Presenters

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CIVHC

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Our Mission
To equip partners and communities in Colorado and across the nation with the resources, services and unbiased data needed to improve health and health care.

Our Vision
Everyone has the opportunity to be healthy and has access to equitable, affordable, high-quality health care.

We Are
• Non-profit
• Independent and objective
• Service-oriented
Who We Serve

Change Agents

Individuals, communities, or organizations working to lower costs, improve care, and make Colorado healthier.
How We Serve

- Administrator of the Colorado All Payer Claims Database

**Public CO APCD Data**
Identify opportunities for improvement in your community through interactive reports and publications

**Non-Public CO APCD Data**
License data from the most comprehensive claims database in CO to address your specific project needs

- Research & Evaluation Services
- Community Engagement
- Program Focus Areas: Advance Care Planning, Palliative Care
What's in the CO APCD

- Over 1 Billion Claims (2013-2022)
- Over 70% of Covered Lives (medical only, 2021)
- 5.5+ Million Lives*, Including 1M (50%) of self-insured
- 40 Commercial Payers, + Medicaid & Medicare*
- Trend information (2013-Present)

*Reflects 2022 calendar year only

What's not in the CO APCD

- Federal Programs - VA, Tricare, Indian Health Services
- Uninsured and self-pay claims
- Majority of ERISA-based self-insured employers
What is “Low Value Care”?

- Low value care is care in which the potential harm or cost is greater than the benefit to a patient
- Defined principally by Choosing Wisely guidelines
  - Developed by American Board of Internal Medicine Foundation
  - Selected by practicing physicians and medical specialty societies
- Barriers to addressing low value care:
  - Fear of malpractice
  - Perception that patients want or expect tests or medications
  - Lack of information about the patient
  - Financial incentives of fee-for-service reimbursement
Why is Low Value Care Important?

**LOW-VALUE CARE VS HIGH-VALUE CARE**

**EXEMPLARY**

**LOW-VALUE CARE**
- Unneeded diagnostic testing
- Unneeded imaging
- Bloodwork for low-risk surgery
- Use of branded drugs when generics are available
- Elective/unwarranted C-sections

Spending wasted on low-value care is estimated to be between $76 and $101 billion each year.

**HIGH-VALUE CARE**
- Getting a flu shot
- Coordinating care for complex patients
- Cancer screening when appropriate
- Prenatal care
- Eye screening for diabetics

Providing more high-value care could avoid costly care later, saving between $89 and $111 billion each year.

For details on the strategies, go to: [HEALTHCAREVALUEHUB.org/low-vs-high-value-care](http://HEALTHCAREVALUEHUB.org/low-vs-high-value-care)
Examples of Low Value Care Measures

• Pediatric Head CT Scans
  • Low diagnostic yields and high risks

• Imaging Tests for Eye Disease
  • Unnecessary for patients without symptoms of significant disease

• Cardiac Stress Testing
  • Often times unnecessary and therefore wasteful

• Routine General Health Checks
  • Controversial, but unnecessary for people who have no pre-existing conditions
Methods

- Only patients with ‘Sufficient History’ are included
- Geographic data is based on patient’s address, NOT provider
- Different low value care services cause different levels of potential harm
- Spending for low value care results are reported as the allowed amount (plan and patient paid amounts) for the specified services
- Services are classified as ‘wasteful’, ‘likely wasteful’, ‘necessary’, and ‘optimal’
  - We defined low value care as ‘likely wasteful’ and ‘wasteful’ services
Example – Imaging Tests for Eye Disease

Choosing Wisely Guidelines:
- Don’t routinely order imaging tests for patients without symptoms or signs of significant eye disease
- Potential Harm (Low)

Categorization using CO APCD data:
- Optimal - Patients with a claim with an evaluation and management code that also contains a diagnosis of eye disease without a service for advanced eye imaging within one year.
- Necessary - Patients with a service for advanced eye imaging, but also had a specialty code for an ophthalmologist or optometrist visit within 30 days prior to the imaging.
- Likely Wasteful – None.
- Wasteful – Patients with eye imaging tests without a specialty code for an ophthalmologist or optometrist visit within 30 days prior to the imaging.
Statewide Findings

In 2021:

1.9M Low Value Services, resulting in $134M in spending.*

-$47.9M
-$12.4M
-$6.6M
-$6.2M
-$6.0M

The top 5 services accounted for 63% of total low value services spending.

