Reducing opioid prescribing through better design of health information technology

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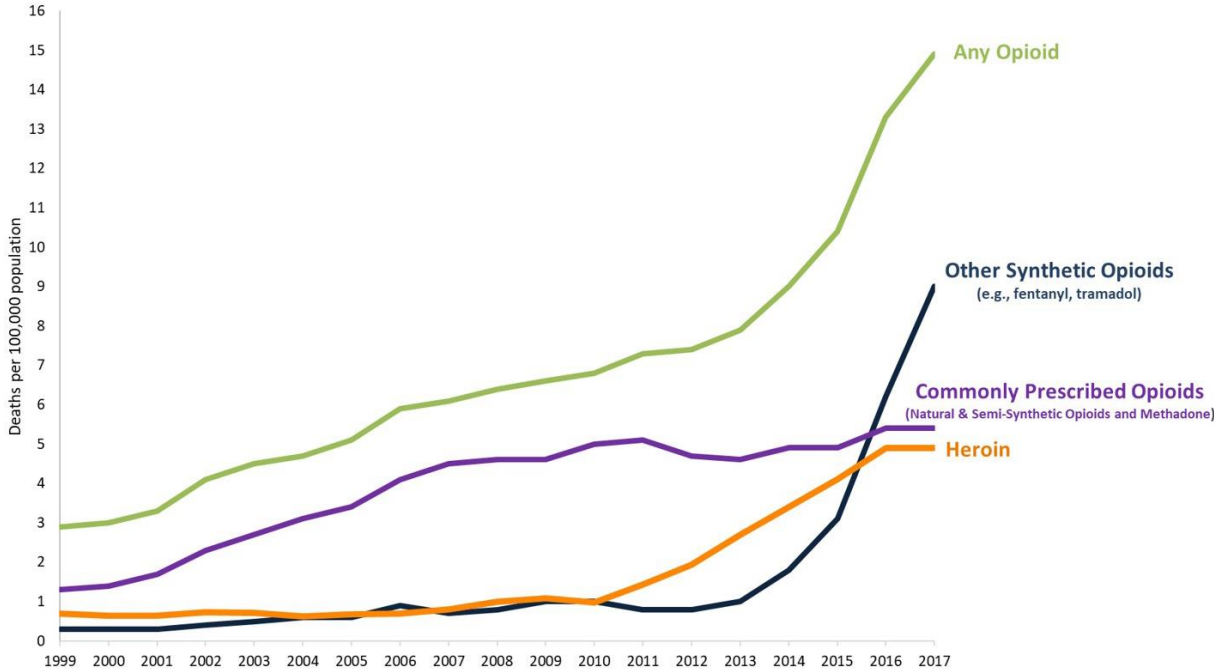Yuming Wang, MD
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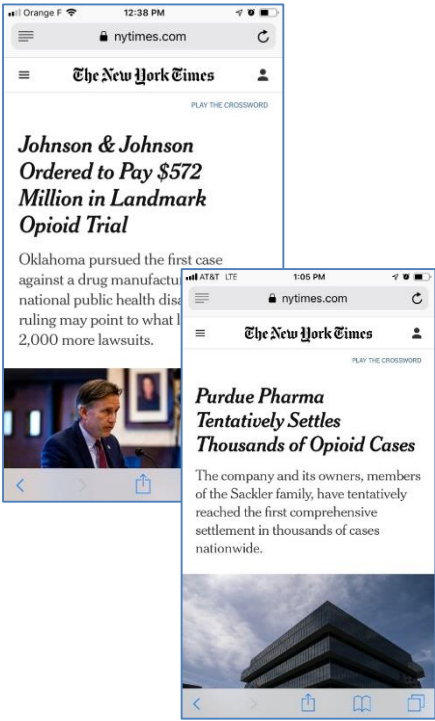Chenghuiyuan Xu, MS
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THE INSTITUTE FOR FAMILY HEALTH

Opioid overdose is now a leading cause of death in the United States

Deaths per 100,000 population

- **Any Opioid**
- **Other Synthetic Opioids** (e.g., fentanyl, tramadol)
- **Commonly Prescribed Opioids** (Natural & Semi-Synthetic Opioids and Methadone)
- **Heroin**

SOURCE: CDC/NCHS, National Vital Statistics System, Mortality. CDC WONDER, Atlanta, GA: US Department of Health and Human Services, CDC; 2018. https://wonder.cdc.gov/.

www.cdc.gov
Your Source for Credible Health Information

Johnson & Johnson Ordered to Pay $572 Million in Landmark Opioid Trial

Oklahoma pursued the first case against a drug manufactu... national public health disa... ruling may point to what l... 2,000 more lawsuits.

