

**UC San Diego**  
**SCHOOL OF MEDICINE**

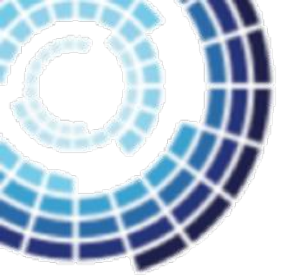
**Department of  
BioMedical Informatics**

Gabriela Betancourt

# Revamping UCSD's Antibiotic time-out workflow

This research was supported by grant T15LM011271





# About Me

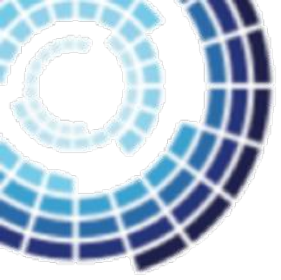
- Health informatics Graduate Student with the University of San Diego.
- UC Irvine School of Biological Sciences Alumni
- Previously employed by a non-profit, Vista Community Clinic, as a Clinical informatics Analyst
- Loves dogs (I will baby sit your dog for free) & Yoga





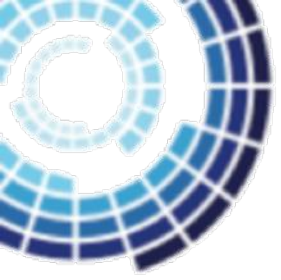
# Outline

- Defining an antibiotic time-out
- Rationale behind the process
- UCSD's Current workflow
- Interviews
- Identification of the barriers
- Proposal of new workflow
- Review of Qualitative Results
- Future work



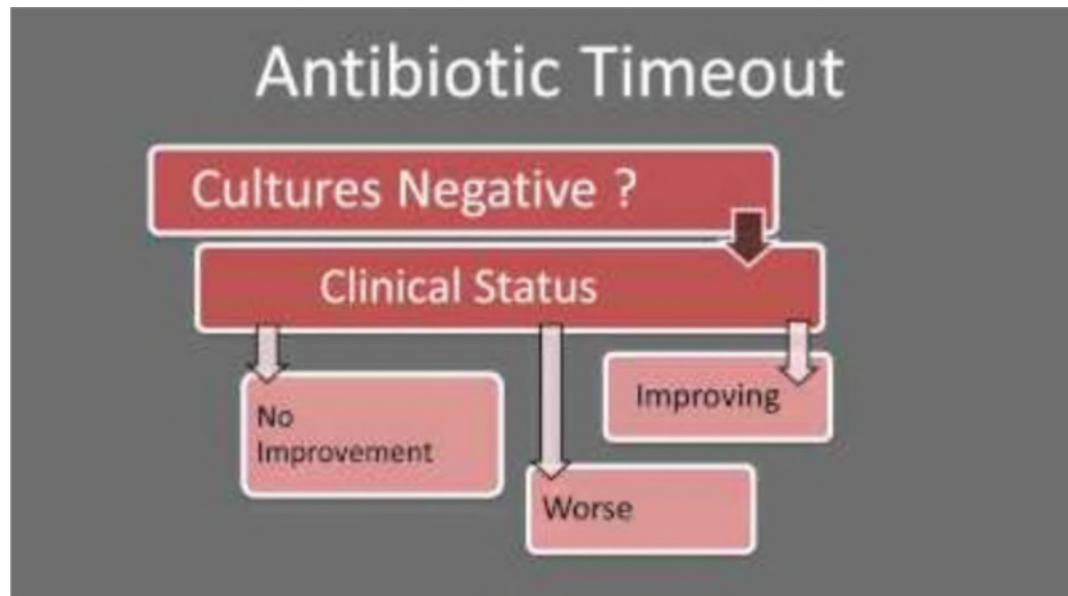
# Project team

- Gabriela Betancourt
- Robert El-Kareh, MD, MPH, MS
- Shira Abeles, MD
  - Director of Antibiotic Stewardship at UCSD
- Nina Haste, Pharm.D

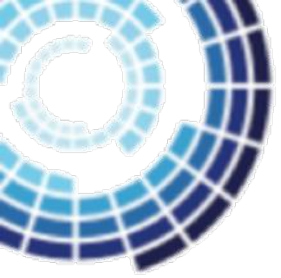


# What is an Antibiotic Time-Out?

A formalized process used to reassess the use of empiric antibiotics within a given time frame.



