PPE 5: What’s New, What’s Not
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William O Roberts MD, MS, FACSM, FAAFP
Professor
Vice Chair of Faculty Affairs
Director of Sports Medicine Program
Department of Family Medicine & Community Health
University of Minnesota.
Minneapolis, MN
Disclosure Information

William O Roberts MD, MS, FACSM, FAAFP

I have no financial relationships to disclose

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I will not discuss off label use in my presentation
Editors
David T. Bernhardt, MD, FAAP
William O. Roberts, MD, MS, FACSM, FAAFP

Organization Representatives
Irfan M. Asif, MD
Chad Asplund, MD, MPH, FACSM
William W. Dexter, MD, FACSM
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Elizabeth A. Joy, MD, MPH, FACSM
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Jason M. Matuszak, MD, FAAFP
Kody Moffatt, MD, MS, FAAP, FACSM
Joseph L. Perez, MD, MBA, FAAFP
Karen M. Sutton, MD

ADDITIONAL CONTRIBUTORS
Brittany J. Allen, MD
Cindy J. Chang, MD, FACSM
Joanna Harper, MS
Constance LeBrun, MD, FACSM
Keith J. Loud, MD, MSC, FAAP
Ashwin Rao, MD
PPE 5
Evidence Based Exam?

“Expert opinion unless otherwise specified”
New for PPE5

• Health Care Home
• Mental Health
• Transgender Athletes
• Expanded “Athletes with a Disability”
PPE5 Emphasis...

- Incorporate the PPE into routine health supervision care visits for all children
  - Start at age 6
  - Every 2-3 years
- Integrating the PPE into the health care home may be more easily achieved
  - Address PPE every 2-3 years, rather than annually
  - Allows a different focus each year for evolving child risk
PPE Best Practice…

- The writing group opinion
  - Student-athletes should schedule in health care home with PCP
  - Integrated into routine health supervision exams
    - Access to medical records
    - Adjust treatment of chronic medical conditions
    - Promote physical activity as a health strategy
The PPE history...

- Not developed as an evidence-based process
- Lack of outcomes data to demonstrate effectiveness
  - Even after several decades of use among athletes
- Widely performed
  - Every state requires PPE for HS athletes
- Implies public health message
  - All children & adolescents should be active
The PPE...

- Provides medical background for shared decision-making
  - History
  - Physical exam
  - Case finding studies
- To determine
  - Medical eligibility
  - Potential physical activity limitations
Purpose of PPE…

- Facilitate & encourage safe participation
  - Not to exclude athletes from participation
- Systematic review of >20,000 examinations
  - Identified only 3 athletes excluded
- Most individual PPE studies report
  - 0.3% - 1.3% of athletes denied medical eligibility to participate
  - 3.2% - 13.9% require further evaluation before allowing participation

PPE Goals…

• Determine general physical & psychological health
• Evaluate for conditions predisposing to injury or illness
• Evaluate for life-threatening or disabling conditions
• Opportunity for discussion of health & lifestyle issues
• Entry point into a health care home
Conditions that may predispose to injury or illness

- PPE may identify medical or MSK conditions that may predispose an athlete to injury or illness
- No outcomes-based data to support the ability of the PPE to reduce injury or illness
Life-threatening or Disabling Conditions

- Opportunity to investigate potentially life-threatening or disabling medical or MSK conditions
- Personal & family history to search for red flags
- No evidence that screening will reliably identify all clinically silent conditions
  - Cardiac conditions associated with SCD
- No outcomes based evidence

Figure Legend:
Percentage of Total Deaths in the United States Due to Firearms
SCD & PPE Screening

- SCD prevalence/incidence baseline
  - All children
  - All child athletes

- “Detectable” conditions potentially linked to SCD (0.3%)

- Discrepancy between detected conditions & outcomes

- No outcomes data
  - Need large RCT

- Patient centered medical decision making

- AMSSM Statement (CSMR 2016, CJSM 2016, BJSM 2017)
Life-threatening or Disabling Conditions

- Author group consensus
  - Comprehensive, uniformly applied approach offers best opportunity to meet this objective
  - Natural experiments
    - Different protocols allow comparison
- Controversy related to augmenting Hx & PE with EKG’s for general population
  - Selective use for higher risk populations
The PPE most likely to find...

- Acute, recurrent, chronic, or untreated injuries or illnesses
- Inadequate neuromuscular control predisposing to injury
- Inadequately rehabilitated prior injuries
- Congenital or developmental problems
Qualifications of Examiners...

