

# Stroke Core Set

Vimonwan Hiengkaew, PhD  
Faculty of Physical Therapy, Mahidol University

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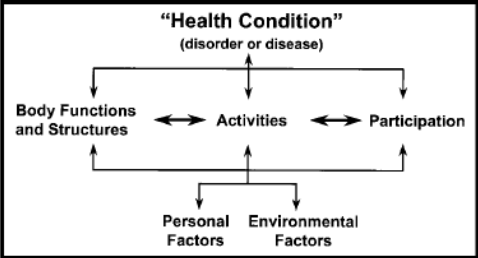
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## ICF



The diagram illustrates the ICF model. At the top is "Health Condition (disorder or disease)". Below it are three interconnected boxes: "Body Functions and Structures", "Activities", and "Participation", connected by double-headed arrows. At the bottom are "Personal Factors" and "Environmental Factors", with arrows pointing up to the central components.

Steiner et al., Phys Ther 2002;82:1098-1107

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## ICF core set for stroke

- Help clinician to describe function by providing lists of necessary categories related to stroke conditions
- Comprehensive ICF categories of the component (130) from consensus, systematic review, empirical data collection
  - Body functions: 41
  - Body structures: 5
  - Activities and participation: 51
  - Environmental factors: 33

Geyh et al., J Rehabil Med 2004; Suppl. 44: 135-141

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ICF code	ICF category title
b110	Consciousness functions
b114	Orientation functions
b117	Intellectual functions
b126	Temperament and personality functions
b130	Energy and drive functions
b134	Sleep functions
b140	Attention functions
b144	Memory functions
b152	Emotional functions
b156	Perceptual functions
b164	Higher-level cognitive functions
b167	Mental functions of language
b172	Calculation functions
b176	Mental functions of sequencing complex movements
b180	Experience of self and time functions
b210	Seeing functions
b215	Functions of structures adjoining the eye
b260	Proprioceptive function
b265	Touch function
b270	Sensory functions related to temperature and other stimuli
b280	Sensation of pain
b310	Voice functions
b320	Articulation functions
b330	Fluency and rhythm of speech functions
b410	Heart functions
b415	Blood vessel functions
b420	Blood pressure functions
b455	Exercise tolerance functions
b510	Ingestion functions
b525	Defecation functions
b620	Urination functions
b640	Sexual functions
b710	Mobility of joint functions
b715	Stability of joint functions
b750	Muscle power functions
b755	Muscle tone functions
b760	Muscle endurance functions
b750	Motor reflex functions
b755	Involuntary movement reaction functions
b760	Control of voluntary movement functions
b770	Gait pattern functions

**41 Categories of body functions component**

Geyh et al., J Rehabil Med 2004; Suppl. 44: 135-141

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ICF code	ICF category title
s110	Structure of brain
s410	Structure of cardiovascular system
s720	Structure of shoulder region
s730	Structure of upper extremity
s750	Structure of lower extremity

**5 Categories of body structures component**

Geyh et al., J Rehabil Med 2004; Suppl. 44: 135-141

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ICF code	ICF category title
d115	Listening
d155	Acquiring skills
d160	Focusing attention
d165	Reading
d170	Writing
d172	Calculating
d175	Solving problems
d210	Undertaking a single task
d220	Undertaking multiple tasks
d230	Carrying out daily routine
d240	Handling stress and other psychological demands
d310	Communicating with - receiving - spoken messages
d315	Communicating with - receiving - non-verbal messages
d325	Communicating with - receiving - written messages
d330	Speaking
d335	Producing non-verbal messages
d345	Writing messages
d350	Conversation
d360	Using communication devices and techniques
d410	Changing basic body position
d415	Maintaining a body position
d420	Transferring oneself
d430	Lifting and carrying objects
d440	Face hand use
d445	Head and arm use
d450	Walking
d455	Moving around
d460	Moving around in different locations
d465	Moving around using equipment
d470	Using transportation
d475	Driving
d510	Working oneself
d520	Caring for body parts
d530	Tolerance
d540	Driviness
d550	Eating
d570	Looking after one's health
d620	Acquisition of goods and services
d630	Preparing meals
d640	Doing homework
d710	Basic interpersonal interactions
d750	Informal social relationships
d760	Family relationships
d770	Intimate relationships
d845	Acquiring, keeping and terminating a job
d850	Remunerative employment
d855	Non-remunerative employment
d860	Basic economic transactions
d870	Economic self-efficacy
d910	Community life
d920	Recreation and leisure

