Ethical Principles

Jason Ryan, MD, MPH
Ethics

- Moral principles
- Govern individual or group behavior
Principlism

• Practice of using principles to guide medical ethics
• Most common US framework for ethical reasoning
• **Four core principles**
  • Autonomy
  • Beneficence
  • Non-maleficence
  • Justice
Autonomy

- Most important US ethical principle
- Absolute right of all competent adult patients to make decisions about their own healthcare
- Patient has “autonomy” over their own body
Autonomy

- Includes right to accept/not accept medical care
- Providers must respect patient decisions
- Providers must honor their preferences
Autonomy

• When patients decline medical care:
  • Okay to ask **why** they are declining
  • Avoid judging, threatening, or scolding
  • “You may die if you make this choice…”
  • “This choice is a mistake…”
  • “You should not do this…”
Beneficence

- Providers must act in **best interests of patients**
- Usually superseded by autonomy
  - Patients may choose to act against their interests
  - Example: Patient may decline life-saving medical care
Non-maleficence

- **Do no harm**
- Always balanced against beneficence
  - Risk versus benefits
  - Some harmful actions (surgery) are beneficial
Justice

- Treat patients fairly and equally
- Also use health resources equitably
- Triage:
  - Form of “distributive justice”
  - Care delivered fairly to all
Gifts from Companies

• Often drug or device companies/manufacturers
• Can influence physician behavior
• Generally acceptable if **educational and low value**
  • Educational dinner or textbook
  • Value usually should be <$100
• Cash, tickets, vacations, other gifts NOT acceptable
Honoraria

• **Fees** to physicians paid by industry
  • Goal usually to promote research about a new product
  • Example: Drug company pays doctor to speak
• Acceptable but must be disclosed to audience
• Fee must be fair and reasonable
• Fee cannot be in exchange for doctor using product

Kolijoriverhouse/Wikipedia
Gifts from Patients

• No definite rules
• In general, small gifts are usually okay
• Large, excessive gifts usually not okay
  • May be viewed as given in exchange for special treatment
Romantic Relationships

• Relationships with current patients never okay
• Per AMA: Sexual contact concurrent with the patient-physician relationship is sexual misconduct

Pixabay/Public Domain
Patient-Physician Relationship

- Physicians may decline to care for a patient
  - Do not have to accept all patients that request care
- Once relationship starts, cannot refuse treatment
  - Example: doctor does not want to perform abortion
  - Still must assist the patient
  - Refer to another provider
Medical Errors

• Mistakes/errors should be disclosed to patients

Pixabay/Public Domain
Family and Friends

• Most medical societies recommend against giving non-emergent medical care to family and friends
  • Many ethical conflicts
• Emergencies are an exception
Family of Patients

• May be present during patient encounters
• May answer for patients, disrupt interview
• Don’t ask patient if they want family present
  • Patient may be afraid to say no
• Politely ask family for time alone with patient
Noncompliant Patients

- Always try to understand **WHY**
  - Why doesn’t patient want to take medications?
  - Why doesn’t patient want to go for tests?
- Try to help
  - Provide more information
- **Avoid scolding or threats**
  - “You will get sick if you don’t…”
Emotional Patients

• Acknowledge the patient’s feelings
  • “I understand you are upset because...”
• Always try to understand **WHY**
  • Why is the patient upset?
  • Check for understanding of issues
• **Avoid telling patients to calm down**
• Don’t ignore emotions
Informed Consent

Jason Ryan, MD, MPH
Informed Consent

• All medical interventions require informed consent
• Patient must agree/consent to treatment
• Must inform about **benefits, risks, alternatives**
Informed Consent

- **Benefits**
- **Risks**
  - Must describe all major adverse effects
  - Commonly known risks do not need to be described
  - Example: choking on pill
- **Alternative treatments**
  - Other therapies
  - What could happen with no treatment
Informed Consent

• Must be in language the patient can understand
  • Must use trained language interpreters
• Must be voluntary (not coerced)
• Patient must have decision-making capacity
Informed Consent

• Patients may withdraw consent at any time
Informed Consent

• **Every procedure** requires consent
  • Consent for one procedure does not imply consent for another

• Classic example:
  • *Mohr vs. Williams*
  • Non-life-threatening diagnosis detected in OR
  • Operation for right ear uncovered disease on left
  • Cannot operate left ear without consent

• Emergencies are an exception
Informed Consent

Exceptions

• Lack of decision-making capacity
• Emergencies
• Therapeutic privilege
• Waiver
• Minors
Emergencies

• **Consent is implied** in an emergency
• Classic example: Unconscious trauma patient
Therapeutic Privilege

- May withhold information when disclosing it would cause **dangerous psychological threat**
- Often invoked for psychiatric patients at risk of harm
- Information often temporarily withheld until plan put in place with family, other providers
Therapeutic Privilege

- Does not apply to distressing test results
  - Cancer diagnosis would upset patient
  - Family cannot request information be withheld
- Cannot trick patient into treatment
  - Cannot lie to patient to get them to agree to therapy
  - Patient autonomy most important guiding principle
Waiver

- Patient may ask provider not to disclose risks
- Waives the right to informed consent
- Provider not required to state risks over objection
- Try to understand *why* patient requests waiver
Minors

- Usually defined as person <18 years of age
- Only parent or legal guardian may give consent
- Exceptions
  - Emergency
  - Emancipated minors
  - Special situations
Minors
Emergency Care

• Consent not required (implied)
• Care administered even if parent not present
• Care can be administered against parents’ wishes
  • Classic example: Parents are Jehovah's Witnesses
  • Physician may administer blood products to child
  • Do not need court order
Emancipated Minor

- Minors can attain “legal adulthood” before 18
- Common criteria:
  - Marriage
  - Military service
  - Living separately from parents, managing own affairs
- Emancipated minors may give consent
Minors
Special Situations