- Inappropriate opioid prescription
- Screening for 25-OH-Vitamin Deficiency
- Prostate Cancer Screening (PSA)
- Imaging Test for Eye Disease
- Coronary Angiography

*All Payer data only includes 6 months of data for Medicare FFS for 2021
### Statewide Top Services

Eighteen Services Account for Over 85% of Total Services and Total Spending for Low Value Care in 2021

<table>
<thead>
<tr>
<th>Cost per Service</th>
<th>Total Spending</th>
</tr>
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<tbody>
<tr>
<td>$44.48</td>
<td>$47.21M</td>
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<tr>
<td>$150.11</td>
<td>$12.42M</td>
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<td>$580.21</td>
<td>$6.62M</td>
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<tr>
<td>$422.06</td>
<td>$6.24M</td>
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<td>$8,799.51</td>
<td>$6.10M</td>
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<tr>
<td>$8,435.78</td>
<td>$5.19M</td>
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<tr>
<td>$792.60</td>
<td>$4.69M</td>
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<tr>
<td>$8,501.20</td>
<td>$4.42M</td>
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<tr>
<td>$28.59</td>
<td>$4.36M</td>
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<td>$192.91</td>
<td>$4.34M</td>
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<td>$523.33</td>
<td>$3.08M</td>
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<td>$306.64</td>
<td>$3.10M</td>
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<tr>
<td>$67.24</td>
<td>$3.08M</td>
</tr>
<tr>
<td>$6,717.00</td>
<td>$1.98M</td>
</tr>
<tr>
<td>$442.5</td>
<td>$1.91M</td>
</tr>
<tr>
<td>$84.45</td>
<td>$1.76M</td>
</tr>
<tr>
<td>$159.20</td>
<td>$1.73M</td>
</tr>
<tr>
<td>$47.54</td>
<td>$1.56M</td>
</tr>
</tbody>
</table>

- Inappropriate Opioid Prescription
- 25-OH-Vitamin D Deficiency
- Prostate Specific Antigen (PSA) Screening
- Imaging Tests for Eye Diseases
- Coronary Angiography
- Two or More Antipsychotic Medications
- Colorectal Cancer Screening in Adults 50 Years and Older
- Headache Image
- Routine General Health Checks
- EKG’s and Other Cardiac Screens
- Vertebroplasty
- Cardiac Stress Testing
- Renal Artery Revascularization
- Intensity Modulated Radiotherapy (MRT)
- Pediatric Head Computed Tomography Scans
- CT Scans for Abdominal Pain in Children
- Lower Back Pain Image
- Cervical Cancer Screening in Women
Statewide Trends in Spending

Low Value Spending (Millions)

<table>
<thead>
<tr>
<th>Year</th>
<th>Spending (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>$153.43</td>
</tr>
<tr>
<td>2018</td>
<td>$146.06</td>
</tr>
<tr>
<td>2019</td>
<td>$142.71</td>
</tr>
<tr>
<td>2020</td>
<td>$147.00</td>
</tr>
<tr>
<td>2021</td>
<td>$133.82</td>
</tr>
</tbody>
</table>
Geographic Variation – Division of Insurance Regions
Geographic Variation in Avg. Cost

**Statewide Division of Insurance Spending Variation**
(Avg. Cost per Low Value Care Service)
All Payers, 2021

- **Denver**: $65
- **Pueblo**: $68
- **Colorado Springs**: $70
- **Boulder**: $75
- **Greeley**: $76
- **Ft. Collins**: $76
- **Grand Junction**: $79
- **East**: $85
- **West**: $97

Map of Colorado with cost variation per region.
### Top Three Low Value Care Services

by Payer, 2021

For detailed methodology and to view the interactive dashboard, visit us at civhc.org.