**51 Categories of activities and participation component**

Geyh et al., J Rehabil Med 2004; Suppl. 44: 135-141

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ICF code	ICF category title
e110	Products or substances for personal consumption
e115	Products and technology for personal use in daily living
e120	Products and technology for personal indoor and outdoor mobility and transportation
e125	Products and technology for communication
e135	Products and technology for employment
e150	Design, construction and building products and technology of buildings for public use
e155	Design, construction and building products and technology of buildings for private use
e165	Assets
e210	Physical geography
e210	Immediate family
e315	Extended family
e320	Friends
e325	Acquaintances, peers, colleagues, neighbours and community members
e340	Personal care providers and personal assistants
e355	Health professionals
e360	Health-related professionals
e410	Individual attitudes of immediate family members
e420	Individual attitudes of friends
e425	Individual attitudes of acquaintances, peers, colleagues, neighbours and community members
e440	Individual attitudes of personal care providers and personal assistants
e450	Individual attitudes of health professionals
e455	Individual attitudes of health-related professionals
e460	Societal attitudes
e515	Architecture and construction services, systems and policies
e525	Housing services, systems and policies
e535	Communication services, systems and policies
e540	Transportation services, systems and policies
e550	Legal services, systems and policies
e555	Associations and organizational services, systems and policies
e570	Social security services, systems and policies
e575	General social support services, systems and policies
e580	Health services, systems and policies
e590	Labour and employment services, systems and policies

**33 Categories of environmental factors component**  
Geyh et al., J Rehabil Med 2004; Suppl. 44: 135-141

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### Brief ICF core set for stroke (18)

ICF component	%	ICF code	ICF category title
Body functions	<b>100</b>	<b>b110</b>	<b>Consciousness functions</b>
	<b>86</b>	<b>b114</b>	<b>Orientation functions</b>
	<b>82</b>	<b>b730</b>	<b>Muscle power functions</b>
	<b>75</b>	<b>b167</b>	<b>Mental functions of language</b>
Body structures	<b>50</b>	<b>b140</b>	<b>Attention functions</b>
	<b>25</b>	<b>b144</b>	<b>Memory functions</b>
	<b>100</b>	<b>s110</b>	<b>Structure of brain</b>
	<b>7</b>	<b>s730</b>	<b>Structure of upper extremity</b>
Activities and participation	<b>100</b>	<b>d450</b>	<b>Walking</b>
	<b>100</b>	<b>d330</b>	<b>Speaking</b>
	<b>93</b>	<b>d530</b>	<b>Toileting</b>
	<b>68</b>	<b>d550</b>	<b>Eating</b>
	<b>50</b>	<b>d510</b>	<b>Washing oneself</b>
	<b>43</b>	<b>d540</b>	<b>Dressing</b>
Environmental factors	<b>4</b>	<b>d310</b>	<b>Communicating with – receiving – spoken messages</b>
	<b>93</b>	<b>e310</b>	<b>Immediate family</b>
	<b>43</b>	<b>e355</b>	<b>Health professionals</b>
	<b>29</b>	<b>e580</b>	<b>Health services, systems and policies</b>

*50% represent a preliminary cut-off  
> 50% is bold*

Geyh et al., J Rehabil Med 2004; Suppl. 44: 135-141

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### Stroke core set: Sweden

Baseline characteristics of study participants.