- MD, DO, or advanced practice providers (NP & PA)
- Essential to have clinical training
  - Knowledge & expertise to conduct the evaluation
  - Address the broad range of problems
  - Determine medical eligibility
- Clinical training for problems encountered during PPE
- Individual state laws vary (NP, PA, DC)
- Seek consultation when appropriate
State regulations determine who can perform PPEs for public schools

- 2017 NHSF survey (W Heinz)
  - All states allow MD/DO
  - All states but 1 allow PA or NP signature
  - 22 states allow DC to sign
    - 1 state requires certification
Timing of Evaluation…

- Health supervision care during birth month
- Well in advance of season
  - Time to evaluate & rehabilitate identified problems
  - 6 weeks prior to season
Frequency of Evaluation…

- No outcomes-based data to guide the recommendations
- AHA recommends every 2 years for cardiac evaluation
  - Arbitrary recommendation
  - Assumes cardiac changes detectable at 2-year intervals
- Little evidence to support any interval recommendations between 1 & 4 years

2017 NFHS Associations Survey (W Heinz)

Required evaluation intervals
- 39 states every 12 to 13 months
  - 4 states 13 month interval for insurance requirements
- 1 state every 18 months
- 7 states every-other-year (interim questionnaire)
- 2 states every 3 years (interim questionnaires)
- 1 state frequency up to individual school districts
- 1 state at entry to HS sports (annual questionnaires)
- 17 states use PPE4 form
PPE Writing Group Consensus

- A comprehensive PPE every 2 to 3 years
  - Grade school, middle school, & high school
  - Integrate into HCH health supervision examinations
- Annual questionnaire
  - Heart, head, heat injury, & mental health issues
  - Problem-focused examination if concerns
Group-based Examinations

- College settings with formal medical teams
  - Group exams may be preferred when full access to PMH available
- Last resort for HS & younger athletes
HIPAA, FERPA, & Athlete Privacy

- Age 18 most common legal age of majority
  - Some states age 19 or 21
- State laws vary greatly regarding
  - Emancipation
  - Mature minor determination
  - Consent & privacy for the treatment of certain medical conditions
    - Pregnancy
    - STD
    - Mental health
Determining Medical Eligibility

5 categories:

1. All activities without restriction
2. All activities with recommendations for further evaluation or treatment (eg, “Check BP in one month”)
3. Not for any activities until additional evaluation, treatment, or rehabilitation is completed
4. Not in specific activities
5. Not in any sports or physical activities
PPE Medical Eligibility Form

- Check box
  - “Not medically qualified for certain sports”
  - “Not medically qualified for any sports”

- Communicate medical eligibility to school without breaking confidentiality rules
Coding & PPE Outcomes

- ICD-10-CM code for sport PPE is Z02.5
- Coding the PPE (1° or 2° position) allows EMR tracking
- Diligent coding
  - Research into short- & long-term PPE outcomes
- Large systems - “big data” in relatively short time
- Help determine PPE outcomes & address gaps
  - Utility of the current exam
  - Predictive value of the exams
  - Reasonable exam frequency
  - Shape the future PPE
Top Research Gaps

- Do PPEs change the mortality rate of target population?
- Are individuals excluded from sports participation necessarily “lives saved” by screening?
- Are abnormalities found at PPEs... for target population
  - different than found at health supervision visits?
  - clinically meaningful?
  - are outcomes modifiable?
Top Research Gaps

• Do PPE requirements adversely affect sports participation rates, and are those participation rates disproportionately affecting individuals at a socioeconomic or medical disadvantage?

• Do requirements for follow-up testing for abnormalities discovered at the PPE lead to harm, reduce participation, or disproportionately affect individuals on the basis of race, socioeconomic factors, or availability of medical resources?

• What is the relative importance of each of the questions in the questionnaire in preventing or modifying morbidity or mortality from sports participation?
Top Research Gaps

• Are the adolescents who have their PPE performed somewhere other than their primary medical home otherwise receiving routine comprehensive or preventive care?

• What is the accuracy of a PPE, for detecting known or suspected conditions that may affect risk or participation status, performed in another setting compared with that obtained in the individual’s medical home?

• Are there any physical examination or functional movement tests that predict or prevent injury to warrant inclusion in universal screening?
Top Research Gaps

• What findings from screening tests performed as part of the PPE are discovered in truly asymptomatic individuals at no apparent increased risk?

• Does regional capture & storage of electronic PPE findings reduce fragmentation of the medical record, improve follow-up on abnormal results, reduce errors, or reduce legal risk?
Sports Medicine Take Home Points

• The PPE is not an evidence based exam
• Incorporating PPE into health prevention visits within the HCH is best practice
• History & PE should drive case finding studies
• Universal ECG screening is not recommended
• Use shared decision making to determine medical eligibility
• There are many knowledge gaps in the PPE
• Coding the PPE may allow big data to inform PPE
Thank you!