BC PATIENT SAFETY & QUALITY COUNCIL
Working Together. Accelerating Improvement.

THE 10K

10,000 Reasons to Race for Infection Prevention

GUIDE FOR SUCCESS

10K DRIVER DIAGRAM: AN INTRODUCTION

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This driver diagram is a framework that can help us achieve our goal. Every piece of it may not be relevant to you, but we hope that you will find it to be a practical resource.

HOW DOES IT WORK?

Primary Drivers
These are key areas that research shows we need to address in order to reach our goal.

Secondary Drivers
These are the actions we can take to successfully implement primary drivers.

Change Ideas
These are specific changes that can help us implement secondary drivers.

You can see how one level flows into the next. These are ideas that help us reach our goal by breaking it down into manageable pieces.

Want to know a bit more about how driver diagrams work? Check out a helpful video from the Institute for Healthcare Improvement at http://youtu.be/A2491BJcyXA.

AIM	PRIMARY DRIVERS	SECONDARY DRIVERS
Together, 10K teams will reduce provincial surgical site and urinary tract infection rates for surgical patients by 50% by November 2016. *	**1** Implement evidence-informed strategies in the operating room to prevent surgical site infection	» Use evidence-informed guidelines for skin preparation prior to incision. » Follow appropriate hair removal technique, if necessary. » Administer prophylactic antibiotics using evidence-informed guidelines. » Assess the need for antibiotic re-dosing. » Ensure that antibiotics are stopped at the appropriate time following surgery. » Maintain safe perioperative glucose levels for all surgical patients. » Follow evidence-informed guidelines for normothermia in the operating room. » Follow appropriate decolonization guidelines. » Follow evidence-informed guidelines in the operating room environment.
	2 Implement evidence-informed strategies on surgical wards to prevent surgical site infection	» Use aseptic technique for dressing changes. » Use appropriate discharge procedures. » Follow evidence-informed guidelines for post-operative nutrition.
	3 Implement evidence-informed strategies to prevent urinary tract infections	» Avoid unnecessary urinary catheters. » Follow evidence-informed aseptic catheter insertion procedures. » Use proper techniques for urinary catheter maintenance. » Review necessity of urinary catheter daily and remove promptly when no longer needed.
	4 Enhance team-based care	» Develop/support a respectful and safe work environment. » Support effective team communication. » Foster visible leadership.

* From 4.4% to 2.2% based on 2014 NSQIP UTI/SSI rates

PRIMARY DRIVERS	SECONDARY DRIVERS	CHANGE IDEAS
1 Implement evidence-informed strategies in the operating room to prevent surgical site infection	Use evidence-informed guidelines for skin preparation prior to incision	» Patients should shower or bathe with either soap or an antiseptic agent on the night before the operative day. [1 2] » Perform intra-operative skin preparation with an alcohol-based antiseptic agent, unless contraindicated. [2] » Do not wash off the two per cent chlorhexidine gluconate 70% alcohol skin antiseptic that will be covered by the surgical dressing at the end of surgery. [2] » Allow the chlorhexidine gluconate-alcohol skin antiseptic to air dry for at least three minutes or longer if there is excessive hair at the surgical site. [2] » Develop standardized order sets for pre-operative skin cleansing. [1] » Develop a strategy for distribution of the pre-operative skin antiseptic agent to the patients. [1] » Educate patients on how to apply the skin antiseptic agent prior to the day of surgery. [1]
	Follow appropriate hair removal technique, if necessary	» No hair removal prior to surgery is optimal. [2] » If hair removal is necessary, use clippers outside of the OR within two hours prior to surgery. [2] » Do not remove hair prior to admission. [2]
	Administer prophylactic antibiotics using evidence-informed guidelines	» Start infusion within 60 minutes for most antibiotics, or within 120 minutes for vancomycin and fluoroquinolones prior to skin incision or application of tourniquet. [2] » Administer prophylactic antibiotic within 60 minutes prior to first incision for c–sections instead of after cord clamping. [2] » Develop standardized order sets for each procedure that include the appropriate antibiotic, the timing of administration, the appropriate dose, and the timing of discontinuation. [1] » Develop pharmacist and nurse-driven protocols that ensure the correct antibiotic selection based on the type of surgery and patient characteristics (age, weight, etc.). [1] » Create a process to review all exceptions to protocols. [1]
	Assess the need for antibiotic re-dosing	» Consider antibiotic re-dosing after four hours of surgery. [2] » Only repeat antibiotic prophylaxis for surgeries lasting longer than two half-lives of the antibiotic (e.g. four hours for cefazolin). [2] » Re-dosing or patients who are over 120kg require 3g cefazolin. [3]

