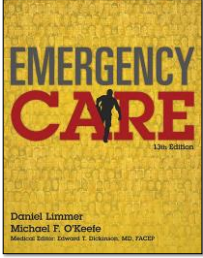


Emergency Care


THIRTEENTH EDITION



CHAPTER 8

Life Span Development

Emergency Care, 13e
Daniel Limmer | Michael F. O'Keefe
Copyright © 2016, 2012, 2009 by Pearson Education, Inc.
All Rights Reserved. PEARSON



- [Infancy \(Birth to 1 Year\)](#)
- [Toddler Phase \(12–36 Months\)](#)
- [Preschool Age \(3–5 Years\)](#)
- [School Age \(6–12 Years\)](#)
- [Adolescence \(13–18 Years\)](#)
- [Early Adulthood \(19–40 Years\)](#)
- [Middle Adulthood \(41–60 Years\)](#)
- [Late Adulthood \(61 Years and Older\)](#)

Emergency Care, 13e
Daniel Limmer | Michael F. O'Keefe
Copyright © 2016, 2012, 2009 by Pearson Education, Inc.
All Rights Reserved. PEARSON

Infancy (Birth to 1 Year)



Younger than 1 Month = Newborn or Neonate

Emergency Care, 13e
Daniel Limmer | Michael F. O'Keefe
Copyright © 2016, 2012, 2009 by Pearson Education, Inc.
All Rights Reserved. PEARSON

Infancy (Birth to 1 Year)


- Physiological
 - 3.0–3.5 kg (6.6–7.7 lbs) at birth
 - Lose 5–10% of weight in first week
 - Weight doubles by six months; triples by twelve months.
 - Head = 25 percent of total body weight

continued on next slide

Emergency Care, 13e
Daniel Limmer | Michael F. O'Keefe
Copyright © 2016, 2012, 2009 by Pearson Education, Inc.
All Rights Reserved. PEARSON

Infants

- Pulmonary system
 - When compared to adults:
 - Softer rib cages
 - Horizontally oriented ribs
 - Immature accessory muscles
 - Larger tongue
 - Shorter, narrower airway
 - Fewer alveoli
 - Fragile lungs



- Nose and diaphragm used for breathing
- Obligate nose breathers (monitor nasal congestion)

Emergency Care, 13e
Daniel Limmer | Michael F. O'Keefe
Copyright © 2016, 2012, 2009 by Pearson Education, Inc.
All Rights Reserved. PEARSON

Infancy (Birth to 1 Year)

- Nervous system reflexes (diminishes)
 - Moro reflex (startle)
 - Throws arms out, spreads fingers, grabs with fingers and arms
 - Palmar reflex
 - Grasps objects placed in palm
 - Rooting reflex (hunger)
 - Turns toward side of head touched
 - Sucking reflex
 - Sucks when lips are stroked

Emergency Care, 13e
Daniel Limmer | Michael F. O'Keefe
Copyright © 2016, 2012, 2009 by Pearson Education, Inc.
All Rights Reserved. PEARSON

Infants

- Renal system
 - Consider:
 - Dehydration
 - Electrolyte imbalances
- Dental system
 - Teething begins at 4–7 months.
 - Baby teeth are in by age 3 years.
 - Permanent teeth come in around age 6.
- Immune system
 - Passive immunity helps protect up to 1 year
- Musculoskeletal system
 - Growth and epiphyseal plates help bones grow.
 - Muscles account for 25% of weight.
 - Growth charts track growth.

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Infancy (Birth to 1 Year)

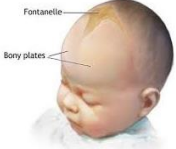
- Physiological
 - Sleep patterns
 - Begin to regulate after two to four months
 - Then sleeps through night
 - Extremities grow from a combination of growth plates and epiphyseal plates.

continued on next slide

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Infancy (Birth to 1 Year)

- Physiological
 - Fontanelles not fused at birth
 - Posterior fontanelle closes in two or three months.
 - Anterior fontanelle closes between nine and eighteen months.





Fontanelle
Bony plates

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Infancy (Birth to 1 Year)

- Physiological
 - Sunken fontanelles indicate dehydration.
 - Bulging fontanelles indicate increased pressure inside skull.


ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Infancy (Birth to 1 Year)

- Psychosocial
 - Bonding
 - Trust versus mistrust
 - Scaffolding – building on what they know
 - Temperament
- For infants, a reaction to a situational crisis follows three phases:
 - Protest phase
 - Despair phase
 - Withdrawal

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Infants



- Children may be:
 - Easy
 - Difficult
 - Slow to warm up
 - Let caregiver hold infants whenever possible!

