Outline for deep dive tool for orthopaedic SSI reviews *(DRAFT)*

I. Purpose of this tool: Why should we review SSIs using this tool?
   a. A root cause analysis (RCA) or deep dive review is defined as a retrospective approach to investigate and analyse a serious event to identify causes and contributing factors, and to recommend actions to prevent a recurrence. Identifying causes and contributing factors to orthopaedic SSIs will ensure a robust process is in place so improvements can be made in clinical practice at the DHB.
   The process of RCA addresses four basic questions:
      1. What happened?
      2. Why did it happen?
      3. What are the contributing causal factors?
      4. What can we do to prevent it from happening again?

   RCA is a process that identifies changes that need to be made to systems, is as impartial as possible, and moves beyond blame. The RCA process must consider human factors and other factors, related processes, and systems, and analyse the underlying cause-and-effect relationships. Relevant literature must be reviewed during the process and internal consistency must be achieved.

II. What SSIs should be reviewed using this tool?
   a. Deep and organ-space SSIs and superficial SSIs leading to readmission or delayed discharge. Deep and organ space SSI should be prioritised.

III. When should SSIs be reviewed using this tool?
   a. As close to when the SSI is identified as possible. There is potential to batch reviews of more than one SSI if they occur in a short time-period, so data collection is more efficient.

IV. Who should be involved in the SSI review?
   a. This tool should be completed by someone from the IPC team, surgical services, or designee. Once the tool is completed, it should be sent to the primary surgeon for review and comment. The IPC team/SSI champion and individuals involved in the original procedure should be interviewed if any practice breaches were identified. The RCA and relevant action plans must include the support of leadership who will be able to remove barriers and help drive the identified actions.

V. How should the review be performed?
   a. Preliminary fact-finding review of the patient's chart should be performed using this tool in addition to the Orthopaedic SSIIP data collection form.
   b. Fill in the gaps by having discussions with the individuals involved in the procedure if opportunity for improvement related to staff exists.
   c. Analyse and identify potential root cause(s).
   d. Determine any systematic opportunities for improvement.

VI. Alignment with the national adverse events programme: ***TBC****

IP&C RISK AND EVENT SEVERITY ASSESSMENT & ACTION TOOL

	Risk (E) Insignificant	Risk (D) Minor	Risk (C) Moderate	Risk (B) Major	Risk (A) Serious
	SAC 4	SAC 4	SAC 3	SAC 2	SAC 1
All Events	No harm. No increased level of care or length of stay. Includes near misses	Requiring increased level of care	Permanent moderate or temporary major loss of function	Permanent major or temporary severe loss of function	Death or permanent severe loss of function
SSI/Infection Events		Surgical site infection or other infection ***following discharge - managed without re-admission,*** e.g. superficial infection	Surgical site infection or other infection ***that may delay discharge OR requiring re-admission for further treatment such as antibiotics,*** e.g. deep incisional infection	Surgical site or other infection ***leading to re-admission for further surgery or treatment of sepsis,*** e.g. deep incisional or organ/space	Surgical site or other infection ***resulting in permanent disability,*** e.g. amputation or fused joint or sepsis related death

* *Note:* The table above is an example of how SSIs align with Adverse Event SAC 1-4 ratings. The national SAC example list will be updated in 2021.

VII. Alignment with ACC Treatment Injury Claims process
   a. Verify that ACC form has been lodged and infection has been recorded in patient discharge notes for GP follow-up.

VIII. What to do with the findings?
   a. Compile a summary and feedback to surgery team.
   b. Compare any findings across multiple SSIs.
   c. Develop targeted action plan related to any findings.
   d. Recommend and implement solution(s).