• Most US states allow minors to consent for certain interventions without parental consent
  • Contraceptives
  • Prenatal Care
  • Treatment for STDs
  • Treatment for substance abuse
Abortion

- Rules on parental notification vary by state

Wikipedia/Public Domain
Abortion

• Providers not compelled to perform a procedure
• If patient insists, **refer to another provider**
Organ Donation

• Brain dead patients are possible organ donors
• In US, organ donation must be discussed only by individuals with specialized training
  • Conflict of interest for caregiver to request organ donation
  • Family may believe physician giving up to obtain organs
• “Organ procurement organizations”
• Often donation coordinator and attending physician
Organ Donation

• In US, individuals assumed NOT to be donors
• Family consent generally required
• Organ donation cards
  • Indicate a preference not final choice
  • Usually not a reason to override family refusal to donate

DNR
Do Not Resuscitate

- Patient request to avoid resuscitative measures
- Meant to decline care in case of cardiac arrest
- No CPR
- No electrical shocks
- **Other therapies may still be given**
  - Includes ICU care, surgery etc.
DNI
Do Not Intubate

- Patient request to avoid mechanical ventilation
- Often given with DNR: “Patient is DNR/DNI”
- Other therapies may still be given
Advance Care Planning

- Deciding about care prior to incapacitation
- Ideally done as outpatient with primary care physician
- Often done at admission to hospital
Advance Care Planning

• Goal is to identify/document patient wishes
  • DNR/DNI status (“code status”)
  • Living will
  • Health Care Proxy

• Very important in patients with **chronic illness**
  • Cancer
  • Heart Failure
  • COPD
Research

- **Research requires consent**
- All clinical research studies require informed consent
- Even if drug/therapy is FDA approved
- Even if drug/therapy has no known risks
Research

- Institutional Review Board (IRB)
- Hospital/Institutional committee
- Reviews and approves all research studies
- Ensures protection of human subjects
- Balances risks/benefits
- Ensures adequate informed consent
Research

- **Prisoners**
  - Informed consent required as for non-prisoners

- **Financial disclosures**
  - Many companies sponsor research
  - Must inform patients of industry sponsorship
Pregnancy

- Pregnant women **may refuse treatment**
- Even if baby’s health is impacted
Documentation

- **Person performing procedure** should obtain and document patient’s consent
  - Alternative: someone VERY familiar with procedure
- Often patient asked to sign form
- Act of signing not sufficient for informed consent
  - Patient must be fully informed by provider
  - Patient must have understanding
  - Legal cases have been won despite signed form
Documentation

- **Telephone consent is valid**
  - Usually requires a “witness”
  - Provider and witness document phone consent

![Telephone](image_url)
Confidentiality

Jason Ryan, MD, MPH
Confidentiality

- Healthcare information is “privileged and private”
- Providers have duty to respect patient privacy
- Disclosure of patient information should be limited
HIPAA
Health Insurance Portability and Accountability Act of 1996

• Sets national standards for protecting confidentiality
• Identifies protected health information
Confidentiality

• Information disclosed **only with patient permission**
• Includes patient’s spouse and children
  • Need patient’s permission
• Includes other physicians
  • Must obtain release of information first
• Includes government authorities
  • Unless a court order is issued
• Limited exceptions
Confidentiality

• May tell family a patient’s location in ER/hospital
  • “Directory information”
  • Patient location in the facility, general health condition
  • No specific medical information
  • Disclosed if provider deems in patient’s best interest
Confidentiality

• May break confidentiality when **potential for harm**
  • Think: If 3rd party not warned, what will happen?
  • If definite harm → answer is usually to inform
Tarasoff Case

- *Tarasoff v. Regents of the University of California* (1976)
- Tatiana Tarasoff killed by ex-boyfriend
- Ex-boyfriend treated by psychiatrist at university
- Boyfriend stated intent to kill to psychiatrist
- Authorities notified but not Tarasoff
Duty to Warn and Protect

- Psychiatric patient intending **harm** to self/others
  - Suicidal patients (i.e. family notification)
  - Homicidal patients (i.e. police notification)
- Partners of patients with STDs
STDs
Sexually Transmitted Diseases

• Duty to protect/warn **partners** of patients
  • **Partners of HIV+ patients**
  • Partners of patients with other STDs
• Only applies to sexual partners
• Does not apply to other individuals
  • Co-workers
  • Students of a teacher
  • Patients of a physician
STDs
Sexually Transmitted Diseases

• Physician **may disclose STD status to partners**
• May do so without consent in special cases:
  • Reasonable effort to encourage patient to voluntarily disclose
  • Reasonable belief patient will not disclose information
  • Disclosure is necessary to protect health of partner
• Always **encourage patient to disclose first**
• Some states have partner referral services

www.aids.gov
Reportable Illnesses

US states mandate certain “reportable diseases”
  - Prevent infectious disease outbreaks
  - Most micro labs have protocols to automatically report

- Tuberculosis
- Syphilis
- Gonorrhea
- Childhood diseases (measles, mumps)
- Many other diseases that vary by state

https://wwwn.cdc.gov/nndss/conditions/notifiable/2017/
Abuse

- **Child and elder abuse** must be reported
  - Child abuse: Reporting mandatory in all US states
  - Elder abuse: Reporting mandatory in most US states
- Child protective services
- Adult protective services
- Usually history of repeated/suspicious injuries
- First step: child/adult *interviewed alone*
- Physician protected if reporting proves incorrect
Spousal Abuse

• “Intimate Partner Violence”
• Suggested by multiple, recurrent injuries/accidents
• Primary concern is safety of victim
  • Provider should be supportive
  • May be a difficult topic of discussion
  • Ask if patient feels safe at home
  • Ensure patient has a safe place in emergency
• Some states have reporting requirements
Driving

