant with right hand
- Patient reports holding towel with 2 hands, placing behind back and drying back by moving towel back and forth
- Patient reports using right hand to eat 20-50% of meals
- Patient reports cutting watermelon with right hand
- Patient reports cutting watermelon with right hand
- Patient reports locking and unlocking apartment door with the key using the right hand

- Patient reports taking items out of the cupboard with right hand
- Patient noticed spontaneous use of right hand
- Opening refrigerator door with right hand
- Turned on StairMaster with right hand
- Patient cut banana with a knife in the right hand
- Shaking hands using right hand
- Patient made a peanut butter sandwich for lunch. he held jar with right hand and opened with left hand. He used a knife in the right hand to scoop the peanut butter and spread it.
- Patient able to put lotion on left arm with right hand
- Patient able to reach behind his back with the right hand
- Held fork in right hand to cut meat with the left hand--meat in pot in sink
- open and close toothpaste tube cap with right hand
- Able to reach out and place right hand on the gear shifter(unable to control it yet)
- Able to dump a bowl of chicken scraps into the garbage using right hand
- Carries cell phone in right hand daily
- Carried laundry basket with 2 hands
- Driving with items on the passengers seat because he can reach over to place and retrieve them-used to place on back seat.
- Used right hand to open and close a door
- Uses right hand to flip light switches on and off
- Cut meat into bite sized pieces on plate on the counter top (could only do standing not sitting)
- Opened a jar of gravy
- Patient able to place hand on top of head
- Able to reach into medicine cabinet for her meds with the right hand
- Doing the dishes with 2 hands more easily now.
- Started doing the laundry
- Stirring food during food prep
- Using right hand to turn light switch on and off
- Started to use right hand to comb hair
- Attempting to brush teeth with right hand
- Able to put 2 curlers in her hair(uses 2 hands)
- Opening doors using the doorknob with the right hand (before others would do for her)
- Able to stand in front of sink and wash her hair independently. Able to place several rollers in her hair (top and sides of head-not back yet)
- Peeled several potatoes with 2 hands
- Able to walk through her backyard with CGA from husband to a fire pit (50-75 feet. She was unable to do this prior to this weekend
- Patient reports going up and down the basement stairs. Stairs had one rail and she was able to do this going sideways. She had not been in the basement since the stroke.
- Went to see a movie this weekend. Used WC due to steep incline at theatre. First time since stroke she was at the movies
- Able to open a lower kitchen cabinet door with left hand--patient had not tried this before

- Cut coupon with left hand using spring loaded scissors
- Stood for one hour making dinner This is the longest she had been up without the WC in the kitchen
- Patient stated that she was able to reach for the door knob with her left hand, she adjusted her left grip with the right hand and opened the door with the left hand
- Patient walked from lab to main elevators with her cane. This is the longest distance that she walked since the stroke.
- Can open a can of chili with the one touch can opener (two handed activity)
- Patient reports not using cane at home in the evening. Without cane was able to reach out and place left hand on door, adjust grip with right and open door with left. Difficulty in releasing doorknob
- Patient reports not using cane all weekend in her home.
- Patient is able to get in and out of car on drivers side independently
- Patient reports driving for the first time since the stroke this weekend with husband.