PRIMARY DRIVERS	SECONDARY DRIVERS	CHANGE IDEAS
1 **Implement evidence-informed strategies in the operating room to prevent surgical site infection**	Ensure that antibiotics are stopped at the appropriate time following surgery	» Discontinue antibiotics administered for cardiac, thoracic, orthopaedic and vascular patients within 24 hours of the end of surgery. Non-complex and uncomplicated surgeries require no further administration of antibiotics following surgery. [2] » Standardized orders regarding antibiotic discontinuation. [1 2]
	Maintain safe perioperative glucose levels for all surgical patients	» Check the perioperative blood glucose levels on all surgical patients who are diabetic or have risk factors for diabetes. [1 2] » Avoid strict blood glucose levels (< 6.1 mmol/L). [2] » Maintain blood glucose below 10-11 mmol/L during the perioperative period. [2] » Ensure that random pre-operative blood glucose values are < 10 mmol/L. » Perform random glucometer at point of care.
	Follow evidence-informed guidelines for normothermia in the operating room	» Maintain core temperature of surgical patients between 36.0 °C and 38.0 °C pre-operatively, intra-operatively, and postoperatively. [1 2] » Initiate that pre-warming and intra-operative warming as indicated for all surgeries scheduled to last 30 minutes or more. [1 2] » Use fluid warmers if the surgical procedure is planned to last more than one hour. [2] » Maintain the ambient room temperature in the operating room between 20 °C to 23 °C. [2]
	Follow appropriate decolonization guidelines	» Use Mupirocin nasal ointment to nearly eradicate *S. aureus* from the nasal site. [2 4] » Utilize photodynamic therapy along with chlorhexidine gluconate wipes. [2]
	Follow evidence-informed guidelines in the operating room environment	» Reduce the number of times the doors open. [2] » Limit the number of operating room staff. [2] » Close the doors securely. [2] » Practice appropriate hand hygiene. [2] » Sterilize equipment appropriately. [2] » Use laminar flow ventilation. [2]

PRIMARY DRIVERS	SECONDARY DRIVERS	CHANGE IDEAS
2 **Implement evidence-informed strategies on surgical wards to prevent surgical site infection**	Use aseptic technique for dressing changes	» Ensure that dressing techniques used are appropriate for the type and site of surgery.
	Use appropriate discharge procedures	» Engage in 30 day post-operative follow up for surgical patients occurs in any inpatient and/or outpatient setting where the selected operative procedure(s) are performed. [5]
	Follow evidence-informed guidelines for post-operative nutrition	» Encourage patient to drink fluids after recovery from anaesthesia. [2] » Resume full diet within the first 24 hours after surgery. [2]

PRIMARY DRIVERS	SECONDARY DRIVERS	CHANGE IDEAS
3 **Implement evidence-informed strategies to prevent urinary tract infections**	Avoid unnecessary urinary catheters	» Insert catheters only for appropriate cases, and leave in place only as long as needed. [6 7] » Use urinary catheters in operative patients only as necessary, rather than routinely. [6 7] » For operative patients who have an indication for an indwelling catheter, remove the catheter as soon as possible postoperatively, preferably within 24 hours, unless there are appropriate indications for continued use. » Use a checklist of catheter criteria to aid in verification. [6] » Empower and expect nursing and other clinical staff to not proceed with catheter insertion when criteria are not met and to contact physicians to clarify and discuss alternatives. [6] » Include a checklist in catheter insertion packs in a format that allows for easy documentation (e.g. sticker to place in medical record, small card). [6] » Build criteria for catheter insertion into computerized order entry systems and require documentation of need at time of order. [6] » Ensure that departments where catheters are inserted frequently, such as the emergency department, have adequate supplies of alternatives to indwelling catheters (e.g. intermittent and external condom catheters). [9] » Educate staff regarding indications, criteria and alternatives for urinary catheters. [6]
	Follow evidence-informed aseptic catheter insertion procedures	» Create standard supply kits that include catheter and all necessary items in one place, or work with supply vendors to revise kits. [6] » Perform hand hygiene immediately before and after insertion or any manipulation of the catheter device or site. [7] » Ensure that only properly trained persons (e.g. hospital personnel, family members, or patients themselves) who know the correct technique of aseptic catheter insertion and maintenance are given this responsibility. [7] » Include appropriate technique in insertion checklist (one checklist for criteria and technique). [6 7] » Properly secure indwelling catheters after insertion to prevent movement and urethral traction. [7] » Unless otherwise clinically indicated, consider using the smallest bore catheter possible, consistent with good drainage, to minimize bladder neck and urethral trauma. [7] » If intermittent catheterization is used, perform it at regular intervals to prevent bladder over distension. [7] » Use a small-sized checklist (index card or sticker) and place it in urinary catheter kits for reference and ease of documentation. [6] » Consider using a portable ultrasound device to assess urine volume in patients undergoing intermittent catheterization and reduce unnecessary catheter insertions. [6] » Measure as an all-or-nothing process with the goal of ensuring that all checklist items are completed every time, for every patient. [6] » Assign responsibility for stocking standard kits to ensure adequate supply at all times, especially in high-use areas such as the emergency department or operating room. [6]