<table>
<thead>
<tr>
<th>Low Value Service</th>
<th>Commercial</th>
<th>Medicaid</th>
<th>CHP+</th>
<th>Medicare FFS*</th>
<th>Medicare Advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorectal Cancer Screening in Adults 50 and Older</td>
<td></td>
<td></td>
<td></td>
<td>$8.6M</td>
<td>$1.8M</td>
</tr>
<tr>
<td>CT Scans for Abdominal Pain in Children</td>
<td></td>
<td></td>
<td></td>
<td>$163K</td>
<td></td>
</tr>
<tr>
<td>Inappropriate Opioid Prescription</td>
<td>$12.5M</td>
<td>$12.9M</td>
<td></td>
<td>$13.6M</td>
<td></td>
</tr>
<tr>
<td>Pediatric Head Computed Tomography Scans</td>
<td></td>
<td></td>
<td></td>
<td>$108K</td>
<td></td>
</tr>
<tr>
<td>Prostate Cancer Screening (PSA)</td>
<td></td>
<td></td>
<td></td>
<td>$2.3M</td>
<td></td>
</tr>
<tr>
<td>Routine General Health Checks</td>
<td>$3.4M</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screening for 25-OH-Vitamin D Deficiency</td>
<td>$6.8M</td>
<td>$4.2M</td>
<td></td>
<td>$177K</td>
<td></td>
</tr>
<tr>
<td>Two or More Antipsychotic Medications</td>
<td>$1.4M</td>
<td></td>
<td></td>
<td>$1.8M</td>
<td></td>
</tr>
<tr>
<td>Vertebroplasty</td>
<td></td>
<td></td>
<td></td>
<td>$2.5M</td>
<td></td>
</tr>
</tbody>
</table>

*Medicare FFS claims only available through June 30, 2021*
Low Value Care Use Cases

• **Providers:** CIVHC can provide provider-specific data identifying your top low value care services and the cost impact that you can use as a benchmark to target reducing low value services for your patients.

• **Policy Makers:** Consider policy to encourage reducing the volume and cost impact of low value services.

• **Payers:** Evaluate payment models that reward reduction in low value care services.

• **Consumers:** Educate yourself on common low value care services and discuss treatment options with your providers.
Decreasing low value care: Strategies to change practice

Lalit Bajaj MD, MPH
Professor of Pediatrics and Emergency Medicine
Chief Quality, Equity, and Outcomes Officer
University of Colorado School of Medicine
Children’s Hospital Colorado
Objectives

• Discuss 2 case studies on decreasing low value care
  • Axial imaging for abdominal pain
  • CXR, Viral Panels, and Bronchodilators in Bronchiolitis

• New strategies to incent “the right care at the right time”
  • Outcomes

• Discussion
Implementation sometimes requires De-Implementation

Failure to Translate Evidence into Practice

- 30-40% of patients do not get treatments of proven effectiveness
- 20-25% of patients get care that is not needed or potentially harmful
Clinical Effectiveness Mission and Vision

• Empowering extraordinary care through information, insight, and action

• Partner to inspire and serve our community in delivering the best value care for kids
CE Strategic Objectives

• Partner with clinical experts to embed evidence into practice and improve care and outcomes
• Partner in the development of reliable data and analytic tools to support sustainable improvements in value
• Partner in the design and implementation of value-based models and measures
• Promote a positive culture of engagement, learning, partnership, and transparency; generate and share knowledge locally and nationally
Current resources (Clinical Effectiveness)

- Director
- Manager
- Admin Assistant
- 4 medical directors
  - Pathways
  - Diagnostic Safety
  - Pop Management
  - Regional Care

