

Bundled Metrics: Optimizing Safety With Care Bundles

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The problem

- Limits on human cognition for attention, processing and memory.
- Inability to consistently do the right thing.
- No single source solution is generally sufficient for producing highly reliable results and robust outcomes.
- Difficult to concentrate on a large number of non-directly related measures.
- Over-concentration in one area results in lack of attention in another.

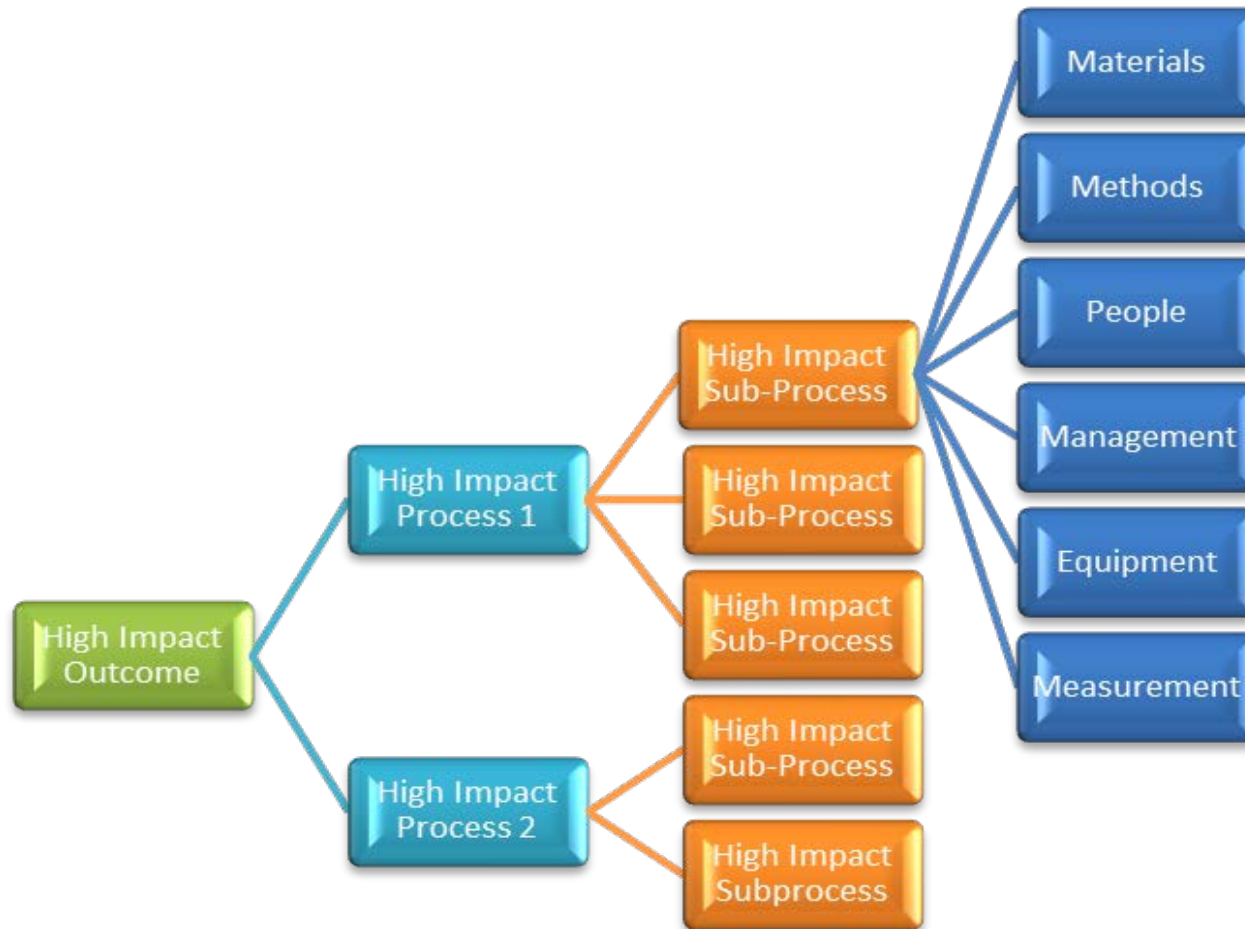


Bundles: A practical solution

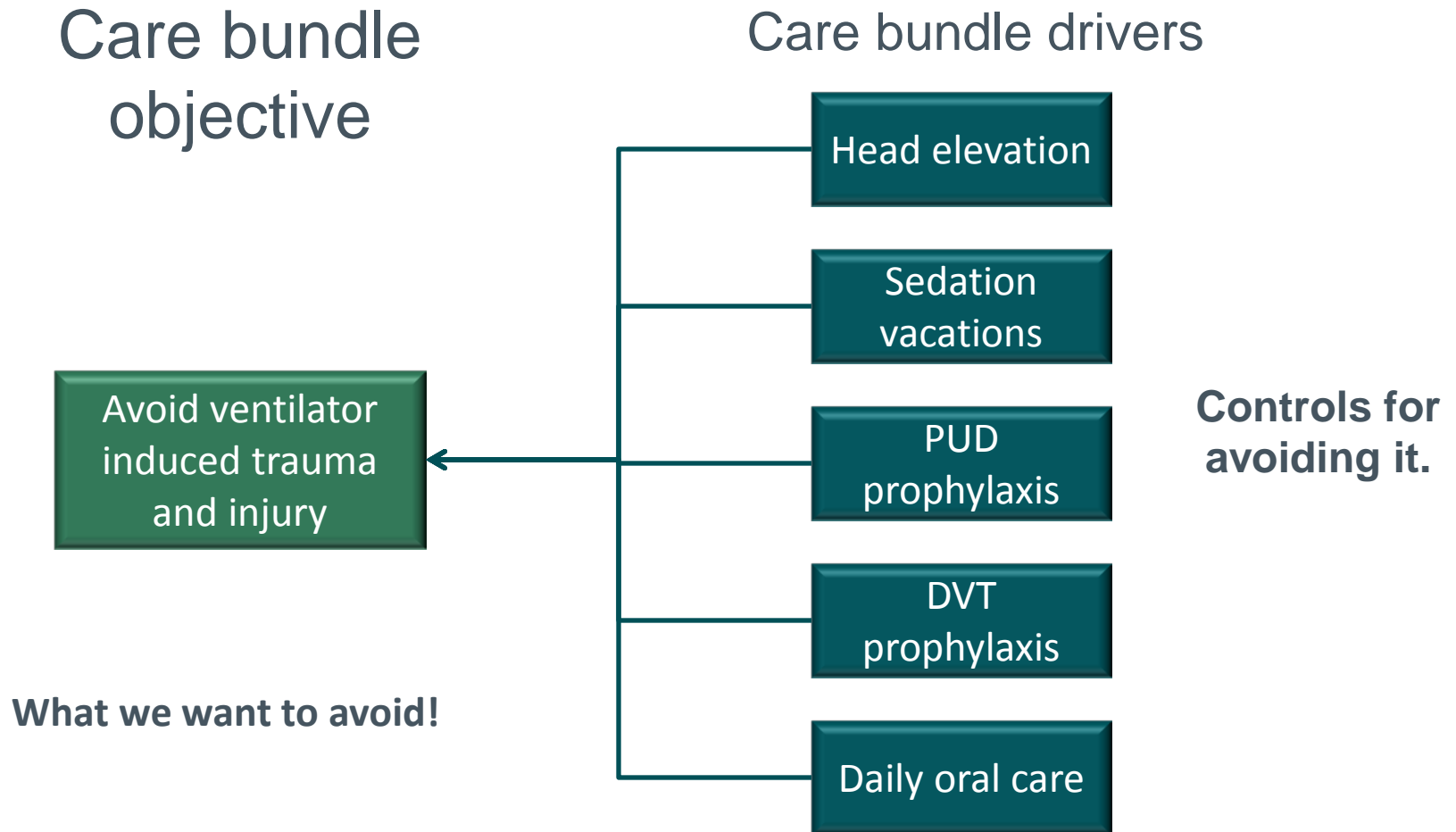
- Focuses attention around typically a single issue.
- Condensation of evidence, best practices and good ideas.
- Synergy= The whole is greater than the sum of the parts.
- Bundle allows us to include things which might work or add benefit.
- Focus on a deliberate outcome.