PRIMARY DRIVERS	SECONDARY DRIVERS	CHANGE IDEAS
3 Implement evidence-informed strategies to prevent urinary tract infections	Use proper techniques for urinary catheter maintenance	» Verify and document the five items listed under routine maintenance every shift (add to existing documentation systems). [9 10] » Consider using urinary catheter systems with pre-connected, sealed catheter-tubing junctions. [7] » Ensure that all care items – hand hygiene supplies, individual containers for drainage, hygiene supplies for meatal cleaning – are always available at or near the point of care. [6 7] » Maintain unobstructed urine flow. [6] » Place paper documentation materials at the bedside so that they are visible and accessible to staff. [6] » Engage patients and families in the process by educating them about the appropriate care and encouraging them to ask or remind staff. [6] » Use alerts in computer systems to prompt staff on the five routine maintenance items and required documentation. [6] » Provide supplies for collection of samples in one place or as a standard kit, at or near the point of care. » Changing indwelling catheters or drainage bags at routine, fixed intervals is not recommended. Rather, it is suggested to change catheters and drainage bags based on clinical indications such as infection, obstruction, or when the closed system is compromised. [6] » Unless clinical indications exist (e.g. in patients with bacteriuria upon catheter removal post urologic surgery), do not use systemic antimicrobials routinely to prevent CAUTI in patients requiring either short or long-term catheterization. [6] » Do not clean the peri-urethral area with antiseptics to prevent CAUTI while the catheter is in place. Routine hygiene (e.g. cleansing of the meatal surface during daily bathing or showering) is appropriate. [7] » Unless obstruction is anticipated (e.g. as might occur with bleeding after prostatic or bladder surgery) bladder irrigation is not recommended. [7] » Clamping indwelling catheters prior to removal is not necessary. [7]
	Review necessity of urinary catheter daily and remove promptly when no longer needed	» Include catheter necessity in the daily nursing assessments at the start of every shift, with the requirement to contact physician if criteria are not met. [6] » Develop nursing protocols that allow for removal of urinary catheters if criteria for necessity are not met and there are no contraindications for removal. [6 7] » Implement automatic stop orders for 48 to 72 hours after insertion, with continuation only when indication is documented in renewal order. [9] » Place reminders in paper patient records and use alerts in computerized ordering systems requiring physicians to document indication for continuation of catheter. [6]

PRIMARY DRIVERS	SECONDARY DRIVERS	CHANGE IDEAS
4 Enhance team-based care	Develop/support a respectful and safe work environment	» Raise awareness of the impact of power and conflict on team performance and patient outcomes. [8] » Provide opportunities for team coaching and feedback on effective communication tools and techniques. [9] » Create opportunities for team members to provide input through tools such as learning boards, huddles, briefings and debriefings. Take action on issues that arise. [9] » Welcome the reporting of safety concerns on the unit by encouraging reporting and loop closure on reported events. [9]
	Support effective team communication	» Provide staff education sessions on non-technical skills such as teamwork and communication, situation awareness and leadership. [9] » Develop daily goals sheets to foster clinician-to-clinician communication. [10] » Conduct daily multidisciplinary rounds on units. [11] » Utilize tools for patient handover and clinician to clinician patient information sharing. [9 10 11] » Implement team huddles. [9] » Implement ad hoc briefings and debriefings to support "just in time learning" following adverse events and near misses. [9] » Implement the surgical safety checklist. [12] » Develop and maintain a learning board on the unit. [9] » Implement safety crosses to share data with front-line staff.
	Foster visible leadership	» Create a shared vision with leadership. » Implement leadership walkarounds. » Trial other channels to invite leadership to spend time with front-line staff, patients and families – (e.g. joining team huddles). » Foster regular visits to the unit to meet with team. (e.g. organize a project launch with leadership attendance).

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