Purdue Pharma Tentatively Settles Thousands of Opioid Cases

The company and its owners, members of the Sackler family, have tentatively reached the first comprehensive settlement in thousands of cases nationwide.

One of the many contributors to the opioid epidemic has been easy access to prescription opioids

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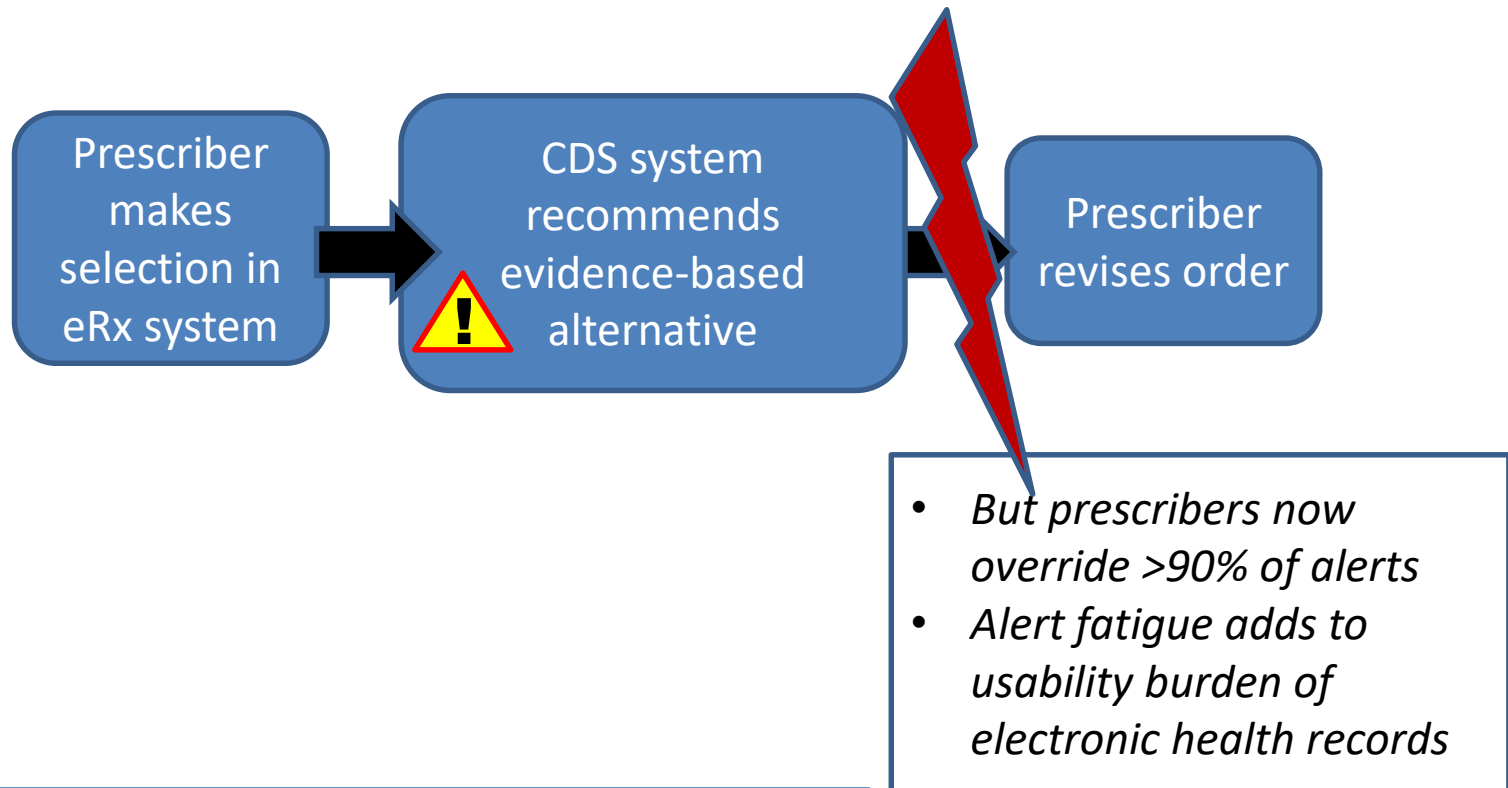
Office-based Physician Electronic Health Record Adoption