- Physicians often encounter “impaired drivers”
- Often elderly patients with vision, mobility disorders
- No uniform standard for reporting
- Widely varying rules by US state
- Best answer often to discuss with patient/family
Driving

• Exception: **Seizures**

• Most states requires a seizure-free interval
  • i.e. 6 months, 1 year

• Often involves consulting with state DMV
Decision-Making Capacity

Jason Ryan, MD, MPH
Decision-Making Capacity

- Ability to comprehend information about illness and treatment options and make choices in keeping with personal values
- Usually used regarding a specific choice
  - Example: Patient has capacity to consent to surgery
- Required for informed consent
- Key component of ethical principle of autonomy
Competency

- **Legal judgment**
- Different from decision-making capacity
- Determined by a court/judge
- Clinicians can determine decision-making capacity
Decision-Making Capacity

- Understanding
  - Patient understands disease and therapy
- Expression of a choice
  - Patient clearly communicates yes or no
- Appreciation of facts
  - Related to understanding
  - Patient understands how disease/therapy affects him/her
- Reasoning
  - Compare options
  - Understand consequences of a choice
Decision-Making Capacity

- Patient is ≥ 18 years old or legally emancipated
- Decision remains stable over time
- Decision not clouded by a mood disorder
- No altered mental status
  - Intoxication
  - Delirium
  - Psychosis
Intellectual Disability

• Patients with Down syndrome, Fragile X
• Does not automatically preclude decision making
• Disabled patient must meet usual requirements
  • Understanding
  • Expression of a choice
  • Appreciation of facts
  • Reasoning
Patients Who Lack Capacity

- Advance directives
- Surrogates
Advance Directives

- Instructions by patient in case of loss of capacity
- Two main types:
  - Living Will
  - Durable Power of Attorney for Health Care
Living Will

• Document of patient preferences for medical care
• Takes effect if patient terminally ill and incapacitated
• Usually addresses life support, critical care
• Often directs withholding of heroic measures
DPAHC
Durable Power of Attorney for Health Care

- Also called a Health Care Proxy
- Signed legal document
- Authorizes **surrogate** to make medical decisions
- Surrogate should follow patient’s wishes
- Answer question: “What would patient want?”
Absence of Advance Directive

- Some states recognize **oral/spoken statements**
- Reliable, repeated statements by patient about wishes
- Usually must be witnessed by several people
Surrogate Designation

- Used when no advance directives available
- Make decisions when patient loses capacity
- Determine what patient would have wanted
- If no power of attorney:
  - #1: Spouse
  - #2 Adult children
  - #3: Parents
  - #4: Adult siblings
  - #5: Other relatives
Brain Death

- Permanent absence of brain functions
- Brain death = **legally dead** in the United States
- Life support may be withdrawn
- Even over surrogate/family objections
Public Health

Jason Ryan, MD, MPH
Disease Prevention

- Primary
- Secondary
- Tertiary
Primary Prevention

- Prevents disease from occurring
- Immunizations
- Folate supplementation in pregnancy

Public Domain
Secondary Prevention

- **Prevent disability**
- Detect and treat early, ideally when asymptomatic
- Most *screening* programs
- Mammograms
- Pap smears
- Colonoscopy

Wikipedia/Public Domain
Tertiary Prevention

- Prevents long-term disease complications
- **Maximize remaining function**
- Cardiac rehabilitation programs
Quaternary Prevention

• Prevents **overtreatment** or harm from treatment
• Many examples of overuse in US medicine
  • Blood tests
  • Radiology tests
  • Coronary procedures
• Ensure appropriate use
US Healthcare

- Healthcare is expensive ($$$)
- Few patients pay out of pocket
- Major insurance options:
  - Medicare
  - Medicaid
  - Private insurance

Kolijoriverhouse/Wikipedia
Emergency Care

- Must always be provided regardless of insurance
- After patient stable, insurance can be discussed
Medicare

- **Federal program** administered by US government
- Paid for by Federal US taxes
- Provides health insurance for:
  - Patients over 65 years of age
  - Disabled
  - Patients on dialysis
Medicare

• Part A
  • Hospital payments

• Part B
  • Outpatient treatment
  • Clinic visits, diagnostic testing

• Part D
  • Prescription drug coverage
Medicare

- Part C
  - Special option that patients may select
  - Pays private insurer to provides healthcare
Medicaid

- Jointly funded by state and federal governments
  - Some $\$ from Federal government
  - Some $\$ from State governments
- Administered by states
- Health insurance for low income patients/families

Wikipedia/Public Domain
Private Insurance

- Often provided by **patient’s employer**
  - Employer pays fee to insurance company
  - Insurance company pays costs of medical care
- Expensive for employer
- Helps to attract skilled workers
- Several types of plans that vary in features/cost
  - Health Maintenance Organization (HMO)
  - Preferred Provider Organization (PPO)
  - Point of Service plan (POS)
Private Insurance

• **Health Maintenance Organization (HMO)**
  - Insurance companies hires providers
  - Must use HMO providers - limited choice of physicians
  - Less expensive
Private Insurance

• **Preferred Provider Organization (PPO)**
  • See any doctor you want
  • “In network” doctors have a lower co-pay
  • Most expensive plan
  • Most flexible plan
Private Insurance

- **Point of Service plan (POS)**
  - Middle option between HMO and PPO
  - Must use specific primary care doctor
  - Can go “out of network” with a higher co-pay
Payment Types

• Fee for service
  • $100 per clinic visit

• Salary
  • $100,000 per year → doctor must see all patients

• Capitation
  • Set fee paid to physician/hospital per patient/illness
  • Spends LESS than fee → make money
  • Spends MORE than → loses money
  • Financial risk transferred to physician/hospital
Affordable Care Act

- Enacted in 2010
- Expands Medicaid coverage
- Establishes exchanges
- Uninsured patients may purchase private healthcare
Hospice

- End of life care
- Focus on quality of life not quantity (prolongation)
- Symptom control
- Services provided at home or in a facility
- Requires *expected survival* \( < 6 \text{ months} \)
Quality and Safety

Jason Ryan, MD, MPH
Quality and Safety

• Vocabulary
• Hospital Quality Measures
• Prevention and Safety
Care Transition

• Patient transfer
  • Home → Hospital
  • Hospital → Home
  • Hospital → Nursing Home
  • Nursing Home → Home

• Potential for harm to patients
  • What meds to take?
  • What activities to avoid?
  • When to call doctor?

