Notes for CDS Class:

Slide 1 Bioinformatics Pipeline

* What parts could be missing from the pipeline?
* How much design is realistic at the beginning of a project?
* Starting from the end of the pipeline

Slide 2 Dissemination

* How important is thinking about dissemination at the beginning of a project?
* What factors do you think need to be considered?
  + No right answers, brainstorming is important, multiple possibilities could be used for different hospitals
  + Think beyond immediate needs for generalization
* What are possible ways of disseminating results

Slide 3 What is CDS?

* A system to link clinical information to clinical decisions
  + Your definitions?
* Three definitions
  + What do you think about each definition?
  + Is CDS useful?

Slide 4 Five Rights of CDS

* Right information
  + Evidence- based (what if there is no evidence?)
  + Amount of information
    - Don’t include too little to be vague
      * The patient has an APPROVE score of 0.33
    - Don’t include too much
      * The patient’s history leading to an APPROVE score of 0.33
  + Be actionable
* Right people
  + Actions must be possible to meaningful to the recipient
  + This is important everyone should see it!
* Right format
  + Passive vs. active alert
  + Non-alert based
    - Checklists
    - Patient self-assessment forms
    - Med admin form that tracks missing doses
    - Referral forms that automatically pass information along
    - Recommender systems
    - Guided does algorithms
    - Automated drug interaction warnings (immediate alert)
* Right channel
  + EHR
  + Other information systems like PACS
  + Online systems
* Right time
  + Alerting a physician to a medication interaction after the order is filled
  + Delivering many alerts all at once
  + Others?

Slide 5 A CDS Example

* BPAs
  + Delivered through EMR
    - Passive and active in EMR, interrupt workflow and force response (sometimes)
  + Clinical intent
    - Built in response to a problem or to force a change in clinical behavior
  + Require response
    - Forces a response from the recipient
  + Trigger actions and display
    - How should BPAs be filtered?

Slide 6 Current BPA Framework

* Is this correct?
* What data should be included?

Slide 7 Current BPA Framework 2

* Problems of filtering and getting retooling BPAs

Slide 8 Current BPA Framework 3

* Right information
  + Is the right information being given in the current system
* Right people
  + Filtering does not currently work
    - Medical Students get alerts
    - Yoga Instructor
    - Alerts going to everyone
  + Who should receive alert
* Right format
  + Is an alert the right format for all alerts?
  + When are alerts a poor choice?
  + What other formats could be used: for example:
    - Discharge paperwork
* Right channels
  + Many are delivered through the EMR
  + Other routes, consider legal considerations
* Right time
  + Altogether, how to overcome problem of timely delivery but not overwhelming

Slide 9 Anatomy of a BPA

* Alert is triggered by criteria
* Alert trigger criteria determines if alert is triggered
* Filtering rules control the recipients and location to determine
  + These control who and where (facility, department, and specialty)
* What about non-static criteria
* What is required by BPA
  + First part displayed to the end user
  + Sets reqs for information and response
* Response is what the end user does

Slide 10 BPA Lifecycle

* What problems can be seen
  + Wrong time or place
  + Discord
  + Wrong provider
  + Others?

Slide 11 BPA Lifecycle problems

* No additional notes

Slide 12 Avg. BPA interactions per Provider

* Why is the yoga therapist getting alerts?!
* Why are nursing and medical students getting BPAs, are they being trained to ignore them?
* Many different alert types are non-specific?
* Proliferation of alerts, especially for LPNs
* Midwife is highly alerted

Slide 13 BPA Types per provider

* Doctors don’t have the most but they have the most diverse
* Why does unspecified provider get any? Possible error in the data?
* Midwives keep getting the same alerts over and over again

Slide 14 Responses to BPAs

* What is the normal response to a BPA?
  + Do nothing
  + Apply HM modifiers
* What is the effectiveness of BPAs

Slide 15 Responses to BPAs 2

* Some BPAs always or almost always get a response
* While most never get a response
* Many BPAs are not useful in their current form while some are highly effective?
  + Might be impossible to ignore or they are easy to satisfy
* Bifurcation among the rest
  + Meaning?

Slide 16 Responses to BPAs 3

* Who responded to BPAs?
  + Nurses!
  + Residents and physicians

Slide 17 Responses to BPAs 4

* Are they any positive interactions with this BPA?

Slide 18 Building a better BPA

Framework for discussion:

Right information

Right people

Right format

Right channels

Right time

Considering: Method, Testing, Data needed and System maintenance