

## Johns Hopkins Center for Injury Research and Policy

# **“Of Course they are an Occupational Group!” Preventing Injuries Among Professional Baseball Players**

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**PIPER Injury and Violence Seminar  
Colorado School of Public Health**

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# Overview

- Professional athletes as an occupational group
- Partnership between Johns Hopkins University and Major League Baseball
- Describe Baseball Medical Assessment and Research Center (BMARC)
- Present an overview of some of our current and future research

# Professional Athletes

- U.S. DOL BLS “Athletes and Sports Competitors”
- Job task: participate in organized, officiated sporting events to entertain spectators
- Work environment: “Athletes and sports competitors often work irregular hours, including evenings, weekends, and holidays. They usually work more than 40 hours a week for several months during their particular sports season. They may be exposed to all weather conditions.”

# Professional Athletes

- Very few athletes become paid professional athletes
- “And when they do, professional athletes often have short careers with little job security”
- Athletes who play a contact sport, such as football or hockey, are highly susceptible to injuries
- No mention on BLS site of non-contact sports, little attention in research

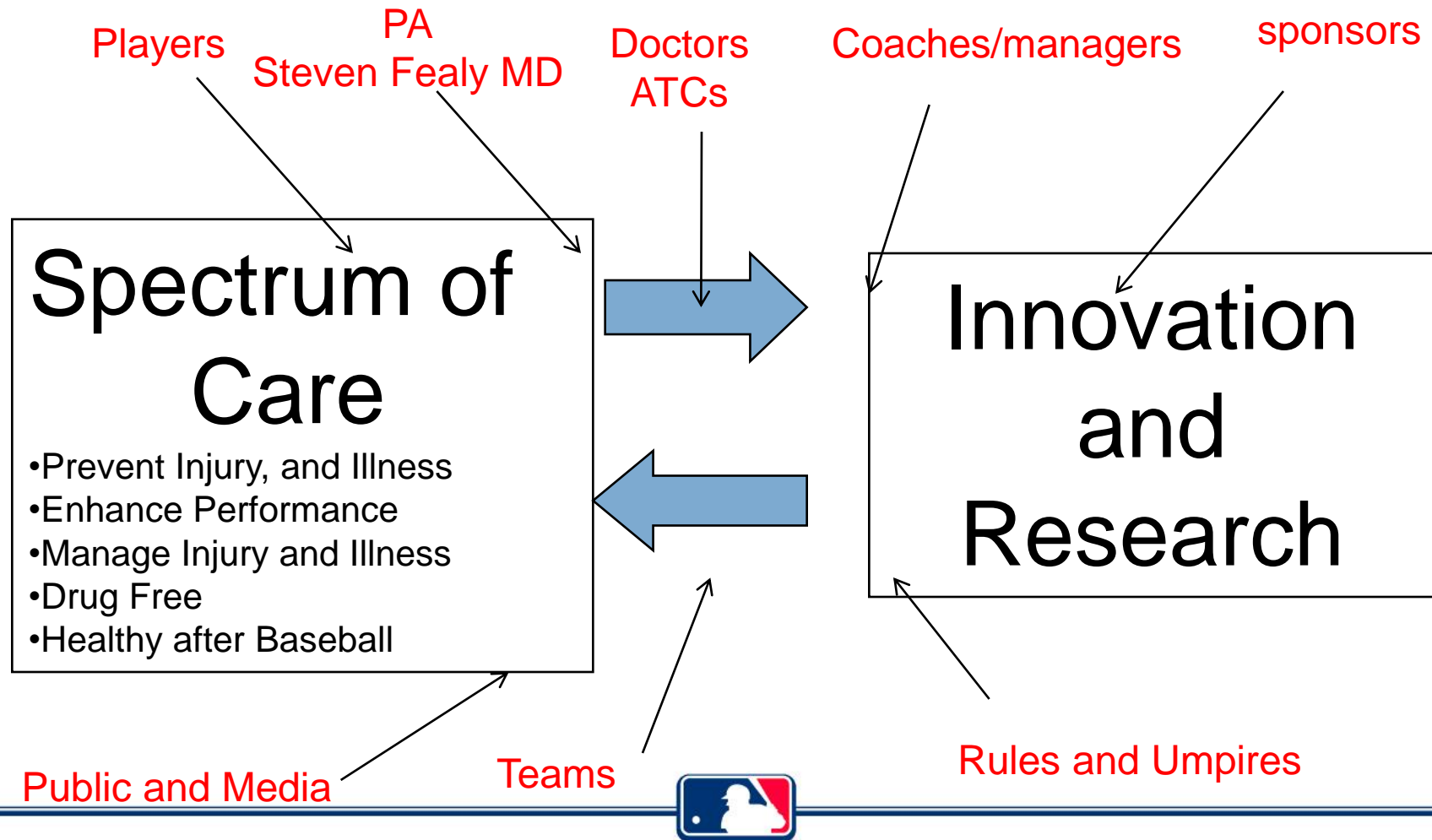
# JHU/MLB Partnership

- In 2009 MLB referred to JHCIRP
- Relationship building!
- Increased attention to NFL
- Interested in our:
  - Our prior work
  - My work: parallels to occupational injury research (e.g., multiple sites ~ multiple teams)
  - Adjunct faculty with expertise in MLB