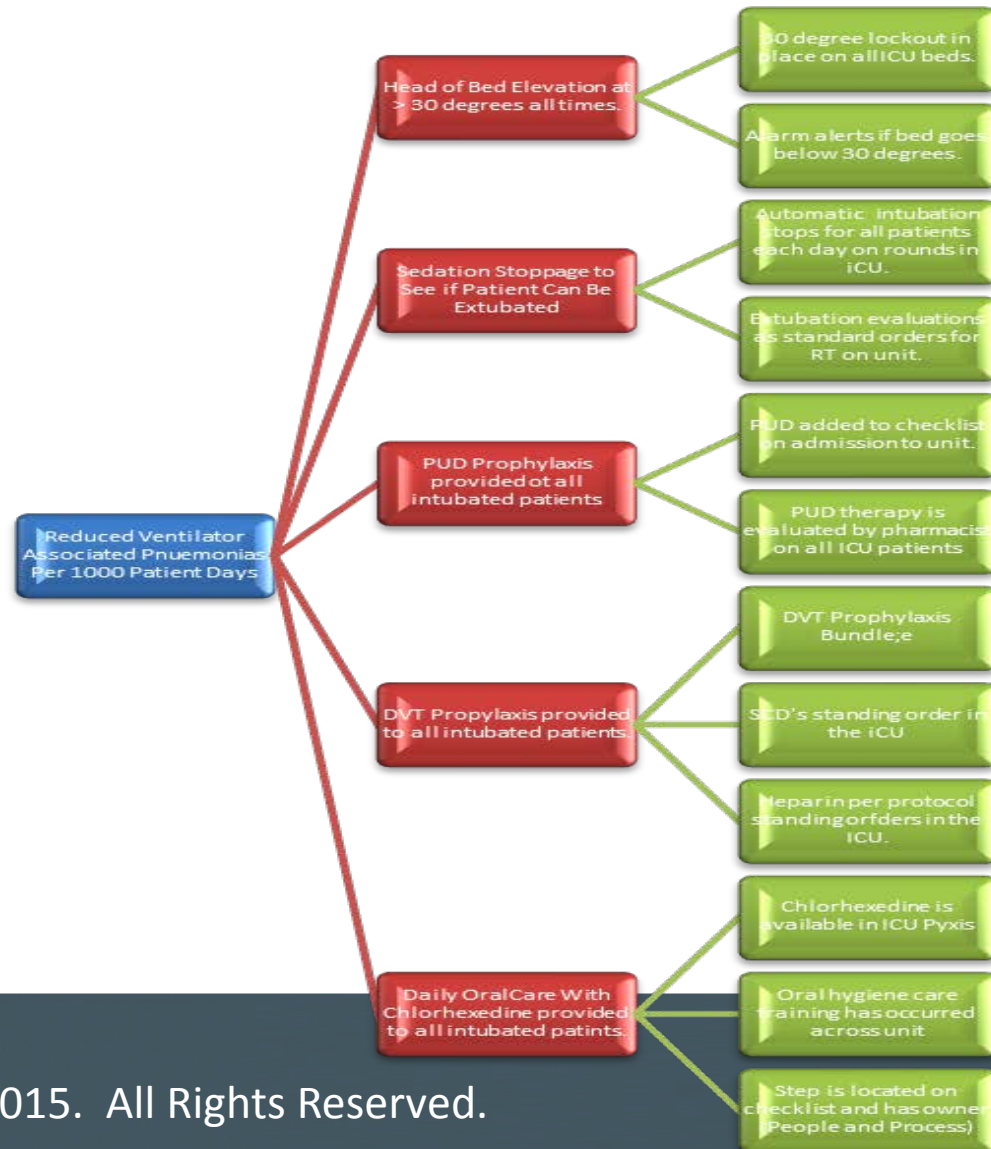
Bundle composition: levels



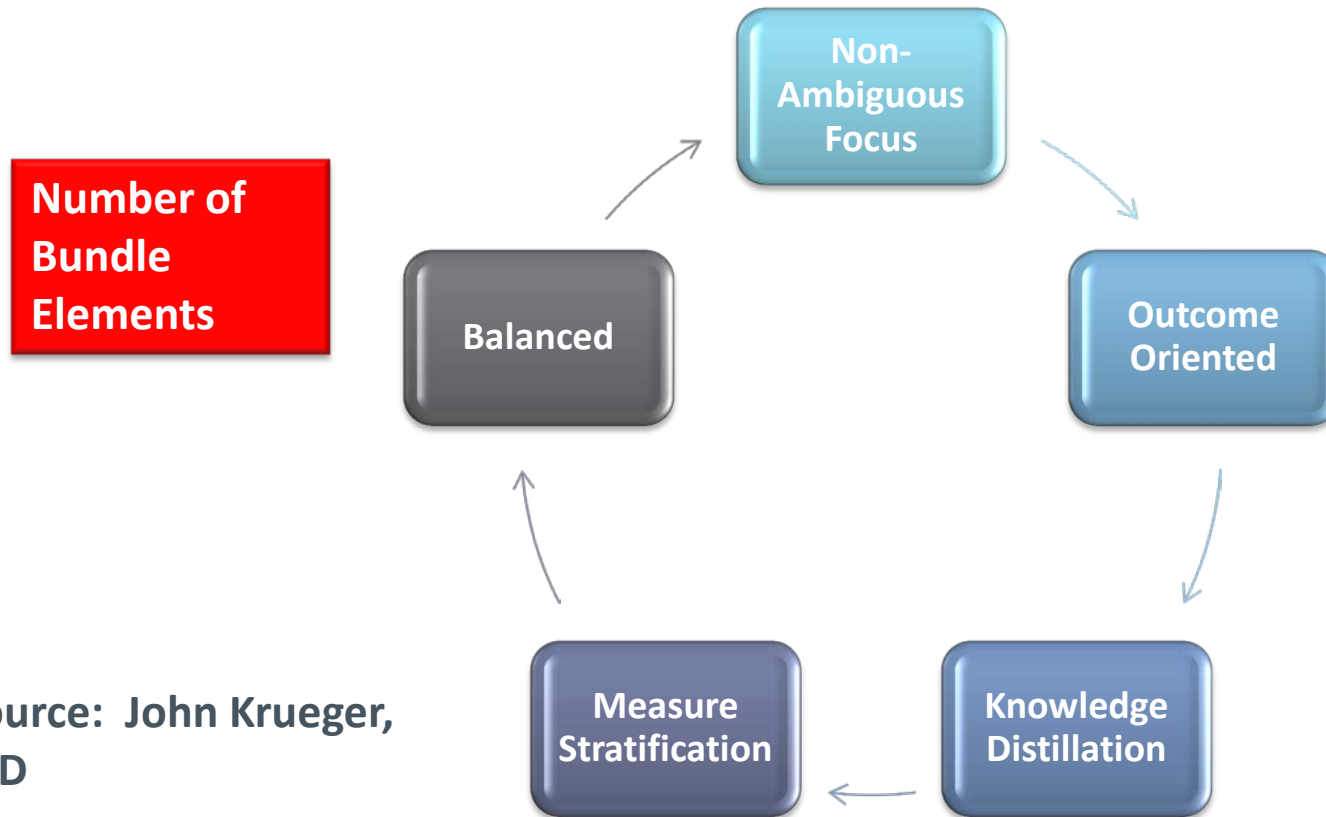
Driver diagram – IHI ventilator care bundle



VAP prevention bundle: sub- processes



Fundamentals of optimal bundle design



Source: John Krueger,
MD



A caveat about bundles

- Bundles do not work well in the following situations:
 - Process not well defined or understand.
 - Knowledge about what to do is poor
 - Problem is not clearly defined.
 - Elements in the bundle not shown to correlate with higher levels of composite performance.



IPC (Innovations in planned care)

Measures With Goals:

1. Health Risk Assessment Bundle: 6 Measures (BMI, Tobacco Screen, DV/IPV Screen, Depression Screen, Alcohol Screen, BP)
2. Cancer Screening Bundle: 3 Measures (Colorectal, Cervical and Breast)
3. Outcomes Bundle: 3 Measures (BP Control, Lipid Control, DM Control)
4. Diabetes Comprehensive Care: 6 Measures (Document A1C, BP, LDL, Nephropathy, Retinal screen, Foot exam last year.)
5. Tobacco Users: Tobacco Users With Cessation and Tobacco Counseling.
6. Staff Satisfaction
7. Average Office Visit Cycle Time
8. Patient Experience Questions
9. Percent of Patients Empanelled to a PCP.
10. Number of Patients in Microsystem
11. Continuity of Care to PCP.
12. 3rd Next Available Appointment.
13. Percent of Patients With Self Management Goal Set.