	Grade of disability		
	ID (n = 26)	D (n = 73)	Total (n = 99)
Age, mean (± STD)	66 (± 14.2)	78 (± 9.5)	72 (± 13.1)
Gender, n (%)			
Female	15 (58)	39 (53)	54 (54)
Male	11 (42)	34 (47)	45 (46)
Diagnose ICD 10, n (%)			
I61	2 (8)	9 (12)	11 (11)
I63	19 (73)	62 (85)	81 (81)
I64	1 (4)	1 (1)	2 (2)
Others (I670; I676)	4 (15)	–	4 (4)
Localization, n (%)			
Left	11 (42)	17 (23)	28 (28)
Right	7 (27)	22 (30)	29 (29)
Bilateral	1 (4)	3 (4)	4 (4)
Central	3 (12)	9 (12)	12 (12)
Unspecified	4 (15)	22 (30)	26 (26)

ID, independent (e.g. mRS ≤ 2); D, dependent (e.g. mRS > 2).

Algarín et al.,  
Disabil Rehabil  
2010; 32(7):  
551-559

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Problems in ICF terms of body functions 6 weeks and 3 months post-stroke.

ICF code	ICF category title	6 weeks (n=89)		3 months (n=89)	
		%	(CI 95)	%	(CI 95)
<b>Chapter 1. Mental functions</b>					
b126	Temperament and personality functions	17	(8-27)	22	(12-31)
b130	Energy and drive functions	72	(62-81)	65	(55-75)
b134	Sleep functions (c=18%)	36	(26-46)	34	(24-44)
b140	Attention functions	11	(5-18)	11	(5-18)
b144	Memory functions	66	(56-76)	61	(50-71)
b160	Thought functions	12	(5-18)	7	(2-13)
b164	High-level cognitive functions	22	(11-32)	20	(9-31)
b172	Calculation functions	17	(8-27)	7	(-8 to 21)
b176	Mental functions of sequencing complex movements	11	(4-18)	6	(1-12)
<b>Chapter 2. Sensory functions and pain</b>					
b210	Seeing functions (c=79%)	95	(90-99)	96	(91-100)
b235	Vestibular functions	34	(24-44)	30	(20-39)
b240	Sensations associated with hearing and vestibular function (c=9%)	19	(11-28)	19	(11-28)
b260	Proprioceptive functions	29	(20-39)	30	(21-40)
b265	Touch functions	11	(5-18)	10	(4-16)
b280	Sensation of pain	23	(14-31)	35	(25-45)
<b>Chapter 4. Functions of the cardiovascular, hematological, immunological and respiratory systems</b>					
b410	Heart functions (c=41%)	43	(35-50)	42	(31-52)
b420	Blood pressure functions (c=55%)	81	(73-89)	76	(67-85)
b455	Respiratory functions	84	(80-89)	84	(80-89)
<b>Chapter 5. Functions of the digestive, metabolic and endocrine systems</b>					
b525	Digestion functions	17	(9-25)	17	(9-25)
b530	Weight maintenance functions	26	(17-35)	19	(11-27)
b540	General metabolic functions (c=15%)	26	(17-35)	32	(22-42)
<b>Chapter 6. Genitourinary and reproductive functions</b>					
b620	Elimination functions (c=5%)	20	(12-29)	16	(8-23)
<b>Chapter 7. Neuromusculoskeletal and movement-related functions</b>					
b720	Muscle power functions	71	(61-80)	61	(50-71)
b740	Muscle endurance functions	77	(68-86)	79	(70-87)
b750	Movor reflex functions	14	(6-21)	10	(4-16)
b755	Involuntary movement reaction functions	52	(41-62)	54	(43-65)
b760	Control of voluntary movement functions	68	(58-79)	61	(51-71)
b770	Gait pattern functions	75	(64-82)	75	(66-84)

c=to-mobility.

28 categories of body functions component  
Algrén et al., Disabil Rehabil 2010; 32(7): 551-559

Problems in ICF terms of activities and participation 6 weeks and 3 months post-stroke.