MLB Baseball  
Medical Assessment and Research Center  
*For the Safety and Health of the player*

## Stakeholders





## **BMARC Team**

- Office of the Commissioner supports personal time on BMARC
- Lead: Bert Mandelbaum, MD
- Co-lead: Gary Green, MD
- MLBPA: Steven Fealy, MD
- Epi/Stats Core:
  - PI: Keshia Pollack, PhD, MPH
  - Co-I: Frank Curriero, PhD
- Plus many others working on specific projects







## **Population: U.S. Professional Baseball**

- Major and Minor Leagues: 7,500 players; 6,500 active at any given time
- Major Leagues: 30 Clubs, play 162 games in 183 calendar days; 25 active players on the roster for a total of 750 active players
- Minor Leagues – over 200 Clubs, each affiliated with a Major League Club; seasons 80 days for low-levels to 150 days for AAA

# Population: U.S. Professional Baseball

- 25-man roster; active roster
  - 25 players who are playing for their Major League team.
  - They are the starting eight position players, pitchers, and reserve players on the team.
- 40-man roster
  - Includes active roster
  - Players who dress in uniform and are the only ones who may take the field in a game at any time
  - Additional 15 players can be optioned to the Minors

## **Injury Surveillance: Disabled List (DL)**

- Teams remove their injured players from the roster in order to summon healthy players; opens up a spot on active roster
- 15-day or the 60-day DL, usually depending on the severity and/or recovery time of the injury
- A player may be shifted from the 15-day to the 60-day DL at any time, but not vice-versa
- The player may not rejoin the team until 15 or 60 days has elapsed; however, a player's time on the DL may exceed the specified number of days
- Limitations



## **Electronic Medical Records (EMR)**

- Implemented in 2010; web-based EMR system, linked to MLBs electronic baseball info system
- Allowing for roster changes to be made automatically, which in turn allows for easy transfer of medical records as players move between and within organizations.
- Entry of data for each player on a Club's roster by the certified athletic trainers (ATCs) on all injuries, illnesses, and preventative events-baseball and non-baseball events as their medical record



## EMR

- These events included any injury and physical complaint sustained by a player that affects or limits participation in any aspect of baseball-related activity (e.g., game, practice, warm up, conditioning, weight training)
- All players provide their consent for their records to be included in the EMR system



# HITS

- Health and Injury Tracking System (HITS) is a centralized database containing the de-identified medical data from the EMR system
- The data available in the HITS system describe only injuries that result in lost time for a player
- The data items for these injuries consist of information gathered at the time of injury (e.g., diagnosis, body part, activity, location, etc.)

# Data Linkage

- Can link deterministically
  - EMR (diagnostic metrics)
  - HITS
  - Performance data (# throws, hits)
  - Exposure data (games played, # times to bat, etc.)
- Studies must be cleared by BMARC, Office of the Commissioner, and the MLBPA
- All human subjects via the Johns Hopkins Bloomberg School of Public Health IRB





## Injury Surveillance: Overall Data

### Event by Level of Play

	2011	2012
MLB	6,516	6,992
Minor	22,378	23,343

### Event by Type

	2011	2012
Injury/Accident	13,507	14,714
Illness	2,803	3,294
Preventive	12,684	12,394
Total	28,994	30,402

\*Excludes Unknown Level of Play





# Research Projects

- Organized by body region
  - Descriptive epidemiology
    - Knee
    - Elbow
    - Hip/Groin
    - Hamstring
    - Head (TBI)
  - Prospective cohort study
    - Shoulder and elbow injuries
  - Hamstring intervention study
- Exposure study



## **Future Research: Exposure Study**

- Our Goal: To identify and study health and injury-related issues in baseball, estimate risk, and inform prevention and control strategies
- For sports injury studies, we use:
  - Number of players
  - Athlete-exposures
  - Games played
  - Innings pitched or pitches thrown



# Exposure Study

- Can we do better?
  - Should exposure depend on position and/or activity (batting, fielding, running, other)?
  - What about offensive vs. defensive?
  - Plate appearance vs. at-bats?
  - For pitchers, should we separate starters vs. relievers?
- Objective: get more precise measure of risk



# Exposure Study

- Better assessment of exposure leads to more accurate estimates of risk, which leads to improved assessments of player health
- Baseball is well positioned to study exposure
- The HITS system in place since 2010
- HITS linked to diagnostics and performance metrics
- We have the complete population: identify cases and non-cases (controls)



## Concluding Thoughts on this Work

- Athletes are workers, albeit a specific subset; questions about external validity
- Good example of an academic-private partnership
- Significant role of the Union
- Research ideas from the Clubs and Unions
- Ability to inform prevention and affect policies, programs, and treatment



# **Thank you!**

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