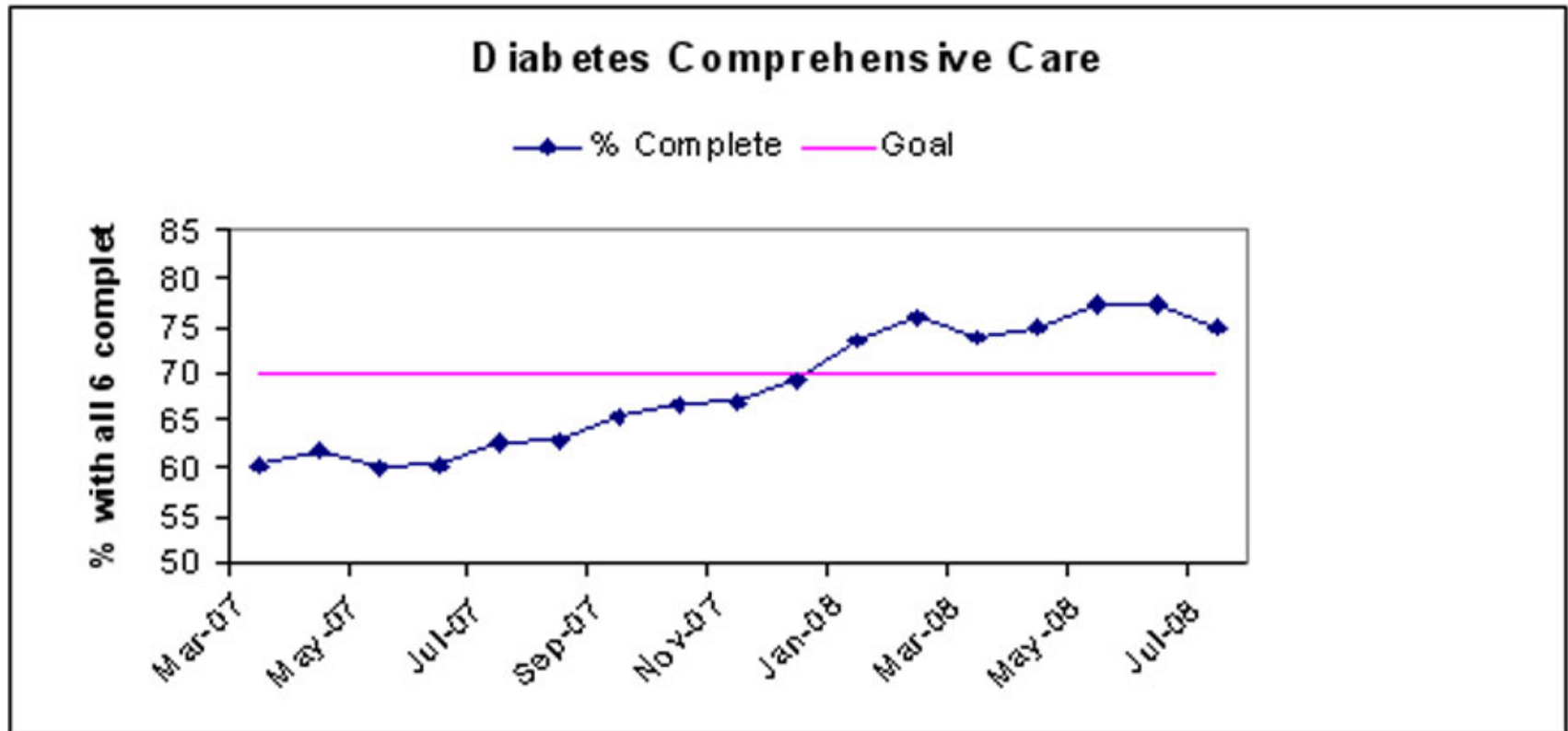
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Supplemental Measures:

1. Pediatric Immunizations
2. Fluoride Applications in Pediatric Patients
3. Physical Activity Screening Level
4. Workforce Retention (In Development)
5. Revenue per Visit
6. RVU's (in Development)
7. Preventable Hospitalizations (PQI's) (Prevention Quality Indicators) In Development.
8. Continuity of Care to Care Team
9. Oral exams for Diabetics
10. Number of ER and Urgent Care Visits.