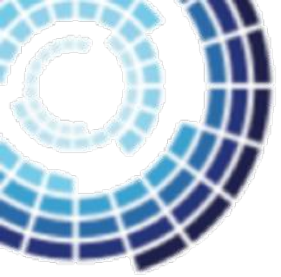
Advocated by the CDC and the Joint Commission



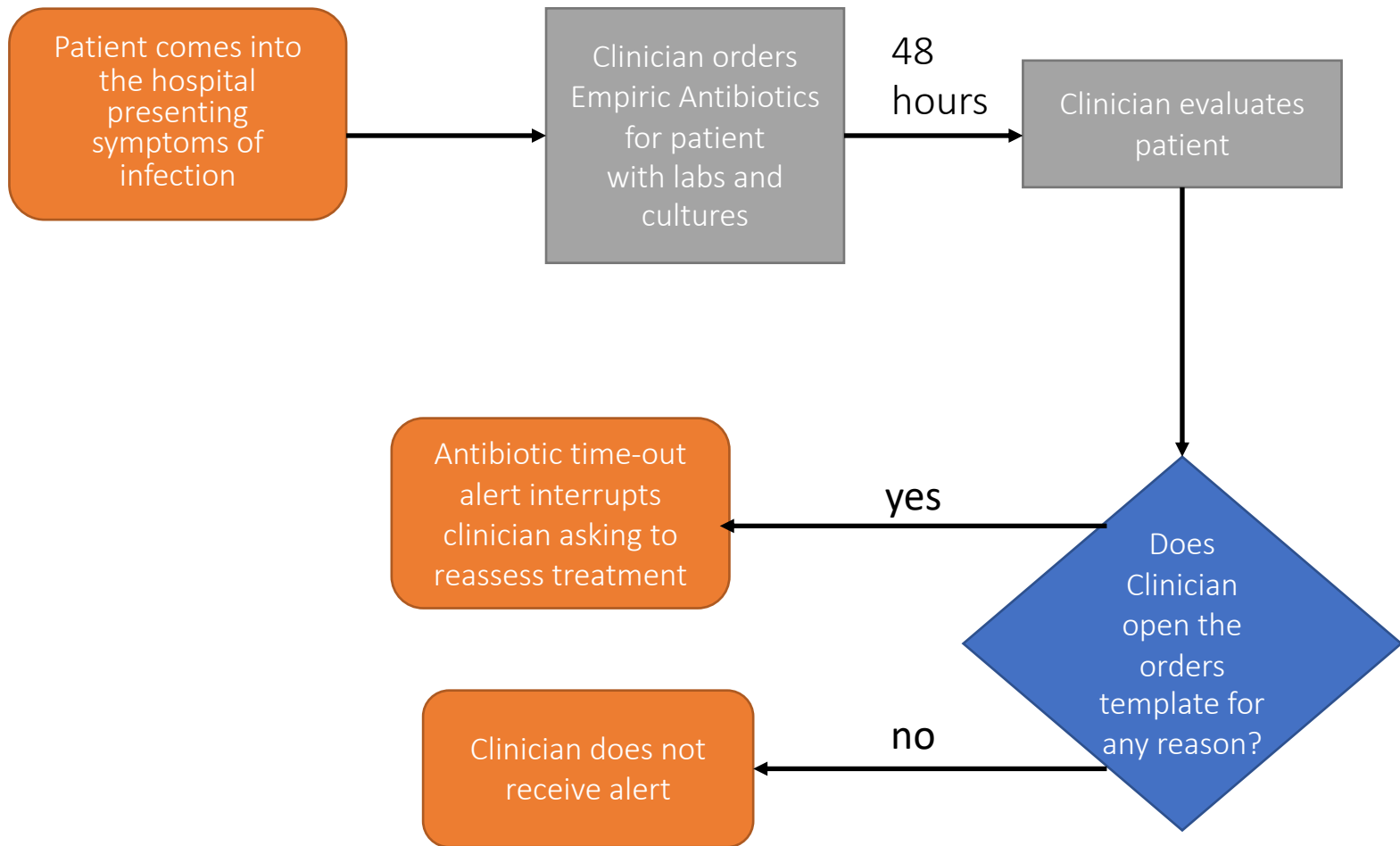
# Rationale behind the process

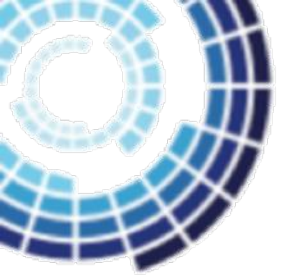
- Reduce the spread of resistant bacteria
- Provide quality care & improve patient outcomes
- Reduce waste
- Simplify the process for clinicians



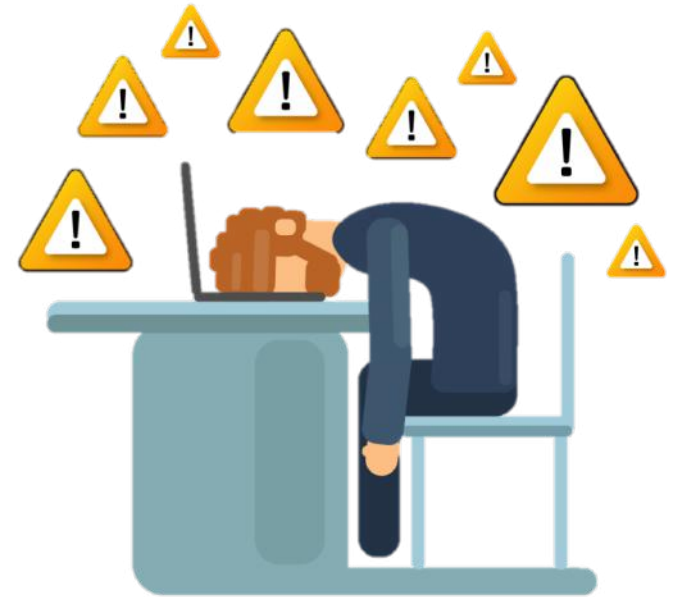
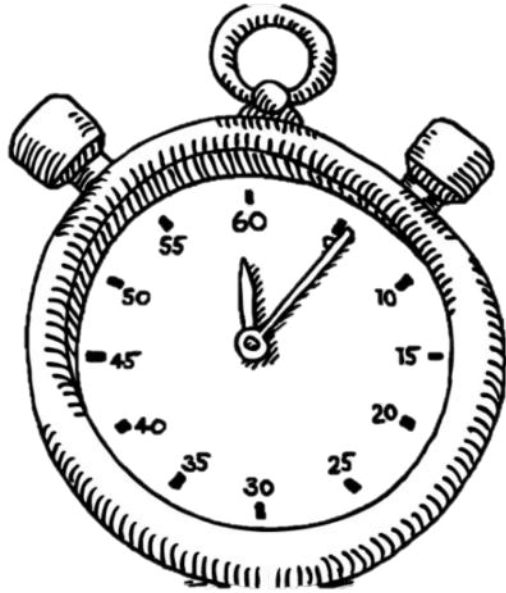


# UCSD's Current Design of ATO





# Identified barriers that make this process inefficient

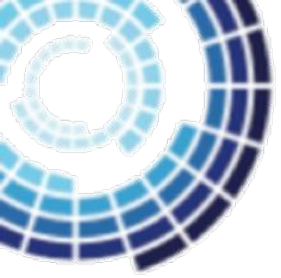






# Surveyed other ATO designs

- Literature search
  - PubMed
- Online presentations / posters
  - Stanford University
  - University of Chicago

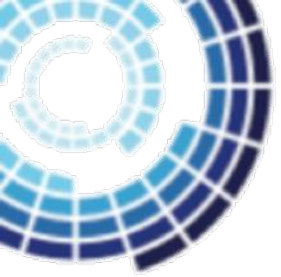


# Interviews

- 1 hospitalist, 1 surgeon, 1 ophthalmologist, 3 medical interns, 1 4<sup>th</sup> year medical student



With this group, the current workflow was assessed, and their opinion was asked in regards to the proposed workflow.



