

Data Driven Order Set Design in Pediatric Appendicitis



PRESENTER:
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BACKGROUND:

- Order sets = form of clinical decision support
- No evidence for optimal approach to design
- Order set deficiencies:
 - Incorrect or dated components
 - Poor implementation
 - Poorly design default settings
 - Lack of workflow cohesion
 - Insufficient optimization or specificity

- **Aim: identify the optimal approach to order set creation utilizing multiple data sources**

STUDY PHASES

1. Preliminary Data Analysis
2. Order Set Design
3. Implementation (go-live: 3/20/24)
4. Post-Implementation Analysis (ongoing)

DATA SOURCES

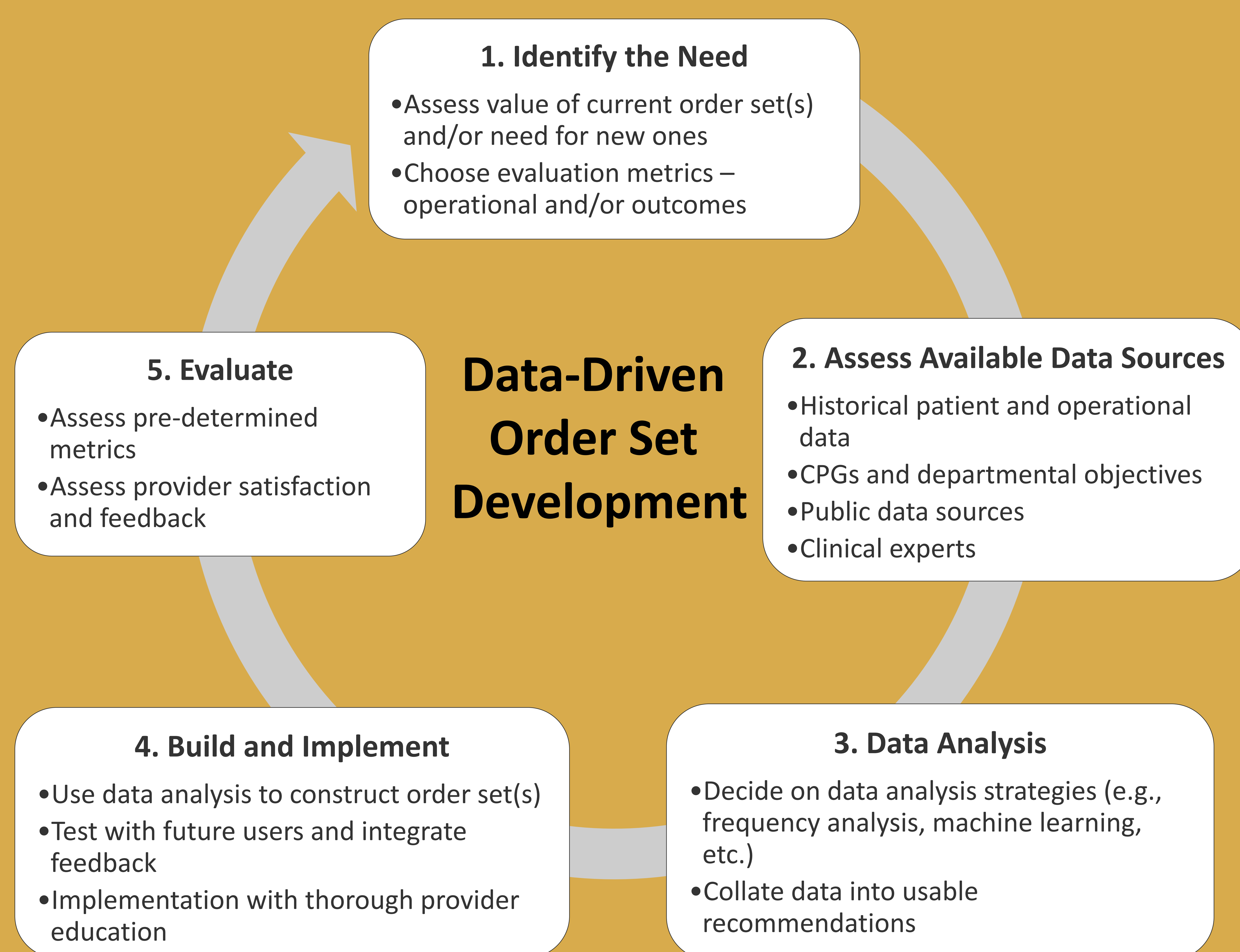
- Historical ordering patterns (Epic data)
- Analysis of pre-existing order sets
- Institutional clinical practice guidelines
- ChatGPT