“All or nothing” six element process bundle = 96% step reliability



Opioid bundled metric example (outcome)

- OIRD (Opioid Induced Respiratory Depression) (% or per 1000 patients)
- OIC (Opioid Induced Constipation) (% or per 1000 patients)
- OINV (Opioid Induced Nausea and Vomiting) (% or per 1000 patients)



Opioid bundled metric example (process)

- **Laxative Co-Prescribing:** Patients prescribed opioid who were co-prescribed laxative within 72 hours of opioid start.
- **Nausea and Vomiting Risk Assessment:** Patients who underwent N.V risk assessment prior to opioid prescribing.
- **Comprehensive Patient and Family Education:** Patients who received appropriate comprehensive opioid safety education regarding OIC, OIRD and OINV.
- **Appropriate Sedation and Ventilation Monitoring:** Patients who received appropriate sedation monitoring and continuous pulse oximetry if they were prescribed an opioid in excess of 20 MEDD.



Opioid bundled metric example (balancing)

- **Hospital LOS:** LOS in patients prescribed opioids for surgery
- **Uncontrolled pain**
- **30 Day readmission rate** in patients prescribed opioids for surgery



Two ways to design bundles

● All or nothing

- Steep requirement may obscure improvement.
- Should use where belief is high regarding the evidence for importance of each step.
- More steps result in statistically more difficult to achieve improvement.
- Really a measure of process fidelity and reliability.
- Works best for well established stable processes where goal is to make highly reliable.

● Composite core metric compliance

- Better for detecting small changes in process.
- Very sensitive way to detect improvements.
- Most helpful where elements of the process are not fully formed and significant variation exists in process integration.

Source: Jim Benneyan, PhD

http://www.coe.neu.edu/healthcare/pdfs/publication/statistical_properties_composite_all-or-none_core_measure_compliance_metrics.pdf



Elements of successful bundles (John Krueger's thoughts)

- Based on best evidence available

- Ideally RCT level evidence in multi-center trials or due to extensive field experience with improvement science where results have been observed in multiple areas over time and differing environmental conditions.

- Concise elements typically aligned to a single overall focus

- Bundle should be very focused on a single overall outcome.

- Not a check-list

- However, a check-list may be used to help comply with bundle elements

- Ideally, process bundles should be 5 elements or less

- Reliability of compliance goes down with each additional element
- More elements are not better....but do increase risk of deterioration of reliability

- Weigh benefits of “All or Nothing Approach” with considerations for overall performance and risk of unintended consequences

- Read the Benneyan paper on this.

- Elements should be related but independent of one another

- Monitor for unintended consequences

- For example, if reducing harms is the focus, uncontrolled pain would be a balancing measure. Important as opioid reduction or substitution may result in increased pain.



IHI White Paper thoughts on successful bundle development

- The bundle has three to five interventions with strong clinician agreement
- Each bundle element is relatively independent
- The bundle is used with a defined patient population in one location
- The multi-disciplinary care team develops the bundle
- Bundle elements should be descriptive rather than prescriptive to allow for local customization and use of clinical judgement
- Compliance with bundles is measured using an all-or-nothing measurement with a goal of 95 percent or greater compliance.

Source: Resar, Griffin, Haraden, Nolan. IHI White Paper. “Using Care Bundles to Improve Health Care Quality” Innovation Series 2012.



In conclusion

- Congratulations!
- Have fun
- Stay in touch



Bundle breakout

Instructions 1:

- Form into groups based on primary harm
- Choose time keeper, scribe and person to feedback
- **Discuss, identify and capture at least 10 interventions/elements for the process bundle on a flipchart**
- Discuss and list the specific change ideas (sub-processes) to achieve each high level intervention
- Feedback on bundle by teams (10 min)



Bundle breakout

Instructions 2:

- Each individual to choose 6 interventions out of 10 for each harm based on their expertise and experience
- Go to the flipchart and rank the 6 interventions in order (1 being the most preferred)



Bundle design guidelines

- The bundle has three to five interventions (elements), with strong clinician agreement.
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