Courtesy of Howard E. Hub, II, BA, EMT-P

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Toddler Phase (12–36 Months)



A year-old infant.

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Toddler Phase (12–36 Months)

- Physiological
 - Pulmonary system – airways branch & grow
 - Nervous system – Brain weight increase
 - Musculoskeletal system – muscle mass, bone density increase
 - Immune system – illness susceptibility (acquired immunity)
 - Teeth – All teeth by 3 years of age

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

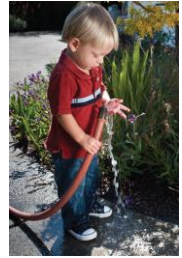
Toddlers and Preschoolers

- Neuromuscular system
 - Development of gross and fine motor skills
 - Brain weighs 90% of final adult weight
- Renal system
 - Begin bladder control
- Teething process may be painful and include fever.
- Sensory development.

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Toddler Phase (12–36 Months)

- Psychosocial
 - Begins to understand cause and effect
 - Develops separation anxiety
 - Begins to develop "magic thinking," imagination, and engages in play-acting



ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Preschool Age (3–5 Years)



A preschooler.
© Daniel Limmer

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Preschool Age (3–5 Years)

- Physiological
 - Body systems continue to develop.
- Psychosocial
 - Developing interactive and social skills
 - Separation anxiety peaks.
 - Language development occurs.
 - Peer interactions result in:
 - Learning control, following rules, competitiveness
 - Modeling behavior
 - Recognizing sexual differences

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Toddlers and Preschoolers

- Development is a reflection of parents
 - Styles:
 - Authoritarian: expects complete obedience
 - Authoritative: balances authority with freedom
 - Permissive: no imposition of rules
- Tips for EMT's:
 - Always include caregiver!
 - Position yourself at eye level.
 - Explain what you are going to do.
 - Save the worst for last.

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

School Age (6–12 Years)



School-age children.
© Shutterstock.com

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

School Age (6–12 Years)

- Physiological
 - Loss of primary teeth
 - Vital signs, physical body approaching those of an adult
 - Grow approximately 4 lbs, 2½" per year
 - Puberty may start as early as 10 years

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

School-Age Children

- Psychosocial changes
 - Less general supervision
 - Developing decision-making skills
 - Self-concept and self-esteem develops
 - Values opinions of peers (positive or negative)
 - Three stages of reasoning
 - Preconventional: avoid punishment
 - Conventional: obtain approval
 - Postconventional: conscience

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Adolescence (13–18 Years)



An adolescent.

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Adolescents (Teenagers)

- Vital signs level off to adult ranges.
- Growth spurt
- Reproductive changes
 - Secondary sex characteristics
 - Hormone secretion
- Psychosocial changes
 - Family conflict related to:
 - Privacy
 - Self-consciousness
 - Rebelliousness
 - Peer pressure
 - Self-destructive behavior

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

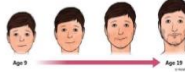
Adolescence (13–18 Years)

PHYSICAL CHANGES

• **Secondary sex characteristics** are changes **not** directly related to sexual reproduction.

Boys

- The voice becomes deeper.
- The Adam's apple becomes bigger.
- The shoulders become wider than the hips.
- Hair grows on the face, body and pubic area.
- The skin on the upper arms and thighs becomes rough.



Girls

- Breasts develop.
- The hips become wider than the shoulders.
- Hair grows on the underarm and pubic area.



Adolescence (13–18 Years)

- Tips for EMT's:
 - Provide discretion and respect to patients.
 - Speak with patient separately from caregivers, whenever possible.



Think About It

- Adolescents are often injured because of risk taking.
 - May be resistant to disclose what happened
 - Must be encouraged to explain circumstances surrounding an incident

Vital Signs: All Age Groups

Age Group	Heart Rate	Respiratory Rate	Systolic Blood Pressure
Infant	140-160/min	40-60/min	70-90 mmHg
Toddler	80-130/min	20-30/min	70-100 mmHg
Preschool	80-120/min	20-30/min	80-110 mmHg
School Age	70-110/min	20-30/min	80-120 mmHg
Adolescent	55-105/min	12-20/min	80-120 mmHg
Adult 18+	60-100/min	12-20/min	90-140 mmHg

Early Adulthood (19–40 Years)



A young adult.
© Shutterstock.com

Early Adulthood (19–40 Years)

- Physiological
 - Lifelong habits formed
 - Reaches peak physical condition
- Psychosocial
 - Job and family stress
 - Marriage, childbirth, and child rearing
 - Accidents leading cause of death

Middle Adulthood (41–60 Years)