- Process Improvement Specialists
  - Pathways Program Manager
  - Diagnostic Safety Program Manager
  - Emergency Department/Urgent Care
  - PICU/Hospitalist
  - Breathing Institute/Digestive Health Institute
  - 2 Population Management
  - 2 Senior level PIs
  - 2 Dedicated data analysts
Abdominal Pain and those pesky CT scans
Practice Change Alert: Acute Appendicitis Clinical Care Guideline

The ED, Radiology and Surgery departments have agreed to the following changes to the Acute Appendicitis Clinical Care Guideline: (Complete guideline under revision)

1. Imaging:
   - Children under three years of age and/or patients with persistent symptoms for greater than 72 hours may be screened by ultrasound first and no longer need to go directly to CT
   - An appendicitis imaging template has been instituted by radiology to increase the objective nature of the report

2. Surgical consults:
   - Surgery is working with resident staff to respond promptly to ED consults
   - Strongly consider a CBC and surgical consult prior to imaging in patients deemed to be clinically high probability. A CBC is indicated in the standard workup in our surgical group. Note that the surgical team may still recommend an ultrasound for the clinically high probability patient, however, the goal is for a portion of these high probability patients to avoid the imaging and go straight to the OR.
   - Strongly consider a surgical consult in a clinically suspicious patient with an equivocal ultrasound prior to ordering a CT scan. While a CT may still be recommended, the goal is for a portion of these patients to either go the OR, or to be observed for disease progression. The decision to observe on the floor or the ED will be made via a collaborative discussion between the ED attending and the surgical attending.

3. Rectal contrast:
   - Patients 6 years and younger require rectal contrast
   - Patients 7-12 years of age with less than 50% BMI need a rectal contrast
   - Patients aged 7-12 years of age with greater than or equal to 50% BMI do not need rectal contrast
   - Patients 13 years and older do not require rectal contrast
The pathway acts as an anchor to improvement...
Appendicitis Volume vs. Imaging Rates
Last Data Refresh Date: 9/3/2023 9:08:47 AM
The Power of Branding Initiatives

REST is best

- For previously healthy patients with uncomplicated bronchiolitis, age 1 month to 24 months
- Reduce unnecessary interventions
- Educate team about AAP guidelines and families on expectations of care
- Supportive care (suctioning, fluids, oxygen)
- Time = improvement. Have patience.

Suspect sepsis? Be ready.

Search "sepsis" on MyChildrensColorado to access sepsis response resources.
Bronchiolitis

• Bronchiolitis is a viral infection that cause lower airway swelling and mucus plugging resulting in various degrees of respiratory distress

• It is the most common reason for hospitalization of infants
  • >100,000 admissions annually in the U.S.
  • Estimated cost of $1.73 billion
## Chest X-rays

Studies show increase in inappropriate use of antibiotic therapy owing to similar appearance of atelectasis and infiltrate

## Bronchodilators

Randomized trials have not shown a consistent beneficial effect on disease resolution, need for hospitalization or length of stay

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### Table 2. American Academy of Pediatrics Guidance for Diagnosis and Management of Bronchiolitis.

