

Use of Bundles in Patient Care



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longer requires an invasive device or his or her status has improved. The steps of the care bundle are carefully selected, well-established practices that are packaged together and scientifically supported. The focus of the bundle is on how to deliver the best care using a clear-cut method to provide the best possible outcome for the patient.

The “care bundle” concept was developed by the IHI in 2001 as part of the “100,000 Lives” campaign. The crux of the term bundle is that the whole is more than the sum of its parts with a high degree of reliability. The only condition is that all elements of the care bundle should be implemented systematically and consistently unless one of the elements is medically contraindicated, so it is an “All-or-None” deal. Healthcare workers should measure the degree of their documented compliance with the care bundle to ensure adherence to all its elements by using simple forms specially designed for this purpose.

Characteristics of a Care Bundle

A care bundle is an explicit tool with clear parameters. As a package of best-practice interventions, each element is as important; the bundle should be delivered on each occasion to every patient meeting the bundle criteria. Multidisciplinary teams work together to deliver the best

What is a Care Bundle?

The Institute for Healthcare Improvement (IHI) defines care bundle as “a small set of evidence-based interventions for a defined patient segment/population and care setting that, when implemented together, will result in significantly better outcomes than when implemented individually”. (1)

In other words, a care bundle is a set of interventions supported by evidence-based research and practices that, when used together, they are bound to improve patient outcomes significantly. Multidisciplinary teams collaborate to implement all the elements of care bundles for a specified patient condition on ongoing basis. Steps of the care bundle are repeated daily until the patient no

Bundle Vs. Checklist

| Care Bundle | Checklist |
|--|--|
| • Critical set of elements all determined by Level 1 evidence | • List of tasks or processes that are important but not necessarily evidence-based |
| • Small number of elements/interventions (3-6) | • Usually large number of elements |
| • “All-or-None” approach | • Some elements or items may not be checked/implemented |
| • When a bundle element is missed, there is an adverse effect on the outcome | • Some elements may not be completed and there may be no effect on the patient outcome |
| • Multidisciplinary approach with a high level of accountability of all team members (who should do what and when) | • Might be completed by any member of the team (3) |

possible care supported by solid underlying evidence, with the ultimate outcome of improving patient care.

- The bundle has a defined set of interventions or elements (3 – 6 elements) with strong clinician agreement
- The bundle is used with a defined patient population in one location with a multidisciplinary approach
- Bundle elements should be descriptive rather than prescriptive, to allow for customization and appropriate clinical judgment
- Each bundle element is relatively independent from the others
- Compliance with bundles is measured using all-or-none measurement, with a goal of 95 percent or greater. (2)

1. Ventilator Bundle

The ventilator bundle was the first set of interventions to be developed by the IHI to prevent complications associated with mechanical ventilation. Ventilated patients are at high risk for several serious complications such as ventilator-associated pneumonia (VAP), venous thrombo-embolism (VTE), and stress-induced gastrointestinal bleeding. Hospital-acquired pulmonary infection usually develops starting from 48 hours following intubation and may be prevented or delayed using a set of interventions. The ventilator bundle comprises five core elements:

- Elevation of the head of the bed to between 30 and 45 degrees
- Daily —sedative interruption and daily assessment of readiness to extubate
- Peptic ulcer disease prophylaxis
- Deep venous thrombosis (DVT) prophylaxis (unless contraindicated)
- Daily oral care with chlorhexidine

There is documented evidence that these combined elements have been effective in reducing the incidence of VAP and decreasing the length of stay in a critical care unit. (4)

2. Central Line Bundle

Using evidence-based procedures recommended by the Centers for Disease Control (CDC), to prevent central line-associated blood stream infections (CLABSI). The central line bundle comprises the following core components:

- Practice proper hand hygiene before and after inserting, replacing, accessing, repairing, or dressing a central line
- Use full barrier precautions during central line insertion including strict compliance with hand hygiene and wearing a cap, mask, sterile gown, and sterile gloves in

Central Line Bundle



- Hand hygiene
- Maximal barrier precautions during insertion
- Chlorhexidine skin antisepsis
- Optimal site selection
- Daily review of line necessity

- addition to using full drape to cover the patient
- Apply chlorhexidine to prepare the patient’s skin
- Select optimal insertion site - Preferred site is subclavian vein for non-tunneled catheters. Avoid central line insertion into the femoral vein in adult patients
- Conduct daily review of central line necessity - Remove unnecessary lines and provide appropriate site care. (5)

3. Severe Sepsis Bundles

The two severe sepsis bundles were developed by the Surviving Sepsis Campaign—an international forum convened to examine the effect of sepsis, severe sepsis, and septic shock. These bundles have been approved by the National Quality Forum (NQF) as the first scientifically sound, valid, and reliable elements for care of severely septic patients. Healthcare professionals should use the two bundles to create customized protocols and pathways specific to their organizations. It is recommended that all the elements of each bundle should be incorporated in those protocols:

- a. Severe Sepsis 3-Hour Resuscitation Bundle
 The following elements should be completed within 3 hours of the time of presentation:
 1. Measure lactate level
 2. Obtain blood cultures prior to administration of antibiotics
 3. Administer broad spectrum antibiotics
 4. Administer 30 mL/kg crystalloid for hypotension or lactate ≥ 4 mmol/L
- b. Severe Sepsis 6-Hour Septic Shock Bundle
 The following elements should be completed within 6 hours of the time of presentation:
 1. Apply vasopressors (for hypotension that does not respond to initial fluid resuscitation to maintain a mean arterial pressure (MAP) ≥ 65 mm Hg)
 2. In the event of persistent arterial hypotension despite

volume resuscitation (septic shock) or initial lactate ≥ 4 mmol/L (36 mg/dL):

- a. Maintain adequate central venous pressure (CVP)
 - b. Maintain adequate central venous oxygen saturation (ScvO₂)
3. Re-measure lactate (if initial lactate was elevated). (6)

4. Skin / Pressure Ulcer Bundle

The SKIN (Surface, Keep moving, Incontinence, Nutrition) bundle is a simple, holistic approach to ensure that all patients receive the appropriate care to prevent pressure damage. The bundle was developed by the National Health Service (NHS) Wales in 2009. The basic approach includes a standardized pressure ulcer risk assessment and careful planning and implementation to address areas of risk. All inpatients must have a pressure ulcer risk assessment undertaken on admission to hospital to identify patients at risk of developing pressure ulcer. Most hospitals use the Braden Scale which is a validated instrument for estimating the risk of pressure ulcer especially in critical care units. Braden Scale examines six criteria: sensory perception, moisture exposure, activity levels, patient mobility, nutrition, and friction and shear force exposure. (7)

Subsequently after admission, skin inspection and assessment should occur once during each shift or more frequently in patients at an elevated risk of pressure ulcer development. Interventions should include the following areas of focus:

- Surface – ensure patient is on the right mattress, cushion, there are no creases or wrinkles
- Keep moving – encourage self movement, reposition patient and inspect skin
- Incontinence – meet patient's toileting or continence needs
- Nutrition – keep well hydrated, meet patient's nutritional needs



Take-Home Points

Healthcare workers should be aware of the tested, evidence-based bundles developed by various professional organizations. Careful selection and proper utilization of bundles for the right patient population has proven beyond any doubt to be effective in producing better patient care outcomes. The use of bundles in patient care is an inexpensive approach with remarkable results. Healthcare professionals are encouraged to use care bundles when indicated.

References

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بعبدات - هاتف: ٠٤/٩٧٧٣٤٧