HIGHLIGHTS

- Population (laparoscopic appendectomy):
 - 2,477 patients pre-implementation
 - 209 patients post-implementation and counting
- >270,000 historical electronic orders analyzed
 - 873 unique order types
- Post-implementation: decreased time from surgical consult to antibiotics
 - 3.00 hours to 2.16 hours, $p = 0.029$

Data Source	Relevance Score	Order Rating Mean (SD)
Historical orders	100.0%	4.34 (0.66)
Order sets	85.7%	4.13 (0.73)
CPGs	70.6%	4.50 (0.64)
ChatGPT	53.1%	4.11 (0.76)

Data-driven methods for electronic order set design can lead to **greater efficiency**, **increased provider satisfaction**, and **improved patient outcomes**.



Order Sets:

1. Appendicitis Pre-Operative Admission Orders
2. Appendicitis Post-Operative and Discharge Orders



Order Sets

Order Sets

Orders

Pediatric Appendicitis Pre-op Admission Orders

- Appendicitis Evaluation Algorithm
- Appendicitis Non-operative Management Protocol
- Order Set Feedback Form

Admission

- Admit to Inpatient - used when the procedure is inpatient only or the expected length of
- Initiate Observation Status
 - Service: Pediatric General Surgery
 - Pediatric General Surgery Team: PEDS GEN SURG
 - Are they the primary team? Yes
 - Diagnosis: Acute appendicitis
 - Future Attending Provider: LOVVORN III, HAROLD N
 - Admitting Physician: LOVVORN III, HAROLD N
 - Level of Care (Level of care does not determine telemetry, pulse oximetry, vitals frequency or other mon

Case Request

Case Request - Laparoscopic Appendectomy

- Case request operating room: LAPAROSCOPIC APPENDECTOMY (44970)
 - Location: VUMC VCH3 OR, Date: 4/25/2024
 - Panel 1
 - LAPAROSCOPIC APPENDECTOMY (44970), Laterality: N/A, Anesthesia Type: General, CPT(R): PR LAP APP
 - Add On Case: Yes
 - Postop Destination: Med/Surg Floor
 - Paralysis Requested: Yes
 - Service: General Surgery
 - Latex Allergy: No

Diet: NPO

Diet: NPO

- NPO Diet Nothing by Mouth: Medical Indications: NPO Effective Immediately
 - Diet effective now, Starting today at 0922, Until Specified
 - NPO: Nothing by Mouth
 - Medical Indications: NPO Effective Immediately
- NPO at midnight
 - Diet effective midnight, Starting 4/25/24
- Clear liquid diet
 - Diet effective now, Starting 4/25/24

Antibiotics

Pre-op Antibiotics

Antibiotics

Most recent recorded (actual) weight

Patient Weight

04/25/24 23.7 kg (52 lb 4 oz) (75 %, Z= 0.68)*

* Growth percentiles are based on CDC (Boys, 2-20 Years) data.

Allergies

No Known Allergies

- No Penicillin Allergy
- piperacillin-tazobactam (ZOSYN) injection
 - piperacillin-tazobactam (ZOSYN) injection : less than 40 kg
 - piperacillin-tazobactam (ZOSYN) (67.5 mg/mL) 2 g in D5W 29.6 mL
 - 2 g (rounded from 1.9997 g = 75 mg/kg of piperacillin x 23.7 kg), intraVENOUS, Administ
 - Infiltration/Extravasation Risk = Yellow (Irritant)
 - Indication: Intra-abdominal/Gastrointestinal infection
 - Indications: infectious disease of abdomen
 - piperacillin-tazobactam (ZOSYN) for pt weight greater than / equal to 40 kg
 - 3.375 g, intraVENOUS, Every 6 hours scheduled, Starting 4/25/24, for 5 days Indications: i
 - Penicillin Allergic Patients : Ciprofloxacin (CIPRO) + Metronidazole (FLAGYL)

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