FreeStockPhotos/Public Domain
Medication Reconciliation

• Process of identifying most accurate list of meds
  • Name, dosage, frequency, route
• Done by comparing medical record to external list
• Often done at care transitions
  • Admission to hospital
  • Admission to nursing home

Pixabay/Public Domain
Antimicrobial Stewardship

• Hospital program
• Monitors use of antibiotics
• Goals:
  • Prevent emergence of drug-resistant bacteria
  • Promote appropriate use of antibiotics
• Often monitors:
  • Prescribing patterns
  • Microbiology culture results and sensitivities
SBAR
Situation, Background, Assessment, Recommendation

• Communication tool
• Standardized method of communication
• Often used by nurses when calling physician
• Situation: What is happening
  • Example: Patient has fever
• Background: Who is the patient?
  • Example: Elderly woman with cancer
• Assessment: Other vitals? Labs?
• Recommendation: What is needed?
  • Example: I need to know if you want to start antibiotics.
Quality Measurements

- Readmissions
- Pressure Ulcers
- Surgical-site infections
- Central-line infections
- Ventilator-acquired pneumonia
- Deep vein thrombosis
- Never Events
Hospital Readmission

• Patient X discharged from hospital
• Ten days later, patient X admitted again
• Readmission rate used as a quality indicator
• High readmission rate may be due to:
  • Patient discharged too early
  • Patient not educated prior to discharge
  • Follow-up not scheduled
Hospital Readmission

### 30-day All-Cause Hospital Readmissions
Most Common Conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Medicare</th>
<th>Medicaid</th>
<th>Private Insurance</th>
<th>Uninsured</th>
</tr>
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<tbody>
<tr>
<td>Heart Failure</td>
<td>Mood Disorders</td>
<td>Chemotherapy</td>
<td>Mood Disorders</td>
<td></td>
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<tr>
<td>Sepsis</td>
<td>Schizophrenia</td>
<td>Mood Disorders</td>
<td>Alcoholism</td>
<td></td>
</tr>
<tr>
<td>Pneumonia</td>
<td>Diabetes</td>
<td>Surgical Complications</td>
<td>Diabetes</td>
<td></td>
</tr>
</tbody>
</table>

Healthcare Cost and Utilization Project. **Conditions With the Largest Number of Adult Hospital Readmissions by Payer.** April 2014
Pressure Ulcers

• Immobile hospitalized patient: ↑ risk skin breakdown
• Can lead to pressure ulcers (usually sacral)
• Causes pain, risk of infection
• Preventative measures
  • Daily skin checks
  • Special mattresses (redistribute pressure)
  • Early identification/care skin breakdown
Pressure Ulcers
Surgical Site Infections

- Post-surgical infection
- Often superficial skin infection (cellulitis)
- Can also be deep tissue or organ infection
- Can result from poor sterile technique

[Image of surgical site infection]
Central Line Infections

- Central line insertion can lead to bacteremia
- Can occur due to poor sterile technique
- Gram-positive skin organisms most common
- Staph epidermis and staph aureus

Wikipedia/Public Domain
VAP
Ventilator Acquired Pneumonia

- Pneumonia after patient placed on ventilator
- May be due to hospital factors
  - Failure to elevate head of bed
  - Poor oral care in intubated patients
DVT
Deep Vein Thrombosis

- Immobile, bed-bound patients = ↑ risk thrombus
  - Virchow’s triad
    - Stasis, hypercoagulable state, endothelial damage
- ↑ rates of DVT may be due to poor hospital practices
- Methods of prophylaxis:
  - Early ambulation
  - Intermittent pneumatic compression
  - Subcutaneous heparin
  - Low molecular weight heparin (Enoxaparin)
Never Events

• Events that should never happen – no exceptions
• Some examples:
  • Surgery on the wrong site
  • Surgery on the wrong patient
  • Wrong surgical procedure performed
  • Foreign object left inside patient during surgery
  • Administration of incompatible blood
Physician Quality Measurements

• Diabetic patients
  • Foot exams
  • Eye exams

• Systolic heart failure patients
  • ACE inhibitors

• Immunizations
Quality Measurements
Process versus Outcome

- Process measurement
  - Rates of immunization
  - Rates of DVT prophylaxis

- Outcome measurement
  - Rates of infection
  - Rates of DVT
Prevention and Safety

• Infection control precautions
• Immunizations
• Root Cause Analysis
• Failure Mode/Effects Analysis
• Time Out
• Checklists
• Triggers and Rapid Response
• Forcing functions/workaround
• Culture of Safety
Infection Control Precautions

- Patients with certain infections need “precautions” taken to prevent spread of disease
- Four basic types of precautions:
  - Standard Precautions
  - Droplet Precautions
  - Contact Precautions
  - Airborne Precautions

Wikipedia/Public Domain
Standard Precautions

• Hand washing
• Gloves when touching blood, body fluids
• Surgical mask/face shield if chance of splash/spray
• Gown if skin or clothing exposed to blood/fluids

Arlington County/Flikr
Contact Precautions

- Patients with infections easily spread by contact
- Gloves, gown
- Key pathogens
  - Any infectious diarrhea (norovirus, rotavirus)
  - Especially *clostridium difficile*
  - MRSA