ICF code	ICF category title	6 weeks (n=89)		3 months (n=89)	
		%	(CI 95)	%	(CI 95)
<b>Chapter 1. Learning and applying knowledge</b>					
a130	Copying	11	(2-19)	8	(-1 to 17)
a135	Remembering	22	(11-34)	11	(0-21)
a135	Acquiring skills	27	(17-37)	25	(16-35)
a160	Reading	31	(21-41)	30	(20-40)
a166	Writing	40	(30-51)	34	(24-44)
a170	Calculating	27	(18-37)	30	(20-39)
a172	Solving problems	12	(4-20)	4	(-1 to 16)
a175	Making decisions	13	(6-21)	9	(0-18)
a177	Making decisions	17	(9-25)	14	(6-21)
<b>Chapter 2. General tasks and demands</b>					
a210	Undertaking a single task	27	(17-36)	32	(22-41)
a215	Undertaking multiple tasks	33	(24-43)	30	(20-39)
a220	Caring for daily routine	24	(14-33)	27	(18-36)
a240	Handling stress and other psychological demands	23	(14-32)	21	(12-29)
<b>Chapter 3. Communication</b>					
a310	Communicating with - receiving - spoken messages	16	(9-23)	3	(0-7)
a315	Communicating with - receiving - nonverbal messages	17	(7-27)	6	(-1 to 14)
a325	Communicating with - receiving - written messages	24	(15-33)	9	(3-15)
a330	Sending	15	(7-22)	12	(5-19)
a335	Producing nonverbal messages	18	(9-29)	9	(-1 to 18)
a345	Writing messages	29	(17-41)	23	(10-36)
a350	Conversation	16	(8-23)	12	(5-19)
a360	Using communication devices and techniques	14	(8-20)	18	(10-26)
<b>Chapter 4. Mobility</b>					
a410	Changing basic body position	36	(26-46)	37	(27-47)
a415	Maintaining a basic body position	23	(14-31)	36	(26-46)
a420	Transferring oneself	37	(27-47)	39	(29-49)
a430	Lifting and carrying objects	44	(33-54)	38	(28-48)
a440	Finishing one's work	31	(21-41)	31	(21-41)
a445	Hand and arm use	37	(27-47)	38	(28-48)
a450	Walking	38	(28-48)	39	(29-49)
a460	Moving around in different locations	71	(61-80)	67	(57-77)
a465	Moving around using equipment	62	(51-72)	58	(48-68)
a470	Using transportation	11	(5-18)	10	(4-16)
<b>Chapter 5. Self-care</b>					
a510	Washing oneself	33	(23-43)	32	(22-41)
a520	Caring for body parts	36	(26-46)	35	(25-45)
a530	Talking	23	(14-34)	25	(16-34)
a540	Dressing	36	(26-46)	35	(25-45)
a550	Eating	21	(13-30)	24	(15-33)
a570	Looking after one's health	9	(3-15)	10	(4-16)
<b>Chapter 6. Domestic life</b>					
a620	Acquisition of goods and services	26	(17-35)	26	(17-35)
a630	Preparing meals	26	(17-35)	26	(17-35)
a640	Doing housework	29	(20-39)	30	(20-39)
<b>Chapter 7. Community, social and civic life</b>					
a720	Recreation and leisure	11	(11-28)	10	(2-18)

41 categories of activities and participation component  
Algrén et al., Disabil Rehabil 2010; 32(7): 551-559


Stroke core set: China

ZNH, Zhongnan Hospital, CJFH, China-Japan Friendship Hospital; CRR, Chinese Rehabilitation Research Center; HPH, Hui People Hospital.

Wang et al., Clin Rehabil 2014, Vol 28(2) 159 - 171

Sociodemographic and stroke-specific data for participants (n = 208)	
Characteristics	No. (%) or range
Age, years, Mean (SD)	60.4 (6.6) 42-80
Gender	
Female	82 (39)
Male	126 (61)
Education, years, mean (SD)	8.77 ± 3.37
Married	197 (97%)
Current work status	
Part-time/employed	19 (9%)
Unemployed due to disease	60 (29%)
Keeping house/housemaker	8 (4%)
Retired	121 (58%)
Sources of patients	
ZNH (Wuhan)	102 (49%)
CJFH (Beijing)	49 (24%)
CRR	28 (13%)
HPH	29 (14%)
Disease characteristics	
Stroke subtype	
I61: Intracerebral haemorrhage	36 (17%)
I62: other nontraumatic intracranial haemorrhage	3 (2%)
I63: Cerebral infarction	168 (80%)
I64: Stroke, not specified	1 (1%)
Side of symptoms	
Left	117 (56%)
Right	91 (44%)
Chronicity	
<3 months	0
3-12 months	95 (46%)
>12 months	113 (54%)
Type of patient	
Inpatient	197 (95%)
Outpatient	11 (5%)