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Recommendation</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic Test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chest radiography</td>
<td>Not recommended for routine use</td>
<td>Poor correlation with severity of disease or risk of progression; studies show increase in inappropriate use of antimicrobial therapy owing to similar radiographic appearance of atelectasis and infiltrate</td>
</tr>
<tr>
<td>Testing for viral cause</td>
<td>Not recommended for routine use</td>
<td>May influence isolation of symptomatic patients, but infection-control procedures are similar for most respiratory viruses</td>
</tr>
<tr>
<td>Treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bronchodilator therapy</td>
<td>Not recommended</td>
<td>Randomized trials have not shown a consistent beneficial effect on disease resolution, need for hospitalization, or length of stay</td>
</tr>
<tr>
<td>Epinephrine</td>
<td>Not recommended</td>
<td>Large, multicenter, randomized trials have not shown improvement in outcome among outpatients with bronchiolitis or hospitalized children</td>
</tr>
<tr>
<td>Glucocorticoid therapy</td>
<td>Not recommended</td>
<td>Large, multicenter, randomized trials provide clear evidence of lack of benefit</td>
</tr>
<tr>
<td>Nebulized hypertonic saline</td>
<td>May be considered</td>
<td>Nebulized 3% saline may improve symptoms of mild-to-moderate bronchiolitis if length of stay is &gt;3 days (most hospitalizations are &lt;72 hr)</td>
</tr>
<tr>
<td>Supplemental oxygen</td>
<td>Routine use not recommended if oxygen saturation is &gt;90% in the absence of acidosis</td>
<td>Transient episodes of hypoxemia are not associated with complications; such episodes occur commonly in healthy children</td>
</tr>
<tr>
<td>Pulse oximetry</td>
<td>Not recommended for patients who do not require supplemental oxygen or if oxygen saturation is &gt;90%</td>
<td>Oxygen saturation is a poor predictor of respiratory distress; routine use correlates with prolonged stays in the emergency department and hospital</td>
</tr>
<tr>
<td>Chest physiotherapy</td>
<td>Not recommended</td>
<td>Deep suctioning is associated with a prolonged hospital stay; removal of obstructive secretions by suctioning the nasopharynx may provide temporary relief</td>
</tr>
<tr>
<td>Antimicrobial therapy</td>
<td>Not recommended for routine use</td>
<td>Risk of serious bacterial infection is low; routine screening is not warranted, especially among infants 30 to 90 days of age</td>
</tr>
<tr>
<td>Nutrition and hydration</td>
<td>Hospitalization for observation of hydration and nutritional status may be needed for infants with respiratory distress</td>
<td>Intravenous or nasogastric hydration may be used</td>
</tr>
</tbody>
</table>

* Adapted from the clinical practice guidelines for the diagnosis and management of bronchiolitis in children 1 through 23 months of age.
Bronchodilators

Percentage of Admitted Patients Receiving a Bronchodilator

P Chart

Kickoff Meeting
Provider Pledge Introduced
Education Interventions Begin

Provider Level Data Distributed

CCG Revised
Education for families

Order Sets
Education for staff

PCP Tear Off Pads
NoseFrida Pilot

mean = 36.1%
mean = 22.0%
Chest X-rays

Percentage of Admitted Patients Receiving a Chest X-Ray

Mean = 40.4%
Mean = 28.7%

UCL
LCL
0%
10%
20%
30%
40%
50%
60%
70%
80%

December 1, 2013
January 12, 2014
February 9, 2014
March 9, 2014
April 6, 2014
May 21, 2014
June 6, 2014
July 10, 2014
August 7, 2014
September 23, 2014
October 7, 2014
November 17, 2014
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January 9, 2015
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March 6, 2015
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May 19, 2015
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March 7, 2023
April 3, 2023
May 19, 2023
June 14, 2023
July 10, 2023
August 7, 2023
September 23, 2023
October 7, 2023
November 17, 2023
December 13, 2023
January 10, 2024
Viral Testing

Percentage of Admitted Patients Receiving Viral Testing
P Chart

Baseline Baseline Intervention Sustain Sustain

mean = 32.4%
mean = 22.9%
Pathways need to be accessible to all
Make them external - PCPs and other EDs

Clinical Pathways

What are Clinical Pathways?

Clinical pathways assist clinicians in standardizing the evaluation, diagnosis, and care of patients with specific conditions, with the goal of achieving optimal outcomes. They translate national guidelines and the best available evidence for clinical application into local context. Clinical pathways are used to inform decision-making at the point of care, to train new clinicians on evidence-based practice, and to support continuous improvement.¹

How can I learn more? References

COVID-19 Clinical Pathways

Please visit Children's Hospital Colorado on AgileMD for COVID-19–specific pathways and clinical guidance documents. Types of guidance include immune modulation, convalescent plasma, medication guidelines and more.