Wikipedia/Public Domain
Droplet Precautions

• Patient with infection that spreads by speaking, sneezing, or coughing
• Facemask, gloves and gown
• Key pathogens:
  • Respiratory viruses, especially influenza, RSV
  • *Neisseria meningitides*
  • *Bordetella pertussis*

College Student
Fever, neck pain
Respiratory Precautions

Airborne/TB precautions

- Patients with infections spread by airborne route
- Fit tested mask or respirator
- Gloves, gown
- Key pathogens
  - **Tuberculosis**
  - Measles
  - Chickenpox

Fever, cough
Immunocompromise
Immunizations

• Many hospitalized patients at risk for influenza and streptococcus pneumonia

• Pneumococcal vaccine
  • Age 65+
  • Age <65 with high risk conditions
  • PPSV23: Contains capsular polysaccharide antigens
  • PCV13: Conjugated to diphtheria toxoid

• Influenza vaccine
  • All persons 6 months and older annually
  • Killed virus vaccine
Root Cause Analysis

• Method to analyze serious adverse events (SAEs)
• Identifies direct cause of error plus contributors
• Example:
  • Wrong drug administered to patient
  • Doctor error?
  • Nursing error?
  • Labels hard to read: Printing error?
  • Nurses rushed: Hospital error?
Failure Mode & Effects Analysis

- Identifying how a process might fail
  - Root cause analysis done **BEFORE** adverse event happens
- Identifying effects of potential failure
- Break process down into components
- Look for failure/effect of each component

Patient Positioned → Skin Cleaned → Lidocaine
Types of Errors

• Active errors
  • Occur at the end of a process
  • Frontline/bedside operator error

• Latent errors
  • Errors away from bedside that impact care
  • Example: Poor staffing leads to overworked nurses
Swiss Cheese Model

- Flaws at multiple levels align to cause serious errors
- Often more than just a single mistake
  - Institutional factors
  - Supervisor errors
  - Environmental factors
  - Individual error
PDSA
Plan-Do-Study-Act

- **PLAN:** Plan a change in hospital practice
- **DO:** Do what you planned
- **STUDY:** Study the outcome. Did things get better?
- **ACT:** Act on the study findings
- PDSA “cycles” repeated
- Generates continuous improvement
PDSA
Plan-Do-Study-Act

• Example:
  • Too many surgical site infections
  • **Plan** to mandate double hand washing
  • Implement plan (**Do**)
  • **Study** effects on surgical site infections
  • **Act**ion taken based on results
Time Out

- Pause before a medical/surgical procedure
- Patient, physician, nurses, staff all present
- All must agree on patient name, type of procedure

Steindy/Wikipedia
Checklist

• Concept from airline industry
• Series of steps that must be done prior to procedure
• Show to reduce many adverse events
  • Central-line infections
  • Surgical-site infections
Triggers and Rapid Response

- Patients that “crash” often have signs of impending decline hours before
- Triggers: Patient events that mandate response
  - New chest pain
  - Low oxygen saturation
- Rapid Response Team
  - Provider group
  - Responds to triggers with formal assessment
Forcing Functions

• “Force” an action beneficial for safety
  • Cannot order meds until allergies verified

• Workaround
  • Obtain meds without using ordering system
  • Potential for harm
Human Factors Design

- **Design of systems** that accounts for human factors
  - How humans work and function
  - How humans interact with system
- Failure to account for human nature ➔ errors
Human Factors Design

• Standardization
  • Same procedures followed throughout hospital

• Simplification
  • Fewer steps \rightarrow less chance for error

• Forcing functions
  • Cannot only interact with system in one way
Culture of Safety

- Safety as priority for organization
- Teamwork
- Openness and transparency
- Accountability
- **Non-punitive** responses to adverse events/errors
- Education and training
High Reliability Organization

• Organizations that operate in hazardous conditions
  • High potential for error
• Fewer than average adverse events
The Healthy Patient

Jason Ryan, MD, MPH
Healthy Patients

• Commonly present for “routine evaluation”
• Focus of visit is screening and prevention
• Criteria for disease screening:
  • Disease has high burden of suffering
  • Good screening tests
  • Effective early interventions
Cardiovascular Disease

• Several major **modifiable** risk factors
• Screening and intervention/counseling recommended
  • Diet
  • Obesity
  • Physical inactivity
  • Smoking
  • Hypertension
  • Hyperlipidemia
  • Diabetes
Obesity

Obesity and Body Mass Index (BMI)

\[
BMI = \frac{\text{weight (kg)}}{\text{height}^2 (m^2)}
\]

- **Normal**: < 25 kg/m²
- **Overweight**: 25 – 29 kg/m²
- **Obese**: ≥ 30 kg/m²

Wikipedia/Public Domain
Obesity

- **Behavior modification**
  - Mainstay of treatment
  - Make long-term changes in eating behavior and activity

- **Drugs (rarely effective)**
  - Orlistat (inhibits pancreatic lipase)
Obesity

- **Bariatric surgery**
  - Restricts amount of food stomach can hold
  - Often lead to significant, sustained weight loss
  - Shown to reduce/limit obesity complications (diabetes)
  - BMI > 40 kg/m²
  - BMI 35 – 40 kg/m² with comorbidities
Cardiovascular Disease
Unclear benefit

- Aspirin for primary prevention
- Routine electrocardiogram
- C-reactive protein
- Carotid artery intima-media thickness
- Coronary artery calcification by CT scan
- Homocysteine
- Lipoprotein(a)
Cancer
General Measures

• Physically activity
• Maintaining a healthy weight
• Healthy diet
• Avoiding smoking
• Limiting alcohol consumption
• Avoiding sexually transmitted infections
• Avoiding excess sun
Obesity