### Stroke core set: Thailand

Personal characteristics of patients with stroke

	All (n=80)	Clinic (n=45)	Community (n=35)	P-value
<b>Age (years)</b>	61.5 (10.9)	60.9 (11.7)	62.4 (9.9)	.545
<b>Age range</b>	28-95	28-95	45-80	
<b>Sex</b>				.223
• male	55 (68.8)	33 (73.3)	22 (62.9)	
• female	25 (31.2)	12 (26.7)	13 (37.1)	
<b>Marital status</b>				.451
• single	14 (17.5)	8 (17.8)	6 (17.1)	
• married	56 (70.0)	33 (73.3)	23 (65.7)	
• divorce	45 (6.3)	3 (6.7)	2 (5.7)	
• widow	5 (6.3)	1 (2.2)	4 (11.4)	
<b>Years of school</b>	9.7 (4.6)	10.7 (4.8)	8.4 (3.9)	.032*
<b>Working status</b>				.008*
• paid work	23 (28.8)	9 (20.0)	14 (40)	
• private business	13 (16.3)	7 (15.5)	6 (17.1)	
• housework	10 (12.5)	2 (4.4)	8 (22.9)	
• retired	14 (17.5)	10 (22.2)	4 (11.4)	
• unemployed from health reason	16 (20.0)	13 (28.9)	3 (8.6)	
• unemployed from other reasons	4 (8.9)	4 (8.9)	0	
<b>Duration of stroke (years)</b>	3.2 (3.6)	4.3 (4.3)	1.8 (1.3)	<.002*
<b>Range of duration of stroke</b>	1-18	1-18	1-6	

Vongsirinavarat et al. (Submitted)

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- ### Stroke core set: Thailand
- Categories of body functions component
    - Chapter 1: mental function
    - Chapter 2: sensory function and pain
    - Chapter 3: voice and speech function
    - Chapter 4: functions of cardiovascular, hematological, immunological, and respiratory system
    - Chapter 5: function of the digestive, metabolic, and endocrine system
    - Chapter 6: genitourinary and reproductive function
    - Chapter 7: neuromusculoskeletal and movement-related function
- Vongsirinavarat et al. (Submitted)

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### Stroke core set: Thailand

Problems in categories of body functions components

Chapter	ICF code and title	N (%)
4	b455 Exercise tolerance functions	62.5
7	b730 Muscle power function	79.9
7	b735 Muscle tone function	60.0
7	b740 Muscle endurance functions	70.0
7	b750 Motor reflex function	61.3
7	b755 Involuntary movement reaction functions	50.0
7	b760 Control of voluntary movement functions	53.8
7	b770 Gait pattern functions	82.5

Vongsirinavarat et al. (Submitted)

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## Stroke core set: Thailand

Problems in categories of activities and participation components

ICF code and title	N (%)
d430 Lifting and carrying objects	52.5
d440 Fine hand use	68.7
d445 Hand and arm use	63.7
d450 Walking	71.2
d460 Moving around in different locations	66.2
d470 Using transportation	53.7

Vongsirinavarat et al. (Submitted)

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## Conclusions

For individuals with chronic stroke

- Most categories of body functions component present in cardiovascular, neuromuscular and movement-related functions
  - b455: Exercise tolerance functions
  - b730: Muscle power functions
  - b740: Muscle endurance functions
  - b755: Involuntary movement reaction function
  - b770: Gait pattern functions

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## Conclusions

For individuals with chronic stroke

- Most categories of activities and participation component present in mobility
  - d430: Lifting and carrying objects
  - d440: Fine hand use
  - d445: Hand and arm use
  - d450: Walking
  - d460: Moving around in different location

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## Conclusions

For stroke core set

- Suggest to use comprehensive stroke core set to identify problems in body functions, and activities and participation in individual with chronic stroke.

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