- MIS-C (Multisystem Inflammatory Disease in Children) Associated with COVID-19
- Acute COVID-19 Pathway
- Cardiac Evaluation for Post COVID-19 (SARS-CoV-2) Infection Return to Play in Children and Adolescents

Note: Use the Google Chrome browser to access AgileMD. The links above will not work in other browsers.

AgileMD Clinical Pathways

Please visit Children's Hospital Colorado on AgileMD for pathways and clinical guidance documents as we transition from the PDF format below.

- Appendicitis
- Acute Painful Serous
- Asthma Exacerbation Management
- Bronchiolitis
I hate toggling between EMR and pathways

- So, we embedded links in Epic via the order sets
  - Still toggling
- Orders set and pathway are not concordant
- Hard to keep up through upgrades
- Administrative burden is high
# Workup

- **Results Review**
- **Screening/Scoring**
- **Patient Labels**
- **Pathways**

## Pathways

### Featured Resources

- **Emergency Medicine Pathways**
  - 55 files
- **Clinical Calculators & Scoring Tools**
  - 57 files
- **Inpatient Pathways**
  - 55 files

### Emergency Medicine Pathways

<table>
<thead>
<tr>
<th>Type</th>
<th>Name</th>
<th>Resource</th>
<th>Status</th>
<th>Last Used</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Abdominal Mass in Oncology or Bone Marrow Transplant (BMAT) Patient: Tylenol</td>
<td>Emergency Medicine Pathways</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Abscess Launch Pad</td>
<td>Emergency Medicine Pathways</td>
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<tr>
<td></td>
<td>Acetaminophen (APAP) Toxicity</td>
<td>Emergency Medicine Pathways</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Acute Abdominal Uterine Bleeding (AUB)</td>
<td>Emergency Medicine Pathways</td>
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<td></td>
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<tr>
<td></td>
<td>Acute Chest Syndrome (ACS)</td>
<td>Emergency Medicine Pathways</td>
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<td>Acute COVID-19</td>
<td>Emergency Medicine Pathways</td>
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<td></td>
<td>Acute Painful Scrotum</td>
<td>Emergency Medicine Pathways</td>
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<td></td>
<td>Acute Pancreatitis</td>
<td>Emergency Medicine Pathways</td>
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<td></td>
<td>Anaesthesia</td>
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<tr>
<td></td>
<td>Anaesthetics Launch Pad</td>
<td>Emergency Medicine Pathways</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Show 63 more files]
If age <28 days:
- UA (catheter OR bagged), if bagged UA positive, send a catheter sample for UA
- Urine culture
- Procalcitonin (CRP sent ONLY if procalcitonin unavailable)
- Complete blood count (CBC) with differential
- Blood cultures x2
- Respiratory Pathogen Testing

If age 29-60 days:
- UA (catheter OR bagged), if bagged UA positive, send a catheter sample for UA
- Urine culture sent ONLY if catheter UA is positive
- Respiratory Pathogen Testing
  - Consider: Blood cultures, CBC, Procalcitonin

Place New Orders:
- Urinalysis
- Urine Culture
- Procalcitonin
- CBC with differential
- Blood Culture
- Respiratory Pathogen Testing
Monitoring pathway goals

- Requires close partnership with analytics team
- Devoted resources are the best, but still need to be connected to central infrastructure
Children's Hospital Colorado (Denver)

Based on Q1-Q4 2022 Emergency Department, Inpatient, and Observation Discharges

Published March 2023

Total Low Value Care Across All Settings for Included Conditions

Of 110,152 encounters that met inclusion criteria in Q1-Q4 2022, 87,973 were eligible for Low Value Care (LVC) calculations after global exclusions were applied. 3,776 (4%) of encounters had some form of resource overutilization representing $525,915 (PHIS Standardized Costs).

Total Low Value Care by Type of Service

Measures are categorized into three types of service: Imaging, Labs, and Medications. Resource overutilization for Imaging represented $429,226, Labs $23,232, and Medications $73,457 (PHIS Standardized Costs).
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