- Excess weight associated with risk for many cancers
- Obesity estimated to cause 20 percent of all cancers
- Absence of excess body fat $\rightarrow$ ↓ cancer risk*
  - Esophageal adenocarcinoma
  - Colorectal
  - Endometrial
  - Ovarian
  - Pancreatic
  - Postmenopausal breast cancers

*International Agency for Research on Cancer (IARC)
Cancer Screening

- Breast: mammogram
- Cervical: Pap smear
- Colorectal cancer: colonoscopy or sigmoidoscopy

Wikipedia/Public Domain
Immunization

- Influenza vaccine (all adults)
- Pneumococcus
  - <64 years old if high risk
  - >64 all adults
- Varicella zoster
- Human papilloma virus
- Tetanus, diphtheria, pertussis
- Meningocococcus
- Hepatitis B
STIs
Sexually-Transmitted Infections

• Screening recommended for at risk patients
• Chlamydia and gonorrhea
  • Often asymptomatic
  • Vaginal swab or urine sample
  • Nucleic acid amplification testing (NAAT)
  • Detects organism-specific DNA or RNA
• Hepatitis B
• Hepatitis C (if born between 1945 and 1965)
• HIV
• Syphilis (RPR/VDRL)
Psychosocial Screening

- Depression
- Substance use disorders
  - Alcohol
  - Tobacco
  - Other drugs
- Intimate partner violence

Pixabay/Public Domain
Intimate Partner Violence

- Suggested by multiple, recurrent injuries/accidents
- Primary concern is safety of victim
  - Provider should be supportive
  - May be a difficult topic of discussion
  - Ask if patient feels safe at home
  - Ensure patient has a safe place in emergency
- Some states have reporting requirements
Osteoporosis

- All women >65 years old
- Younger women and men with risk factors
- Dual-energy x-ray absorptiometry (DXA)
Vascular Disease

- **Abdominal aortic aneurysm**
  - One-time ultrasound recommended
  - Male smokers ages 65 to 75

Wikimedia commons
Geriatrics

Jason Ryan, MD, MPH
Geriatric Syndrome

- Group of common health problems among elderly
- Usually multifactorial
- Do not fit in single organ-based categories
- Examples:
  - Cognitive impairment
  - Weakness/fatigue
  - Falls
CGI

Comprehensive Geriatric Assessment

- Functional status
- Fall risk
- Cognition
- Mood
- Polypharmacy
- Social support
- Financial concerns
- Goals of care
- Advanced care preferences
Functional Status

• Basic activities of daily living (BADLs)
  • Basic self care tasks
• Instrumental activities of daily living (IADLs)
  • Tasks required to remain independent
• Advanced activities of daily living (AADLs)
  • Participate in family, social, or work-related roles
BADLs
Basic Activities of Daily Living

• Feeding
• Bathing
• Dressing
• Toileting
• Transferring
• Walking
IADLs

Instrumental Activities of Daily Living

- Shopping for groceries
- Driving or using public transportation
- Using the telephone
- Housework
- Home repair
- Preparing food
- Laundry
- Taking medications
- Managing finances
Falls

• 50% patients over 80 fall each year
• Many risk factors
  • Prior falls
  • Weakness
  • Balance problems
  • Arthritis
• CNS drugs
  • Hypnotics: zolpidem, zaleplon, eszopiclone
  • Benzodiazepines: alprazolam, clonazepam
Falls

- Best prevention: **exercise**
  - Strength training
  - Gait and balance training
  - Tai chi
- Avoid certain medications
Falls

• **Home safety evaluation**
  - Stair hand rails
  - Rails in bathrooms
  - Improved lighting
  - Nonslip bath mats

• **Walkers/canes**
  - May help mobility
  - Little evidence of fall prevention
Cognition and Mood

- **Cognition**
  - Incidence of dementia increases with age
  - Cognition problems often undiagnosed

- **Mood**
  - Depression very common in elderly
  - Often goes undiagnosed
  - Leads to impaired function, hospitalization
Polypharmacy

- Elderly patients often on multiple medications
- Often have multiple providers (PCP, specialist)
- Review of meds important to prevent med errors
Social and Financial Support

• Strong social support associated with better outcomes
• Elderly often eligible for public financial support
• Caregivers can develop depression or burnout
Goals of Care

• Full health and independence often not possible
• Goals of care: **What is most important?**
  • Living at home
  • Meeting with friends
  • Attending family gatherings
  • Walking without a walker
• What is less important?
• Patients vary in what they value
• Care guided to patient desires
Advanced Care Preferences

• Preferences if health deteriorates
• Especially if patient cannot make decisions
Labor

- Regular uterine contractions
- Progressive dilation and effacement of cervix
- Descent and expulsion of fetus
Labor Stages

• Stage I: Onset until cervix dilated 10cm
  • Early Labor Phase: Onset until cervix dilated to 3 cm
  • Active Labor Phase: 3 cm until cervix dilated to 7 cm
  • Transition Phase: 7 cm the cervix fully dilated to 10 cm
• Stage II: Delivery of baby
• Stage III: Delivery of placenta
Labor Stages

Stage 2: Birth
1. Presentation of head
2. Rotation and delivery of anterior shoulder
3. Delivery of posterior shoulder
4. Delivery of lower body and umbilical cord

Stage 3: Afterbirth delivery
- Placenta detaches and exits through vagina
Apgar Scores

• Assigned to children at time of birth
• Assessed at 1 and 5 minutes after birth
• Score of 0, 1, or 2 for the following:
  • Heart rate
  • Respiratory effort
  • Muscle tone
  • Reflex irritability
  • Color
• 90% newborns have scores 7 – 10
• Scores <7 require further evaluation
# Apgar Scores