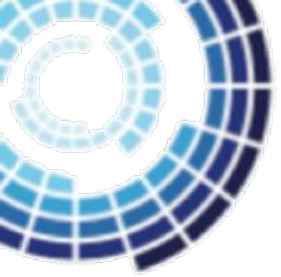
# Proposal of new workflow

Peds ID Shared 7 Patients Refreshed just now Search All My Lists

Room/Bc	Patient Name	MRN	Age/Sex	Weight (kg)	Anticipat Discharg Date	Admissic Date	Isolation Status	New Rslt Flag	New Note	Attending	FCP	RN	48hr Review TDM
	Jane Doe			1.43	8/20/2020					RN, MD	6361, Peds NICU - First Contact Provider	Rn 1	
	John Smith			33.8	8/20/2020		Contact-MDRO, Contact, Droplet			RN, MD	7428, PICU FELLOW - First Contact Provider	Rn 2	

The patient list column was edited to have a passive visual trigger after an antibiotic was prescribed.

Konold V.J.L., Kumar M., Choksi A., Liebovitz D., Nguyen C.T, Pettit N.N., Bhagat P., Pisano J., (2017) Evaluation of an EHR Reporting Tool to Support and Assess Use of the 48 Hour Antibiotic Timeout *University of Chicago Medicine*



# Antibiotic Time-out Workspace

After 48 hours, the timeout would populate. The time-out workspace included:

- WBC count
- Temperature
- CRP and ESR
- Creatinine
- Current antibiotics
- Microbiology results
- Antibiotics, start/stop date

**Patient Summary**

48hrs Antibiotic Review | Encounter VS | NICU | Microbiology Results | Unresulted Labs | WALDO | Mom Delivery Report | More | 48hrs Antibiotic Review

CC15-K539-A

>>>>CLICK TO THE RIGHT (Document Scoring System Review) TO MARK PATIENT AS REVIEWED>>>> : 300  
48 hour review: 300 points (Up 300 points since last review) - [Last updated: 01/14/19 0139] # Document Scoring System Review # [Summary] Comment

\* ID Sign Out - Jump to Result Review #

ID Vitals and Labs

Last 103 hours

37.2

35.9

20.2

0.6

24 Hour Max

36.5 (97.7) Temp °C (°F)  
01/14 0050

Most Recent

20.2 ^ WBC 10<sup>3</sup>/uL  
01/11 2240

0.6 Creatinine mg/dL  
01/11 2240

Anti-Infectives

Medication

cefepime (MAXIPIME) 1 g in sodium chloride 0.9% 50 mL (MiniBag)

Dose/Rate, Route, Frequency

1 g, IV, ONCE

Last Action

Ordered

Anti-infectives Active Meds

(From admission, onward)

Collapse | Hide

Start	Stop	Status	Route	Frequency	Ordered
01/14/19 1400	01/15 0159	Sent	IV	ONCE	01/14/19 0631

Question: Is this for an adult or a pediatric patient?  
Answer: Pediatric

Please select one of the following: (Pediatric Approval needed, page peds ID fee/line on call)

Select Intended Duration: 3-7 days

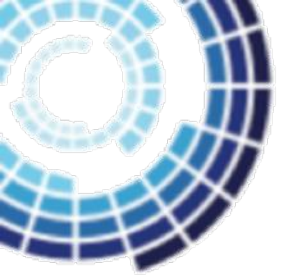
Microbiology Results

Procedure	Component	Value	Units	Date/Time
Blood Culture (Bacterial & Fungal) [175611029]				Collected: 01/11/19 2329 Updated: 01/14/19 0748

Specimen: Blood

Specimen Description

--  
BLOOD



# UCSD's Fever/Antibiotic Curve

Print group: Print Group 461005 - Uc Rx Antimicrobials

## Antimicrobial Meds

[Comment](#) | [Hide](#)

(From admission, onward)

Start Date	Start Time	Medication	Stop Status	Route	Frequency
		nitrofurantoin monohydrate (MACROBID) capsule 100 mg	Discontinue	PO	2 TIMES DAILY