Deep dive tool for Orthopaedic SSI reviews – *Working DRAFT*	
I. Background information	
1. Brief narrative description of SSI (patient description, date and type of original procedure, indication for surgery, theatre number, admission, readmission date and discharge date, date of signs/symptoms, date SSI confirmed, type of SSI, organisms identified)	
2. Names of surgeons (registrar, consultant, etc.), anaesthetist and scrub team involved in the surgery.	
3. Patient visited a pre-admission clinic?	Yes / No / Unknown
II. Patient risk factors – Was the patient identified as higher risk of surgery pre-operatively?	
1. Revision surgery?	Yes / No / Unknown
2. Prior infection in joint?	Yes / No / Unknown
3. Age	_____ years
4. Medical comorbidities (ASA score)	1 / 2 / 3 / 4 / 5 / Not Recorded *Other comorbidities:*
5. Obesity (elevated BMI; if not known, specify height and weight)	<30 / 30 – <35 / 35 – 40 / >40
6. Antibiotic allergy?	Yes / No / Unknown
7. Diabetes, specify which type?	Yes / No / Unknown *If Yes, specify type (Type 1, Type 2, Type 2 on insulin):*
8. Haemoglobin A1c prior to surgery	<7% / ≥7% / Unknown
9. Poor compliance with medical advice in past?	Yes / No / Unknown
10. Smoking status	Current (smoked within 1 month prior to surgery)/ Past (quit >1 month) / Never / Unknown
11. Skin conditions	Psoriasis / Dermatitis / Lesions / Boils / Under control / Active / Unknown
12. Renal function	Normal / Poor / Acute renal failure post-op / UNK *Test used:* GFR / Creatinine
13. Duration of hospitalisation: pre-operative and post-operative hospital length of stay	Pre-operative LOS (days): Post-operative LOS (days):
14. Elective or acute (emergent) procedure?	Elective / Acute / Unknown
15. Infection at distal sites at time of surgery?	Yes / No / Unknown *If Yes, specify site:*
16. Admission from another healthcare facility?	Yes / No / Unknown
17. *S. aureus* colonisation?	Yes / No / Unknown *If Yes, colonised with:* MSSA / MRSA

18. Other risk factors identified?	
19. If yes, was a specific plan put in place including referral, deferment of surgery, etc.?	
III. Pre-operative measures	
1. Admission day before surgery?	Yes / No / Unknown
2. Hair removal	Clipping / Shaving / Other / None
3. Components of Staph bundle (nasal and skin decolonisation)?	Yes / No / Unknown If yes, self-administered or supervised by HCW?
4. Clear pre-operative instructions given in appropriate language?	Yes / No / Unknown
IV. Operative measures	
1. Patient's temperature abnormal (>38.0°C or ≤36.0°C) between pre-operative to recovery areas?	Yes / No / Unknown
2. Appropriate antibiotic prophylaxis compliance (dose, timing)? *Note: vancomycin is needed (in addition) if patient is colonised with MRSA Additional dose administered?	Yes / No / Unknown *If No, specify non-compliance:* Yes / No / Unknown
3. Antibiotics appropriate for alert (allergies, etc.)?	Yes / No / Unknown
4. Skin preparation: Alcohol-based Chlorhexidine or Alcohol-based Povidone Iodine?	Yes / No / Unknown *If not used, specify product used:*
5. Theatre attire, etc worn according to hospital policy?	Yes / No / Unknown
6. Tissue oxygenation optimised (80% fraction of inspired oxygen (FiO2) intraoperative and 2-6 hrs postoperatively if general anaesthesia with endotracheal intubation used)?	Yes / No / Unknown
7. Blood loss?	None / ≤1.5 L / >1.5 L / Unknown
8. Tourniquet used?	Yes / No / Unknown *If Yes, was tourniquet applied after antibiotic prophylaxis?* Yes / No / Unknown
9. Antibiotic cement used?	Yes / No / Unknown
10. DVT prophylaxis administered?	Yes / No / Unknown

11. Prolonged duration of surgery (≥2 hours for hip and knee surgery)?	Yes / No / Unknown *If Yes, specify reason(s):*
12. Antimicrobial (e.g. triclosan) sutures used?	Yes / No / Unknown
13. Orthopaedic space suits used?	Yes / No / Unknown
14. Any unusual intraoperative incidents (documented variations from the norm)?	
V. Post-operative measures	
1. Blood glucose control checked? What was patient's highest blood glucose level from preoperative to postoperative day one (if checked)?	Yes / No / Unknown *If Yes:* <200 mg/dL or ≥200 mg/dL
2. Surgeon notified at time of infection diagnosis?	Yes / No / Unknown
3. Referral process: patient referred properly (as opposed to given antibiotics by GP without wound being looked at)?	Yes / No / Unknown
4. Intraoperative wound interventions (e.g. washouts leading to infection) following surgery prior to infection being identified?	Yes / No / Unknown
5. Antibiotic prophylaxis followed in accordance with standard practice/guidelines?	Yes / No / Unknown
6. Wound care a. Post-op dressing used? b. Time dressing left in place? c. Any interventions needed? d. Discharge wound care instructions provided?	a. b. c. Yes / No / Unknown *If Yes, specify:* Yes / No / Unknown
7. Heavy post-op oozing?	Yes / No / Unknown
8. DVT prophylaxis (e.g. Tranexamic acid) used?	Yes / No / Unknown
VI. Miscellaneous	
1. Any other relevant factors identified?	