<table>
<thead>
<tr>
<th>SIGN</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart rate</td>
<td>Absent</td>
<td>Below 100</td>
<td>Over 100</td>
</tr>
<tr>
<td>Respiratory effort</td>
<td>Absent</td>
<td>Slow, irregular</td>
<td>Good, crying</td>
</tr>
<tr>
<td>Muscle tone</td>
<td>Limp</td>
<td>Some flexion</td>
<td>Active motion</td>
</tr>
<tr>
<td>Reflex*</td>
<td>No response</td>
<td>Grimace</td>
<td>Cough or sneeze</td>
</tr>
<tr>
<td>Color</td>
<td>Blue, Pale</td>
<td>Body pink, Extremities blue</td>
<td>Completely pink</td>
</tr>
</tbody>
</table>

- 7 to 10 is normal
- 4 to 6 is moderately depressed
- 0 to 3 needs immediate resuscitation

*Response to catheter in nostrils
Low Apgar Scores

• Feared outcome: cerebral palsy
  • Most infants with low scores will not develop CP
  • Risk higher with low scores
• 1-minute Apgar score of 0–3:
  • Does not predict outcome
• 5-minute Apgar score of 0–3:
  • Associated with increased risk of neurologic damage
Cerebral Palsy

• Permanent central motor dysfunction
• Affects muscle tone, posture, movement
• Nonprogressive: present at birth and remains
• Caused by damage to fetal or newborn brain
• Can be caused by asphyxia at time of labor
  • Lack of oxygen to the brain
Normal Growth

• Usually occurs in a predictable course
• Influenced by nutrition, health
• Key metrics monitored by pediatricians:
  • Weight
  • Height
  • Head circumference (until 2 years)
• Compared to norms for age group
• Often reported as percentile (10\text{th}, 50\text{th}, 99\text{th})
Growth Charts
Height, Weight, Head Circumference
Newborn Weight

• Full term babies lose weight after birth
  • Up to 10 percent of birth weight
  • Occurs in first few days of life
  • Usually regained by 10 to 14 days
• Infants double birth weight by four months
• Triple birth weight by one year
• Children gain ~4.5 lbs per year from 2 to puberty
Linear Growth

• Non-linear with **spurts and slowing**
• Average length at birth: 20 inches
• Infants grow 10 inches during first year
• Children reach half adult height by 24 to 30 months
• Children grow 2 inches per year ages 2 to puberty
• Normal deceleration of height velocity before puberty
  • Followed by growth spurt
Linear Growth

- Most common causes of short stature after age two:
  - Constitutional growth delay (most common)
  - Familial (genetic) short stature
- Both variants of normal
- Constitutional delay of growth and puberty (CDGP)
  - Late adolescent growth spurt
  - Delayed puberty
  - Adult height often normal
Pathologic Short Stature

- Pulmonary symptoms: cystic fibrosis
- Developmental delay/learning disabilities: Down
- Webbed neck, wide chest: Turner syndrome
- Short limbs compared to torso: achondroplasia
Head Growth

• Reflects growth of brain
• Small head: microcephaly
• Many, many causes of microcephaly
• Occurs with dysmorphism in many genetic disorders
  • Abnormal facial, limb features
  • Down syndrome (trisomy 21)
  • Angelman syndrome (imprinted gene disorder)
  • Williams syndrome (deletion on chromosome 7)
Down Syndrome

- Birth weight, length, and head circumference low
- Usually remain low until puberty

Vanellus Foto/Wikipedia
Developmental Milestones

- Motor, language, and social skills for various ages
- Developmental delay = failure to reach milestones
- Reversible causes:
  - Hearing loss
  - Lead poisoning
- Often occurs with dysmorphic features
  - Facial, limb and other abnormalities
  - Down syndrome
  - Fragile X (long face, large ears, large testes)
<table>
<thead>
<tr>
<th>Age Range</th>
<th>Gross Motor</th>
<th>Fine Motor</th>
<th>Social</th>
<th>Hearing and Speech</th>
<th>Red Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 weeks</td>
<td>Holds head up for a few seconds</td>
<td>Follows light with eyes</td>
<td>Smiles</td>
<td>Started by sound</td>
<td></td>
</tr>
<tr>
<td>4-6 months</td>
<td>Lifts head and chest when prone</td>
<td>Reaches for objects</td>
<td>Babbling</td>
<td>At 6 months: No smile No grasp No roll Poor head control</td>
<td></td>
</tr>
<tr>
<td>6-9 months</td>
<td>Crawls</td>
<td>Gives toy on request</td>
<td>Responds to bye bye</td>
<td>At 9 months: No response to words Lack of eye contact/facial expressions No gestures No passing toys from hand to hand No sitting without support/ crawling</td>
<td></td>
</tr>
<tr>
<td>7-12 months</td>
<td>Walks with hand held</td>
<td>Pincer grasp develops</td>
<td>Plays peek a boo</td>
<td>Waves goodbye</td>
<td>At 12 months: Unable to pick up small items No crawl/bottom shuffle No standing/ holding onto furniture No babibled phrases</td>
</tr>
<tr>
<td>12-15 months</td>
<td>Drinks from cup</td>
<td>Single words</td>
<td>Listens to stories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 months</td>
<td>Walks up steps</td>
<td>Softblossom</td>
<td>Helps with blocks</td>
<td>6 words</td>
<td>Uninterested in social playing No clear words Not walking without support Unable to hold crayon Unable to stack two blocks</td>
</tr>
<tr>
<td>1.5-2 years</td>
<td>Kicks/throws ball</td>
<td>Stacks 5-6 blocks</td>
<td>Follows two step command</td>
<td>2-word sentences</td>
<td>At 2 years: 80 words Difficulty handling small toys Unable to climb stairs No interest in feeding/dressing</td>
</tr>
</tbody>
</table>
Screening
Select Screening Measures

- Hearing
- Vision
- Iron deficiency
- Lead poisoning
- Oral health
- Tobacco, alcohol, substance use (9 years and older)
- Depression (ages 12 to 21 years)
- Poverty
Iron Deficiency