A middle-aged adult.
© Royalty Free/Masterfile

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Middle Adulthood (41–60 Years)

- Physiological
 - May need vision correction
 - Cancer, heart disease often develop.
 - Weight control more difficult
 - Menopause/bone density loss, fractures
- Psychosocial
 - Empty-nest syndrome
 - Caring for elderly parents

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Late Adulthood (61 Years and Older)



An older adult.
© Shutterstock.com

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Late Adulthood (61 Years and Older)

- Physiological
 - Body systems less efficient
 - Vital signs dependent on overall health status, medical conditions, medications
- Psychosocial
 - Living environment
 - Self-worth
 - Financial burdens
 - Death and dying



ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Late Adults

- Cardiovascular system
 - Atherosclerosis leads to blood vessel blockage.
 - May lead to aneurysms
 - Hearts are less able to deal with exercise or disease due to:
 - Decreased pulse rate
 - Declining cardiac output
 - Inability to elevate cardiac output

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

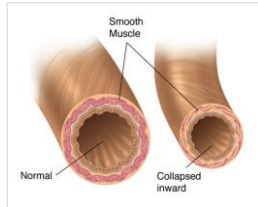
Late Adults

- Respiratory system
 - Larger airway; smaller alveoli
 - Reduced lung elasticity; increased use of intercostal muscles
 - Rigid chest as ribs calcify to sternum
 - Decrease in intercostal muscle strength
 - Difficult to clear secretions
 - Cough and gag reflexes decline
 - Less responsive to smoke and dust due to decline in cilia

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Late Adults

- Respiratory system
 - Weakening of smooth muscles may lead to:
 - Collapse
 - Inspiratory wheezing
 - Low flow rates



ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

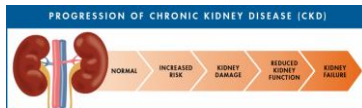
Late Adults

- Respiratory system (cont' d)
 - Vital capacity only 50% of younger adult's
 - Loss of respiratory muscle mass
 - Increased stiffness of thoracic cage
 - Decreased surface area for air exchange
 - Residual volume increases causing air to hamper gas exchange in alveoli.

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Late Adults

- Renal system
 - Functional changes of the kidneys:
 - Declining filtration function
 - Decreasing kidney mass
 - Declining number of nephrons
 - Decreased response to hemodynamic stress



ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

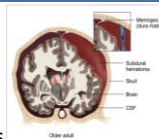
Late Adults

- Gastrointestinal system
 - Decreased sense of taste, weaker teeth
 - Decreased saliva production
 - Slower gastric motility
 - Diminishing acid secretion
 - Decreased ability to extract nutrients
 - Fecal incontinence

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Late Adults

- Nervous system
 - Central nervous system changes:
 - Brain weight loss of 10%–20%
 - Loss of 5%–50% neurons
 - Loss of 20% frontal lobe synapses
 - Slower motor and sensory neural networks
 - Change to sleep patterns
 - Brains have increased risk to injury
 - Peripheral nervous system changes:
 - Diminished sensation & nerve ending deterioration



ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Late Adults

- Vision changes:
 - Pupils less responsive to light
 - Diminished visual acuity
 - Restricted ocular movement
 - Increased distortions
 - Decreased ability to focus at close range
 - Decreased peripheral vision
- Hearing changes
 - Loss of high-frequency hearing
 - Deafness

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Group	Age	Virtue	Crisis
Infants	0 to 18 mo	Hope	Trust vs. Mistrust
Toddlers	18 mo to 3 yrs	Will	Autonomy vs. Shame & Doubt
Preschool	3 to 6 yrs	Purpose	Initiative vs. Guilt
Childhood	6 to 12 yrs	Competence	Industry vs. Inferiority
Adolescence	12 to 18 yrs	Fidelity	Identity vs. Role Confusion
Young Adults	19 to 40 yrs	Love	Intimacy vs. Isolation
Middle Adulthood	40 to 65 yrs	Care	Generativity vs. Stagnation
Seniors	65 yrs +	Wisdom	Ego Integrity vs. Despair

ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Questions to Consider

- How do I approach a patient most effectively based on developmental characteristics?
 - Does the age of my patient pose any assessment or care challenges based on physiologic development?
- ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON

Critical Thinking

- You are called for abdominal pain in a 16-year-old girl. She is with friends at the park. She seems hesitant to answer any of your questions. What characteristic of adolescent development is most likely the cause of this? How could you overcome it?
- ALWAYS LEARNING Emergency Care, 13e Daniel Limmer | Michael F. O'Keefe Copyright © 2016, 2012, 2009 by Pearson Education, Inc. All Rights Reserved. PEARSON