Print Group 22246620 - Ip Accordion Fever/antibiotics

## Fever/Antibiotics

Go to now

Friday 0000 - Today 1559

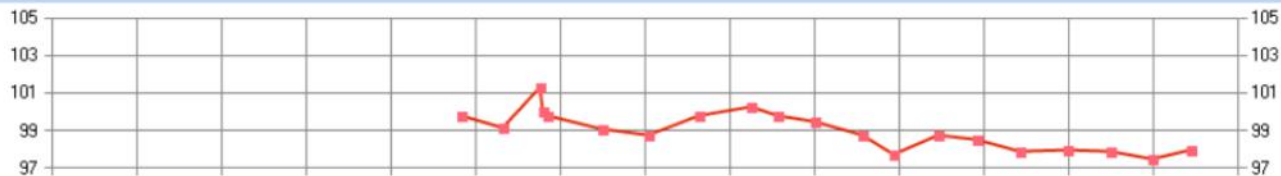
24 Hrs 12 Hrs 8 Hrs 6 hrs 4 Hrs 1 Hr All

8 Hrs: ◀

00-08 08-16 16-00 00-08 08-16 16-00 00-08 08-16 16-00 00-08 08-16 16-00 00-08 08-16

### Temperature

Temperature (°F)



### Anti-pyretics

Acetaminophen (mg)

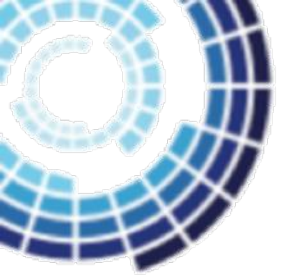
Aspirin (mg)

650	650	650	650	650	650	650	650	650	Acetamin...
			81			81			Aspirin (...)

### WBC Count

WBC count (k)

25



# Template used to document decision

Scoring System Review Notes

(Please select action:202)

1. Continue therapy, cultures pending
2. Continue therapy, directed therapy
3. Continue therapy, empiric course for suspected infection, cultures negative
4. Discontinue therapy, antibiotic therapy no longer needed
5. Discontinue therapy, alternative agent selected
6. Antibiotic(s) for prophylaxis
7. Other: \_\_\_\_\_

Click on the arrow buttons, double click selection(s), you may free text additional details in space below if needed, and click on accept when done

Mark patient as reviewed?

Copy to Note

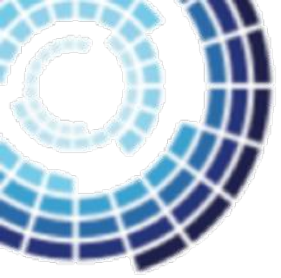
Value: 20.00

Time spent: 10

Accept Cancel

In this template, Providers would select an option from the drop-down list in correspondence to the action being taken

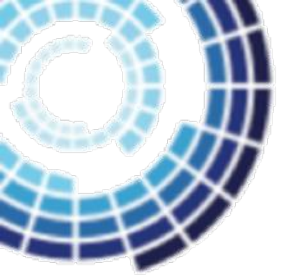
Konold V.J.L., Kumar M., Choksi A., Liebovitz D., Nguyen C.T, Pettit N.N., Bhagat P., Pisano J., (2017) Evaluation of an EHR Reporting Tool to Support and Assess Use of the 48 Hour Antibiotic Timeout *University of Chicago Medicine*