• Up to 9% toddlers have iron deficiency in US
• Commonly caused by insufficient dietary intake
• Other causes (duodenal absorption):
  • Celiac disease
  • Crohn’s disease
CRAFFT Screening
Substance Use Screen for Children

• Car – Have you ever ridden in a car driven by someone who had been using alcohol or drugs?
• Relax – Do you ever use alcohol or drugs to relax?
• Alone – Do you ever use alcohol or drugs while alone?
• Forget – Do you ever forget things you did while using alcohol or drugs?
• Friends – Do your family or friends ever tell you that you should cut down on your drinking or drug use?
• Trouble – Have you ever gotten into trouble while you were using alcohol or drugs?
• Score $\geq 2$ = high risk adverse outcomes
Car Injuries

• Newborns: rear-facing car seat
• Toddlers/young children: forward-facing car seat
• Older children <12 years: booster seat with seat belt
• Air bags (front seat) dangerous < 12 years

Wikipedia/Public Domain
Poverty

- Screen for lack of basic needs
  - Food, housing, heat
- Providers can link families with community services
Injuries

- Unintentional injuries: leading cause of death
- Often predictable and preventable
- **Car injuries**: car seats and seat belts
- **Firearms (guns)**
  - Gun avoidance (most effective means of prevention)
  - Safe handling and storage of firearms
- **Bicycle Injuries**
  - Usually head injuries
  - Prevention with bicycle helmets
Anticipatory Guidance

- Given by provider to parents
- Varies by child’s age
- Expected growth and development
- Safety reminders
## Immunizations

**Figure 1.** Recommended immunization schedule for persons aged 0 through 6 years — United States, 2009

(For those who fall behind or start late, see the catch-up schedule [Table])

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Age</th>
<th>Birth</th>
<th>1 month</th>
<th>2 months</th>
<th>4 months</th>
<th>6 months</th>
<th>12 months</th>
<th>15 months</th>
<th>18 months</th>
<th>19–23 months</th>
<th>2–3 years</th>
<th>4–6 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B</td>
<td></td>
<td>HepB</td>
<td>HepB</td>
<td></td>
<td></td>
<td></td>
<td>HepB</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Rotavirus</td>
<td></td>
<td>RV</td>
<td>RV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DTaP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diphtheria, Tetanus, Pertussis</td>
<td></td>
<td>DTaP</td>
<td>DTaP</td>
<td>DTaP</td>
<td></td>
<td></td>
<td></td>
<td>DTaP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haemophilus influenzae type b</td>
<td></td>
<td>Hib</td>
<td>Hib</td>
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<td></td>
<td>Hib</td>
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</tr>
<tr>
<td>Pneumococcal</td>
<td></td>
<td>PCV</td>
<td>PCV</td>
<td>PCV</td>
<td>PCV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PPSV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inactivated Poliovirus</td>
<td></td>
<td>IPV</td>
<td>IPV</td>
<td></td>
<td></td>
<td></td>
<td>IPV</td>
<td></td>
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<tr>
<td>Influenza</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Influenza (Yearly)</td>
<td>MMR</td>
<td>MMR</td>
</tr>
<tr>
<td>Measles, Mumps, Rubella</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Varicella</td>
<td>Varicella</td>
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<tr>
<td>Varicella</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>HepA (2 doses)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meningococcal</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Range of recommended ages**

**Certain high-risk groups**

---

CDC/Public Domain
Puberty

- Transition to sexual maturity
- Two major physiologic events
  - **Gonadarche:**
    - Activation of gonads by pituitary gland
    - Follicle-stimulating hormone (FSH)
    - Luteinizing hormone (LH)
  - **Adrenarche:**
    - Increased androgens from adrenal glands
Puberty

- Thelarche: development of breasts
  - Estradiol action on breast tissue
- Menarche: first menstrual period
- Spermarche: first sperm production
  - Often followed by nocturnal emission
- Pubarche: development of pubic hair
  - Primarily due to androgens from adrenal gland
Tanner Stages

- Stages I to V
- Assigns stage number to pubertal development
- Separate stages for:
  - Male genitalia
  - Female breasts
  - Pubic hair
- Stage I: prepubertal
- Stage V: adult sexual characteristics
  - Usually occurs by age 15
# Tanner Stages

<table>
<thead>
<tr>
<th>Stage</th>
<th>Example</th>
<th>Age Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td><img src="image1" alt="Stage I Image" /></td>
<td>3 - 2.5</td>
</tr>
<tr>
<td>II</td>
<td><img src="image2" alt="Stage II Image" /></td>
<td>4 - 2.5 - 3.2</td>
</tr>
<tr>
<td>III</td>
<td><img src="image3" alt="Stage III Image" /></td>
<td>10 - 3.6</td>
</tr>
<tr>
<td>IV</td>
<td><img src="image4" alt="Stage IV Image" /></td>
<td>16 - 4.1 - 1.5</td>
</tr>
<tr>
<td>V</td>
<td><img src="image5" alt="Stage V Image" /></td>
<td>25 - &gt; 1.5</td>
</tr>
</tbody>
</table>

![Stage I Example](image1)

![Stage II Example](image2)

![Stage III Example](image3)

![Stage IV Example](image4)

![Stage V Example](image5)
Precocious puberty

- Occurs at early age, usually < 8-9 years old
- Excess androgens (boys) or estrogens (girls)
- Boys: congenital adrenal hyperplasia
Delayed puberty

- No evidence of puberty by age 12-14 years
- **Constitutional delay of growth and puberty**
  - Most common cause
- Underproduction of androgens or estrogens
- Hypogonadism:
  - Turner (girls)
  - Klinefelter (boys)
- Kallman syndrome (GnRH deficiency, anosmia)