EHR adoption has more than doubled since 2008

2017

Legend: Any EHR — Basic EHR — Certified EHR
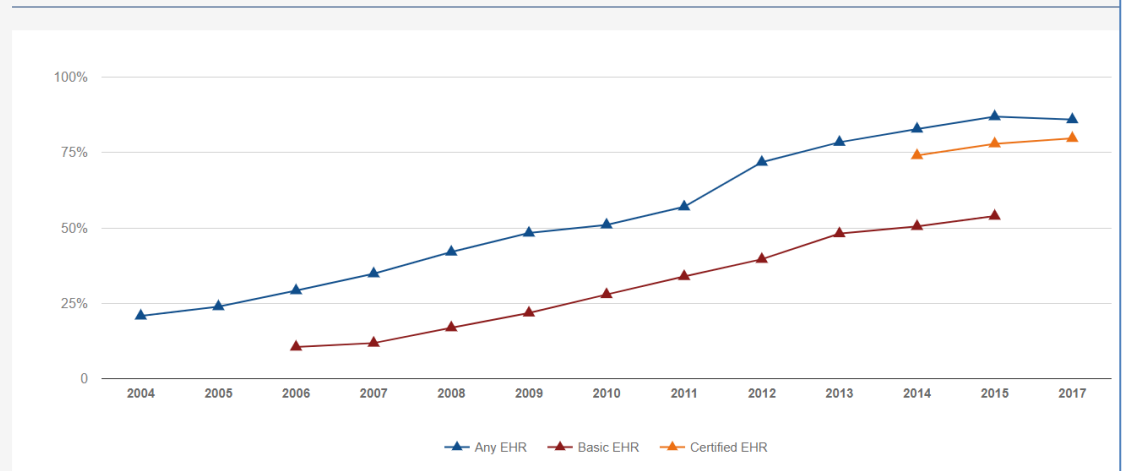
The health information technology community often tries to design sophisticated clinical decision support (CDS) to improve prescribing choices

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┌─────────────────┐      ┌─────────────────────┐      ┌─────────────────┐
│   Prescriber    │      │    CDS system       │      │   Prescriber    │
│   makes         │ ───► │   recommends        │ ───► │   revises order │
│   selection in  │      │   evidence-based    │      │                 │
│   eRx system    │      │   alternative ⚠     │      │                 │
└─────────────────┘      └─────────────────────┘      └─────────────────┘
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- *But prescribers now override >90% of alerts*
- *Alert fatigue adds to usability burden of electronic health records*

Gardner et al. Physician stress and burnout: the impact of health information technology. *JAMIA* 2019.
https://academic.oup.com/jamia/article/26/2/106/5230918

Instead, we decided to exploit the power of the <u>default option</u>, which has a strong but unobtrusive effect on decisions
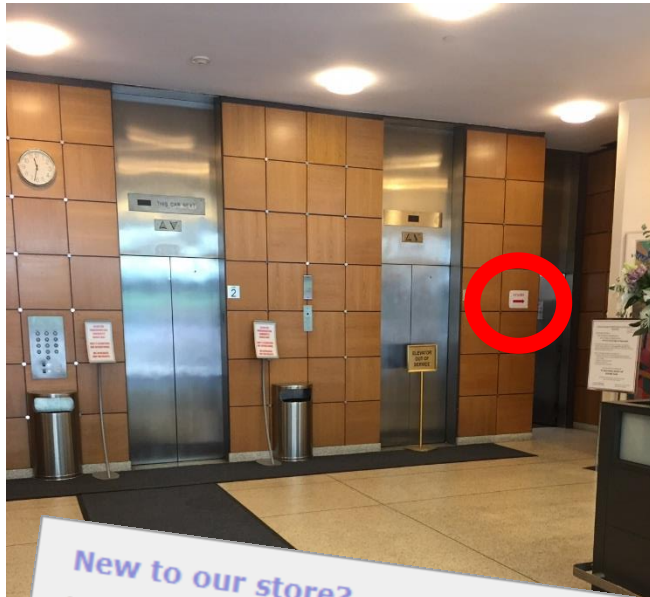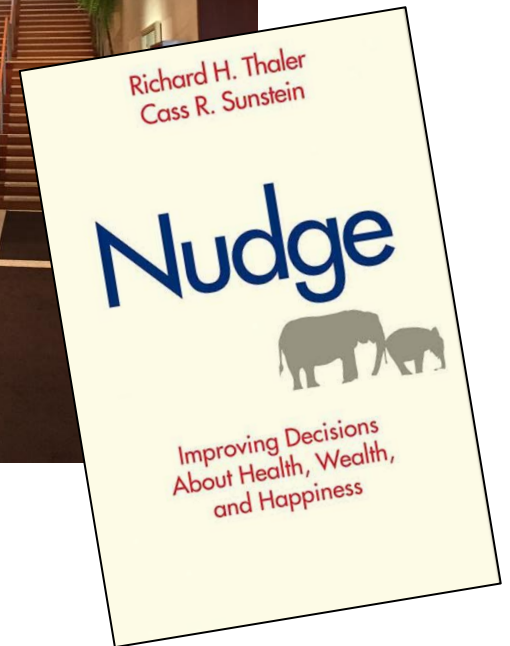
Typical e-prescribing order entry:

1. Physician enters drug name in new order

2. Physician then selects quantity, frequency, etc

Our innovation:

1. Physician enters drug name in new order

2. If drug = short-acting opioid:
   - Order **autopopulates** with CDC-recommended minimum for opioid-naive patients

3. Physician can easily overwrite

Rx

Pharmacy: [Click to Select and Send]

Oxycodone 15 mg oral tablet

SIG: *One tab every 6 hours*

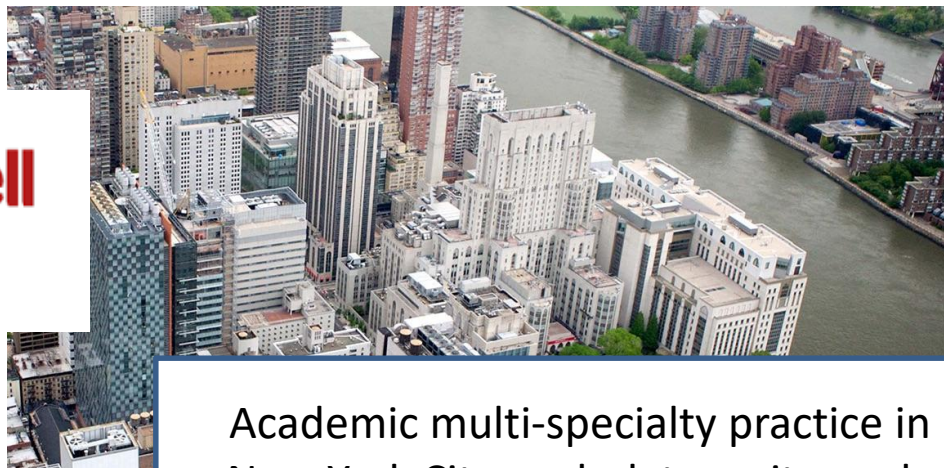Quantity: *12* Tablet Days Supply: *3*

Refills: *0* Substitution: ✓

Instructions for Pharmacist:

1st Diagnosis:

2nd Diagnosis:

Academic multi-specialty practice in New York City, ambulatory sites only

Federally qualified health center, >30 sites in and around New York City

Among Weill Cornell physicians, we saw several years of increasing adoption of CDC-recommended prescribing practices, followed by an abrupt increase when we implemented the innovation
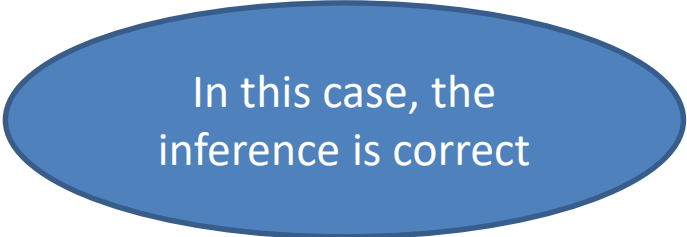
The intervention was also associated with a lower proportion of high-quantity prescriptions (more than 7 days' supply)

However, the innovation had little effect at the Institute for Family Health, where providers were already much more likely to follow CDC-recommended prescribing practices for new patients

Why does the default option affect our choices?

1. **Effort** – Staying with the default is easier than switching

2. **Endorsement** – Decision-makers infer that the default option is endorsed by the authority who set up the social or technical system

In this case, the inference is correct

Dinner et al, *J Exp Psych* 2011

In this project:

A redesign of the e-prescribing order form strongly affected prescribing choices without interrupting workflow

There was a ceiling effect; the intervention had no effect in an organization where congruence with recommended prescribing practices was already high

But even in this organization, the intervention reduced the number of clicks needed to write a prescription for the majority of prescribers

It's virtually unheard-of for informatics innovations to **reduce** keystrokes

Weill Cornell: 50% increase in congruent prescriptions with 40% decrease in keystrokes

IFH: No difference in congruent prescriptions but a 60% decrease in keystrokes

Alternatives to traditional clinical decision support can encourage guideline-congruent prescribing while reducing EHR burden

We 'nudged' providers to prescribe several hundred fewer high-quantity opioid prescriptions, <u>and</u> made their job easier

There seems to be an upper limit on how far 'nudges' can change prescribing choices

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Thank you!

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