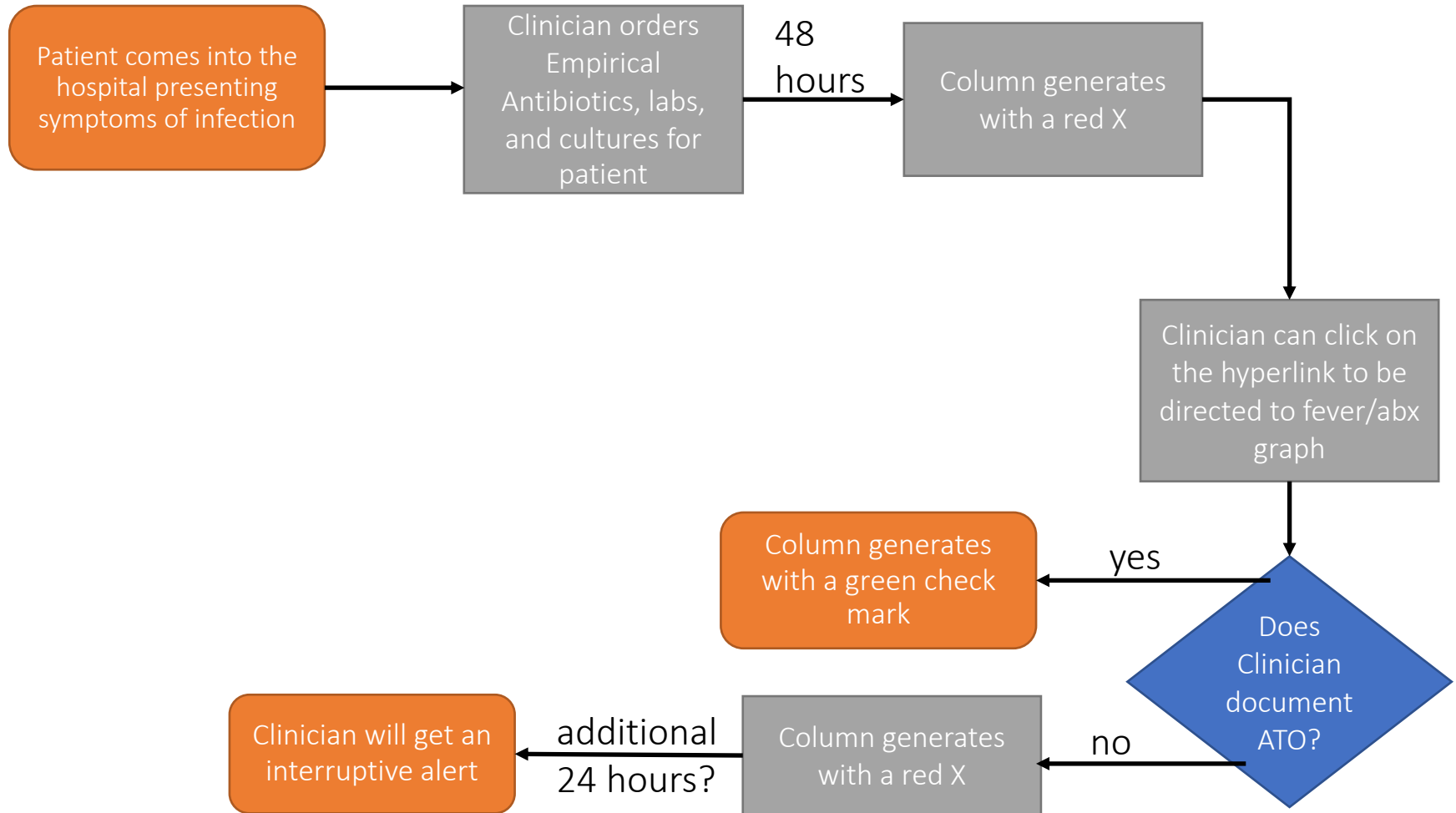
# Responses

Common themes in regards to the proposed workflow:

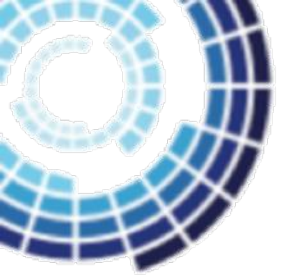
1. Appreciate the passiveness!
2. Additional CDS for clinicians!
3. Not interruptive towards the clinicians workflow
4. Will need to provide further education to staff to be able to understand the benefits of the column



# Proposed workflow







# Future work

- Pilot the workflow on hospital medicine using clinician champions
- Determine whether 48 hours is right time frame of passive indicator on the patient column
  - Based on times to culture results
- Design an interruptive guardrail alert as a back-up
- Collaboration planned with the University of Chicago
- If successful, expand the workflow to all departments

# UC San Diego

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## SCHOOL OF MEDICINE

### Department of BioMedical Informatics

#### Acknowledgements

- Project team
- Victoria J.L. Konald, MD
- Interviewees
- NLM



Questions?